• Sandretto Logica 170/770 - a budget-conscious operation:
The two Cannon companies - CannonForma thermoforming machinery is exhibited separately at past shows.
Rationalization of exhibiting efforts, containment of costs and a more effective display of the Group’s synergies were the driving reasons for combining these two businesses units, usually grouped under “one roof” in a 840 sqm area located in Hall 15, stand C7/D78.
Welcome@K2004!
Experience makes the difference!
Welcome@K2004!
Experience makes the difference!

The Cannon Group will be hosting two stands at K 2004, in Halls 15 and 3.
Cannon Polyurethane equipment and the Sandretto and Windsor injection moulding technologies are grouped under “one roof” in a 840 sqm area located in Hall 15, stand C7/D78.
Rationalization of exhibiting efforts, containment of costs and a more effective display of the Group’s synergies were the driving reasons for combining these two businesses units, usually exhibited separately at past shows.
CannonForma thermoforming machinery is presented in Hall 3, stand F58: a more logical location as most thermoformers traditionally concentrate their visiting time in this part of the vast Düsseldorf Messe fairground.
The two Cannon injection moulding Companies - Sandretto and Windsor - show their latest developments for standard and multi-component moulding, all in full operation:
• Sandretto Mega SNH 700/9130 - a newly-designed compact 2-platen clamp unit covering the widest range of high-end applications, including injection compression, producing a deep laundry bin in Polypropylene
• Sandretto SNM 220/860+185 with a Windsor PlugXPress Unit WKT3 - producing a three-component in-mould-assembled automotive part
• MACH 150/1180 - the high-performance fast-cycle machine designed for thin-walled articles, producing four goldfish in Polyurethane

As is the custom for any Cannon event, “technological islands” illustrate - by means of moulded samples and using a complete set of new DVD videoclips - the complete range of industrial solutions manufactured by the Group.
See both Cannon stands: you are - more than ever - complete range of industrial solutions manufactured by Cannon.

Welcome@K2004!

Experience makes the difference!
We celebrate this year forty years of successful activity at Afros, the mother Company of the Cannon Group. If it’s true that “life starts at forty” well here we are, ready to start!

Sandretto is almost sixty (it was founded in 1946), Shelley and Viking are almost fifty, other sister Companies are younger: it’s like a family where various generations grow together, sharing experiences, errors and successes. Where everyone helps those in need, and gets a helping hand when it’s their turn. Where Companies and people - join hands when a difficult job needs to be done.

This networked structure makes a lot of difference, if we compare this Group with others. Multi-cultural, multi-national, multi-technological, made out of larger and smaller Companies - Cannon is a unique blend of people, and people (not Companies) can remember when they do good things and when they make mistakes. Then they call the summary of their mistakes “experience”, don’t they? Don’t we all, actually.

What’s this all about, in this editorial? Well, it’s all about you, our customers, potential customer, supplier, partner, person or Company in touch with us.
Our experience comes directly to you, when you talk to us. You profit from our innovative developments, because they mandate into efficient tools for your activity. You profit from our reliable solutions, which save you time and money. You profit from our local presence, fruit of many years of investments and training, because it brings close to you an invaluable amount of global experiences, in your own language and adherent to your needs and mentality.
You profit from our independence from different, larger corporations, because we leave you the freedom of the choice when it’s time to choose other fundamental components required by your business.

“Experience makes the difference” we claim at K2004. It’s a lot, for us and for you. It’s a difference that sometimes you think you are paying a little too much, if you compare our bottom line with other, less global competitors. But you are smart; you know that the bottom line is not only made by the number you write in your purchase order. What makes the difference for a production machine is - we learned this term from the computer world - the TCO, the Total Cost of Ownership, which includes the starting investment plus all costs deriving from its use in five, ten, sometimes more than twenty years of use.
And when the parts of a machine are well engineered and “made for quality”, designed to last in harsh environments, can be replaced with standard components, are serviced by fast and skilled technicians, your TCO remains within a reasonable level. Our experience, the sum of our errors, saves you costs, frustrations and further errors.

We often tell you - in this magazine and elsewhere: “talk to us, we know how and we share it with you”. Those who keep coming back after all these years know that we mean exactly this. Join them!

BREAKING NEWS!
TWIN SHEET FUEL TANKS BY CANNON!
Cannon has designed and installed both equipment and moulds for automotive fuel tank production, following the concept of twin-sheet thermoforming.
Read more at page 5 about this revolutionary development!
Significant experience in the supply of PUR equipment to the automotive industry over many years, has left Cannon with an impressive portfolio as a global supplier of integrated plants for car parts. Unique among its competitors, for twenty years Cannon has supplied plastic and foam processing machines, moulds, mould carriers and mould-transport systems, technological consulting, lab trials, prototyping and pre-production facilities, all "under one roof".

The increasing consolidation of the automotive industry into just a handful of global brands has generated a concentration of major projects (and related - expensive - tasks) over a selective few tier-one and tier-two suppliers. The part - whatever it is - must be designed, engineered, produced, assembled and delivered to the car maker's assembly line (just in time, please) by the component manufacturer. A tough job, considering the current prices paid by the "majors". It goes without saying that this re-allocation of costs has forced the part makers to try the same technique with their suppliers of raw materials, equipment, moulds and ancillary components. As a major provider of production technologies, Cannon had quickly learned that supplying only one piece of equipment for automotive applications was no longer possible, rational, or economically convenient. It was either a large, complex contract, full of risks and question marks, or no business at all. Faced with the "take-it-or-leave-it" option, Cannon accepted the challenge and created one of its Technology Centres - Tecnos - to serve this demanding industry. It was only 1983… "globalisation" was an unknown word and the car makers were still thinking in terms of national strategy, barely looking beyond their own national boundaries, let alone continent, when faced with the problem of a new manufacturing plant.

One complete plant - one supplier

More than twenty years later Cannon Tecnos presents itself to the automotive market as the "one-stop-shop" for all their manufacturing needs associated with the complex moulding of plastic and foamed parts. Several things have happened in the meantime: the Cannon Group has acquired new plastics technologies (Thermoforming, Composites, and - later - Injection moulding) and grown internally with the construction of foaming and thermoforming moulds. Many automotive projects, combining more than one transforming technology and resulting in several new machines dedicated to the production of new, multi-component parts, have been completed successfully. No big interest for the simple - though volume-wise challenging - moulding of large injected plastic parts. Too many players, no margins, different mentality. Backed by the Group’s experience in plastics moulding - Cannon is a unique supplier of all the plastics moulding technologies, except blow moulding - Cannon Tecnos’ mission is to supply complete plants dealing with the complex moulding of one or more plastics, alone or in combination with the various materials present in a modern vehicle: glass, textile, synthetic skins, noise-absorbing and vibration-dampening filled resins, carbon fibres, aramids, glass fibres. Providing a "complete plant" means that foam dosing machines, mixing heads, thermoforming stations (standard or designed for that project), special clamps and vertical presses, injection moulding presses and their auxiliaries, moulds, mould carriers and mould-transport systems, robotics, part handling and automation, chemical and raw material storage, piping, integration of external devices, technological consulting, lab trials, prototyping and pre-production facilities, all come from a single supplier, all "under one roof" and with one brand - and responsibility.

Cannon Tecnos has nurtured significant experience in the field, supplying the three tiers of this industry with turn-key solutions for exterior and interior parts: some examples?

A complete moulding plant, including thermoforming machine, Polyurethane moulding presses and dosing units, thermoforming and foaming moulds and auxiliaries for the production of VW Minivan, VW Tuareg, and Porsche Cayenne door panels.

The new "side by side" parallel twin sheet forming process machines and moulds recently delivered to Visteon to produce the fuel tank for a new high volume passenger car.
Prototyping and pre-production

The supply of these complete plants is only the final result of Cannon Tecnos’ activity. A successful project requires intense development prototyping and small pre-production runs.

The availability of two Application Development laboratories - each covering 1,500 sqm, with all the necessary framing, thermoforming and moulding equipment, staffed by expert technicians - offers important advantages to its clients. A part can be conceived, developed, prototyped, tested and modified to completion. If required by the car maker for road tests or benchmarking, small production runs and industrial pre-productions can also be carried out by the client’s technicians very effective training whilst the final plant is under construction.

Know-how transfer

The wide geographic coverage of Cannon offices offers tier one car parts manufacturers another important advantage: after having developed projects and worked out initial production with them in Europe or USA, Cannon is the ideal partner for assisting in the transfer of technologies to their Asian, Russian or South American partners. In contrast with those competitors who supply only moulds and tooling, Cannon is present locally with its own skilled technical personnel who can guarantee prompt, local assistance speaking the same language as the local client.

This happened recently when GM Buick had to make parcel shelves in China: Cannon provided the moulding plant and all the moulds, assisted in the specification of the chemicals and in the certification of the parts in USA, and finally installed the production plant in China. When Bright Brothers of India began local production of dashboards for a vehicle developed in Germany: again Cannon provided the moulding plant and all the moulds, assisted in the specification of the chemicals and in the certification of the parts in Germany, and installed the production plant. Or when Antosceora (Plastic Sizran) in Russia started making door panels for Lada cars: Cannon introduced them to this new technology in Russia.

Cannon Tecnos welcomes enquiries for complete plants and projects for these complex mouldings: its competitors are qualified and well-represented in this competitive market, but - to date - none of them has the same range of available products, technologies and services all "under one roof".

And - at the end of the project - this makes a big difference.

Why don’t you talk to Cannon Tecnos about your next project?

Prototyping and pre-production at Cannon Tecnos.
Make a PitStop and win the race!

Various methods are used by the PUR processing industry to handle moulds and mould carriers, each of them with benefits or disadvantages, depending on the individual process and the required productivity.

Nowadays, turntables and carousel systems, as well as stationary moulds, are the common choice. Back in 1983, Cannon developed a flexible overhead conveyor system (the RemiTech) and today offers a floor-based version of the flexible conveyor, the PitStop system, more suitable for complex parts and a diversified production mix.

Cannon’s engineering resources enable the Group to offer, design and in-house manufacture, dedicated automotive plants and complete packages including mould carrying systems and moulds for every application and budget. Its turntables and oval conveyors are well known to the stamp manufacturers. But these rigid solutions—where the cycle time is dictated by the machine—are not appropriate for complex mouldings or when a wide range of different models has to be produced simultaneously. In these cases, the cycle time is dictated by the operator, who must have the time to position complex inserts and perform more operations than are required by a standard seat or back. For example, the “In-stall” moulding technology adds a delicate operation, the manual positioning of the textile container into which the fabric will be deposited, to the list of conventional ones: mould cleaning, release agent spraying, insert positioning, foaming and demoulding. This is a delicate operation requiring some time, yet it can be allowed to extend the cycle.

The PitStop—a practical solution offered by Cannon—consists of a carousel line with a row of service positions where the operators can work on moulds that have been temporarily taken offline. When the press leaves the curing area, it moves in front of the first free operator and is automatically disengaged by the dragging system. The moulds can be serviced, taking all the time required, then, when all the textile or metal inserts have been positioned, the carousel can be re-inserted in the line.

Thanks to its outstanding production flexibility, this self-moving overhead conveyor system is an extreme flexibility: each mould carrier/mould is mounted on an independent self-moving trolley, equipped with its own electrical circuit and electronic control panel, two-zone thermoset/cure, vacuum pump and hydraulic unit. The stationary time of each trolley in each station can be optimized and individually adapted. They can move continuously in the curing area and the personnel perform standard manual operations, or with a step-and-go movement where high precision is required in positioning the trolley: for vacuum forming the textile insert, spraying the release agent, or re-orienting the final part in closed moulds.

The main advantage of the PitStop conveyor system is its extreme flexibility: each mould carrier/mould is mounted on an independent self-moving trolley, equipped with its own electrical circuit and electronic control panel, two-zone thermoset/cure, vacuum pump and hydraulic unit. The stationary time of each trolley in each station can be optimized and individually adapted. They can move continuously in the curing area and the personnel perform standard manual operations, or with a step-and-go movement where high precision is required in positioning the trolley: for vacuum forming the textile insert, spraying the release agent, or re-orienting the final part in closed moulds.

The system combines the advantages of a stationary plant (efficiency and modularity) to those of a rotary plant.

INAX: the steering-wheel champ

INAX International, an innovative start-up in the Poitou-Charentes region of France, now offers its steering-wheel know-how to manufacturers wishing to expand production by including items hitherto unattainable on the market.

INAX International’s young founder was struck by the fact that, in an industrial sector that holds no secrets for him after twelve years spent there, competitors invariably proposed only the products found in their catalogues. Christian Martineau and his team want to change all that by offering purpose-built steering-wheels that meet individual customer specifications.

Thus INAX International designs and manufactures custom steering-wheels, in small and medium production rates, for use on cars requiring no driving licence, industrial or leisure vehicles, buses, etc., a market representing 450,000 vehicles a year in Europe alone. Needless to say, this takes no account of the market sector, with its fast-growing potential.

INAX needed to equip itself with extensive production resources embracing the whole spectrum of techniques required for this highly specialized product, and notably facilities for producing polyurethane technology of paramount importance to this application.

On the basis of his experience with steering-wheel design, Christian Martineau picked Cannon as a partner and opted for a high pressure “A-Compact” Servo dosing unit.

Thanks to its outstanding production flexibility, this self-regulating machine featuring closed-loop flow rate control enables INAX to turn out very high-quality items in small or medium production batches.

INAX can already boast of significant credentials plus an order-book representing a production backlog of over 30,000 steering-wheels a year. The firm can obviously rely on support from Cannon France’s local after-sales service always crucially important during the initial stages of production start-up. RATIONAL USE OF RESOURCES: ONE MIXING HEAD, ONE OPERATOR OR ROBOT FOR EACH FUNCTION, ONE SUCTION POINT FOR THE EXHAUST VAPOURS.

The system is also ideal for maintenance and mould changeovers: each mould carrier can be extracted from the line without interrupting production. Also the plant modularity is enhanced: further mould carriers can be inserted into the line, without requiring the operators to work at a faster pace.

Cannon have supplied the PitStop system to major manufacturers of automotive seats and welcomes enquiries from those who would like to achieve the same positive results in their own factories!

Wheels are steering, in China!

Impressive figures were released, about the forecast automotive production in China. Although these were recently reviewed downward—reflecting the rising concerns mixed with politics and traffic (that already cut off control in several Chinese cities)—still a figure of several million passenger cars can be made annually by 2007 grabs the attention of anyone involved in their production.

Cannon—present once more than twenty years in China and in the whole Far East area with various offices offices—is very active in the supply of key polyurethane technology to the Chinese manufacturers of automotive plastic components.

In China, there are eight complete plants for making wheels for a total of 45 fixed moulding stations—two sold to the Chinese operations of three major tier one international suppliers. All these working hands are outsourced by the direct injection of an extrusion into the moulding beds, as well as by the injection of an extrusion injected into the polymerization bed.

In contrast with the common belief that foreign companies go to China mostly for the cheap labour, one of them is currently evaluating a Chinese project for a fully automatic steering wheel manufacturing plant, based on the PitStop concept expressed in the article above. Service tasks such as demoulding, mould cleaning, application of release agent and positioning of inserts in the mould are performed automatically by dedicated robots, working on mould carriers which have been temporarily taken off the polymerization line.

To contrast with the common belief that foreign companies go to China mostly for the cheap labour, one of them is currently evaluating an 11,000 tonne/year project for a fully automatic steering wheel manufacturing plant, based on the PitStop concept expressed in the article above. Service tasks such as demoulding, mould cleaning, application of release agent and positioning of inserts in the mould are performed automatically by dedicated robots, working on mould carriers which have been temporarily taken off the polymerization line.

When they have been properly serviced, the mould carriers are brought into the foam injection station, and continue their travel in the curing area until they are ready to enter into the final service station. A very automated and innovative plant, which can also be supplied in a partially manual version for particularly complex mouldings.

Impressed? Ask Cannon!
Twin sheet fuel tanks

Cannon has designed and manufactured both machinery and moulds for automotive fuel tank production - using the twin sheet thermoforming technology - for Visteon, a major Tier One supplier. A number of multi-station thermoforming plants and moulds have already been installed and additional machines are on order.

New environmental regulations are growing in scope and stringency in such a way that they have a fundamental impact on how a fuel tank should be made. New evaporative emissions regulations require innovative plastic fuel tank technology. California LEV2 (Low Emission Vehicles) and the target of PZEV (Partial Zero Emission Vehicles) require multi-station thermoforming technology that can incorporate the fuel delivery system, fuel filters, fuel/vapour lines, level gauges and on-board recovery system in the tank in order to reduce the number of path ways fuel vapours can escape.

The dedicated solution proposed by Cannon contains several technical breakthroughs. Amongst others, it offers significant advantages in terms of:

• process stability and wide accessibility to the forming station
• in mould automatic loading of components inside and outside the fuel tank, on both halves of the tank
• improved wall thickness tolerance as plug assist is allowed while forming both halves and better geometrical definition as pressure forming is allowed
• scrap reduction
• production flexibility
• heating performance and accuracy, thanks to new heating systems and controls and cooling during heating.

Visteon reported other positive aspects related to the design of equipment and moulds, which, due to a secrecy agreement, Cannon is not in the position to further disclosure.

In any case, it is important to point out that due to Cannon’s wide know-how in building both “classic” thermoforming machines and specific moulding lines for thermoplastic and thermoset materials, combined with specific skills to develop, make and test both prototype and serial tools and equipment in well equipped laboratories, Visteon took significant profit from the “turn-key” supply capacity of Cannon.

Once this joint development activities can be presented to the public in fact Cannon believes that this technology could gain a significant market share in comparison to the “standard” twin sheet or the blow moulding concepts, presently in use for fuel tank production.

Visteon, a leading fuel systems supplier, is developing new plastic-tank architectures that will allow vehicles to meet these standards, with additional benefits like superior wall thickness distribution on the most complex geometries, possibility to fit larger inserts inside the tanks and design freedom to use the narrowest available space in the car body.

The new architecture will be possible with the application of the Twin Sheet technology, e.g. thermoforming two thermoplastic sheets and welding them together along a pinch line while the material is still in the molten state. This is pretty much similar to the blow moulding process, but starting from a flat multi-layer sheet, instead from a co-extruded multi-layer pattern.

Thermoforming allows better control while forming with respect to blow moulding, thanks to differential heating (“zoning”) and plug assist technology. It is also less likely to cause damage to the important EVOH barrier layer.

Fundamental to drastically reduce gas emissions, even on the most intricate shapes. Thermoformed tank design can incorporate the fuel delivery system, fuel filters, fuel/vapour lines, level gauges and on-board recovery system in the tank in order to reduce the number of path ways fuel vapours can escape.

Flexible solution for single and twin sheet production

The Italian company A.B. Battiston has purchased a new CannonForma machine capable of thermoforming single sheets, in the “classic” way, or “twin sheet forming” welding two plastic sheet together into an hollow product. The machine allows a flexible production with a quick conversion from single to twin sheet operation.

Twin sheet forming technology has a history of thirty years but CannonForma, with its sister companies Cannon Tessino and Cannon Shelley, has gained a deep knowledge by working with several recent projects. As an example, about ten years ago Cannon Shelley delivered its first twin sheet forming machine with pressure forming capability (150 x 100 mm sheet size with 60 tonne force) and a subsequent sophisticated model was presented at the K95 Show.

A major recent involvement in the technology by the Cannon Group has been the project for the manufacturing of many multi-station machines for the production of fuel tanks for cars: the preview of this project is presented in the article here on the left.
There is a trend to manufacture larger thermoformed parts. This is due to the fact that it is easier to find suppliers for wider plastic sheet dimensions and new thermoforming machines allow better control even on larger sizes.

CannonForma has experience in building such kind of machines, paying attention to several fundamental aspects of this complex moulding.

Due to increased tooling weights, the forces needed for suitable movements preferably require hydraulic actuators.

For these large-sized frames a correct alignment between the structural elements is very important, in order to allow a controlled thermal expansion and straight movements. It is therefore fundamental to machine tool the joints of the frame, as only in this way the perfect alignment is guaranteed.

CannonForma's manufacturing culture has been since long years sensitive to this aspects and therefore has machine tools of suitable size to fulfil even the largest needs.

Correlated to previous point is important to have the mould table properly designed and manufactured. FEM analysis is an invaluable tool for proper dimensioning, as well as - again - proper milling of the surface can allow the planarity needed for sealing.

Sag control of the plastic sheets is fundamental for material saving, but must be more sophisticated, since much bigger sheets are heated between hot surfaces at the same distance as for smaller sizes. Since standard components and standard heating system are used an advantage for the final user, on the long run - the heating elements are designed with a focal length control that ensures heating uniformity to all sizes of plastic sheets.

Improved telescopic clamp frames must be used with the sections that favour heating on the edges, even if they are telescopic. Jacking strips are present on the perimeter, for better adjustment. Griping force is fundamental, especially for heavier gauges.

Larger heating panels provoke increased air flow and therefore important air draughts that must be kept in consideration if one presents a uniform and reliable heating. CannonForma has developed a heating control in close loop.

This system allows the adjustment on the actual temperature (not only on power level) of upper and lower heater of main heating station through several thermocouples and a dedicated control system. This function adjusts directly the actual temperature of the heater elements instead of a level of supplied power. Then it is possible to control the temperature of each single element combined to the "reference" heater with thermocouple, increasing or decreasing the power level. The benefits are numerous.

The actual temperature of each single element can be set, and is controlled in closed loop, with video displaying parameter status and consumption of heaters in the rest position. This system ensures precise and constant heater temperature both in operating and rest positions.

Significant energy saving and recovery are guaranteed, because in rest position heaters are positioned over reflective panels which avoid dispersion of the IR emissions. Automatically the closed loop system decreases the heater's voltage, maintaining the data set by the operator.

Energy saving can reach 20-30%.

Finally, the temperature compensation system automatically adjusts the heating temperature according to ambient temperature changes.

Heat dispersion is a main issue and the heater banks must have as well proper heating panels, reflecting back to the plastic sheet all emitted energy.

CannonForma specialises in large parts forming machines.
Calyx - Italy

Calyx (a member of the Palazzetti Group, leaders in the production of domestic fireplaces) is currently following the strategy of investing in the sanitaryware market in order to achieve a similar leading position to their primary market. To achieve that result, Calyx required a very performing production machine.

Their new CannonForma thermo-forming machine will be equipped with a sheet loader - part unloader with automatic unloading device, to ergonomically operate the machine and eliminate the need to manually re-align the plastic sheets on the machine to the loader and use it as it is received from the supplier.

The heating system is fitted with quartz elements individually controlled, for better performance and temperature zoning, to gain the benefits of better thickness distribution, so important for aesthetic and structural performance. Mechanical movement of the heater bank with proportional valves is performed, in order to avoid any mechanical shocks to the delicate heating elements and assure proper lifetime.

As top-of-the-range thermoformed bath tubs and shower trays are manufactured from cast PMMA, it is necessary for the mould table and clamp frame to supply a great amount of pressure in order to successfully form the vertical rim around the bath edge. For this reason bath forming machines must be fitted with high power cylinders for lifting the mould table and clamping the material.

Another feature of this CannonForma thermoformer is the ability to release the clamping force during the heating cycle, allowing the acrylic materials to expand freely, releasing in this way any stress and tension, therefore stabilizing the part dimensions. Sophisticated heating controls have also a facility that allows the user to vary or even switch off the power to the heating elements for a time-controlled period within the overall heating time. The timer is set so that power is switched on again prior to the end of the heating period. Although this will slightly extend the length of the heating time, it will allow the material to "cool", i.e. let the heat penetrate and therefore achieve a higher core temperature without damaging the surface. This is very important when processing thick materials, especially PMMA, in order to reduce the risk of inducing stress in the material which may manifest itself as hairline cracks on the material surface at a later date.

A special mention must be made to the operator interface on a MS Windows-based PC that CannonForma has developed, in order to accomplish the specific needs of the Italian market. This control features a friendly and familiar interface, allowing for an easy modification of all parameters with just a click of the mouse.

Its standard components can be purchased at the computer shop around the corner, and the built-in additional graphical features dramatically help the machine setting. Being based on common industry standards, network communication and machine remote control over IP and via the WiFi protocol are also immediately available, allowing for wireless communication. The system also permits easy offline programming and link with process data collection procedures, as well as regular backup of production data with standard hardware and software.

With respect to other machine concepts, this "classic" concept of machine achieves superior material distribution and thickness control over the most intricate geometry. In turn this means being able to reduce to a minimum the starting thickness of the plastic sheet.

Heating the sheet while holding it vertically with vertical heaters, a machine concept proposed by other manufacturers, does not allow the same degree of control, as ascending air and draughts caused by the "chimney" effect prevent proper heater zone control of the plastic material surface and also cause high speed heat loss from the surface of the plastic sheet, with great detrimental efficiency; this is also negative in terms of energy consumption and influence on the temperature distribution.

These are reasons why the machines with sqg control will represent the winning concept in the field of sanitaryware, especially today where more and more complex shapes are required to match the sophisticated needs of the culture of well-being in the bathrooms.

Kinedo - France

It’s a new “art of living” what KINEDO - a brand of the SEA French Group - is proposing: domestic hydraulic massage in ergonomic tubs of every shape and shower cabins with hydro-massage, produced by the sister Companies SETMA and AQUAPRODUCTION.

The right co-operation between KINEDO and Cannon France lasts since eight years; the first step, back in 1996, was the purchase of one automatic, double-table router by Belotti, immediately followed by an automatic thermo-forming machine for bath tubs and shower cabins, able to form sheets up to 2,500 x 2,000 mm.

KINEDO recently confirmed their confidence in Cannon and Belotti, purchasing a complete line for thermo-forming and routing, able to satisfy the complex technical needs characterizing their latest series of wellness products.

This new line is composed by one thermoforming machine CannonForma PF2212, with automatic loading and unloading, quick mould change, Siemens process control and automatically-regulated sheet-holding frame.

One Belotti FLA 2620 SS automatic router, with double shuttling table for operating the unit in batched time, allowing for the load of very large parts. A four-position resolver - with quick tool change system - permits the optimisation of the routing cycle, while the see-through integral cabin provides a convenient sound-deadening and easy visual control of the process.

As of today, five CannonForma thermoforming machines and three Belotti’s routers - all used on a three-shift basis - allow the market-leading SFA Group to respond properly to the increasing demand of the “domestic wellness” market.

Perfectly complemented, the CannonForma thermoforming machines and Belotti’s routers constitute a complete installation - more than 100 are currently operating in France - whose start-up and technical service is assured by Cannon France, with full satisfaction of its customers.
Only three years after the official launch on the market, the new range of “A-Compact” high-pressure Polyurethane dosing units has become a true reference point for the compact machines segment, confirming the reliability of Cannon technology, the product quality and the excellent design concept.

In the field of moulded Polyurethanes there is a growing demand for high-pressure metering machines combining simplicity of use, high quality standards, efficiency, reliability, limited investment. Cannon’s new “A-Compact” has proven in the past three years to be the ideal solution for the small and medium-sized businesses in need of all these features. The “A-Compact” models are now widely used to produce an extensive range of Polyurethanes, from rigid low-density foams for thermal insulation to flexible cushioning for automotive and furniture industries, from synthetic wood to integral-skin leather imitations. Their range of final applications and sectors covers automotive interiors and exteriors, refrigerator insulation, panel insulation for cold chain transportation, building elements (i.e. panels for roof, wall, folding garage door, piping insulation, air ducts and ventilation systems), technical components, medical stretchers etc.

The complete range is composed of six models: from the small “A-Compact 10” (with output capacity ranging between 40 and 130 g/s) to the recently launched “A-Compact 200” (355-2,400 g/s). The machines are currently available in three configurations:

- “A-Compact” Basic: standard version characterized by the manual adjustment of output and component ratio.
- “A-Compact” FC (Frequency Controlled): provided with automatic output adjustment through frequency inverters, pouring programs automatically selectable shot-by-shot and fixed output pumps with reduced maintenance costs.
- “A-Compact” CL (Closed-Loop): equipped with flow transducers to operate the closed-loop control of output and component ratio. Set values are constantly compared with those measured in real time. Whenever deviations beyond the tolerances allowed are recorded, the control system automatically adjusts the parameters, keeping output and ratio values stable. The machine is also provided with an Output Visualization System to monitor and print the main processing data. Thanks to its extremely competitive level of investment, the “A-Compact” units represent the best solution to replace low pressure machines with a more modern and environmental-friendly technology. This high pressure technology offers many and significant advantages:

  - Elimination of solvated solvents for the mixing head’s cleaning
  - Improvement of the working conditions, safeguarding the health of operators
  - More efficient production processes
  - Production of foams with higher quality and better physical/mechanical properties
  - Significant savings in raw material
  - Safety is a high priority for Cannon, that continually investigates other industrial sectors for new technological solutions which can be applied to metering units to improve quality, performance and safety.
  - Examples of this constant endeavor are numerous. The most important machine parts are supplied by the world’s best-known manufacturers, to guarantee reliability and workmanship.
  - The machines are always equipped with high-pressure axial-piston pumps able to process the widest range of formulations, ensuring the precise chemical metering.
  - The innovative explosion-proof sheaths were co-designed by Cannon to cover high-pressure component flexible hoses.
  - All electrical wires pass through the machine’s frame for an easy maintenance. They are, therefore, not visible and not subject to deterioration or damage which an accidental mishandling may cause.
  - Safety plugs are fitted on each drainage line to perform the necessary operations in full safety and to avoid any chemical leakage.
  - Anti-corrosion bolts offer the best circuit seal, even in extreme climate conditions.

Outstanding mixing efficiency

The “A-Compact” metering machines can be equipped with the classic Cannon FPL (with “L-shaped” geometry) or the LN (with a straight mixing chamber) high-pressure mixing heads. The mixing head can be positioned vertically or horizontally on a rotating boom assembled on the machine frame, or on a separate stand-alone unit. In order to obtain easier and more flexible mixing head positioning on the requested foaming units, the system can be also supplied with a dedicated device to switch over from vertical to horizontal position.

Share the Cannon experience in this field: try an “A-Compact” for your moulding applications!

New! Re.Co. Air - Pneumatic injection pressure control

An affordable and reliable solution for the improvement of quality and performance of the foaming process is now available from Cannon: the new Re.Co. Air System, the pneumatically driven version of the well-known injection pressure control system.

In a modern foaming process the control of the pressure into the injection circuit is an extremely critical - but very important - point in order to secure the homogeneous and efficient mixing of the chemical components. Since its launch on the market the Re.Co. system - developed many years ago by Cannon for the control of pouring pressures - has aroused great interest within the specialists and the most meticulous operators.

A classic Cannon tool

The Re.Co. is an hydraulic device controlling the movement and the correct positioning of the needle in each injector fitted on the head. Actually, its basic working concept is just to detect the right position of the needle and keep it stable. Because of the advantages it brought and its proven reliability, this device was immediately successful and in use is widespread across different applications: from furniture to automotive and from technical articles to insulation. The ability to have a constant pressure, by monitoring and automatically varying its closed-loop the component ratio from shot to shot or even during the same shot, has definitely improved the foam quality (and consequently the products) increasing the performance of the equipment. The limits of this hydraulic system are governed by its complex management, which requires the intervention of highly skilled technicians for the installation and calibration procedures. The system, therefore - even assuming maximum reliability and efficiency - is comparatively expensive and requires the adoption of additional units such as the hydraulic unit and the control panel that further increase the space required for the installation.

For these reasons work on the development of this device has increased in recent years with the aim to create a new version which is able, performances being equal, to give improved competitiveness to those operators who, even though they acknowledged the real benefits, could not afford such a level of investment.

The new, innovative version

Cannon today officially presents the new Re.Co. Air System: this new version is fully productive and has successfully survived rigorous testing in both Cannon’s central R&D Laboratories and at selected customers under the most severe working conditions, giving the same level of reliability as the hydraulic configuration. The beauty of the Re.Co. Air is the simplicity of its installation and calibration. The working pressure of the system is 5.5 Bar hence, for its operation, it is sufficient to connect the compressed air circuit commonly available in all factories.

The basic design has been radically revised. The result is very simple mechanics requiring minimal maintenance and, due to its relatively easy operation, it can be managed directly by the company personnel following a short, dedicated training course.
From June 2004, all Cannon high-pressure dosing units for Polyurethanes feature a new electronic control from Siemens, with an LCD (Liquid Crystal Display) touch screen. Available in four versions, this control covers the whole range of machines, providing immediate control of all production parameters. As a consequence the IRD (Instant Ratio Detector) retires, after 25 years of invaluable service to the PUR processors of five continents.

A flashback into the history of this industry is required, as a tribute to this glitzy device.

Remember when the component calibration in a PUR dosing unit was done by shooting - separately, of course - the main chemicals into two plastic buckets which were then immediately weighed, and the ratio was calculated by dividing the two weights? No? Good for you, you’re still a youngster then! The operation was standard procedure until 1979: the manual calibration of the components was a compulsory operation, carried out several times each day, to make sure that the foaming process was conducted within the given stoichiometric ratio between the two main components, Isocyanate and Polyol.

Then - in 1979 - Cannon launched the Instant Ratio Detector - the IRD. This electronic measuring device measured the volumetric flow of the two components in the high-pressure lines and displayed the two values, and their calculated volumetric ratio, in three dedicated displays on a small control panel, housed above the machine’s main electrical board.

This device saved an incredible amount of time, work, mistakes and waste to PUR processors around the World. It became a standard piece of equipment and was quickly copied by other machine manufacturers.

The path was open to the closed-loop control of output and ratio, the electronic piston-dosing machine (the Cannon HE born in 1985) and the computerized monitoring and control of the foaming process.

Integrated with dedicated process-control software, then shown on a conventional video-monitor, and later integrated in MS Windows-based programs, the IRD became a central monitoring part of more sophisticated process controls.

With the new series of electronic controls the IRD retires, replaced by the CRS (Output Visualisation System). Farewell, IRD, and thanks for the invaluable service!

The new operator panels on Cannon high pressure machines are based on a Siemens touch-screen LCD system.

New LCD, touch-screen control for all Cannon high-pressure dosing units

The first version of the IRD - introducing in 1979 the real-time visualisation of component outputs and volumetric ratio.

Two people were involved in this manual operation (one holding the buckets, one pushing the button) and numerous pairs of trousers and shoes witnessed the turbulence of all Isocyanates! The calculation errors - deriving from the sudden evaporation of volatile blowing agents - and simple mistakes in imparting the two weights often resulted in incorrect machine set-up, numerous scrap parts and wasted time and money!

The new Re.Co. Air assembly for one component: compact, easy to set and use, pneumatically

Because of the elimination of the hydraulic unit and the control panel, the new configuration does not need any additional space, and is therefore more rational and compact. The lack of oil totally eliminates the possibility of leakage, thus contributing to an improved working environment and operator safety.

The working concept itself has been radically changed; the adjustment of the injector needle is now achieved through the action of a spring on which the piston moves pneumatically.

The needle positioning is then performed by means of a “substantial ‘balance of forces’”: the preset force of the spring opposes the force generated by the material flowing into the injection nozzle. The requested working pressure is opposed by the force generated by the material flowing into the nozzle, between the thrust of the pneumatic actuator (through the spring) and the hydraulic thrust of the material at the outlet of the nozzle.

Whenever deviations beyond the tolerances allowed are recorded, the control system automatically adjusts the parameters varying the driving air pressure, keeping mixing pressure constantly stable.

Maximum production flexibility is facilitated by the ability to automatically change the output and ratio parameters from shot to shot, giving an instantaneous change of formulation. Tens of production lines have confirmed that the requested time to switch over (changing the components in the formulation to be poured and achievement of the set pressure and output) can be estimated between 0.5 and 1.5 seconds, depending on pressure values, output and properties of the chemical component in use.

For the production of dual hardness parts (i.e. car seats and shoebeds), this solution is still under evaluation trials to determine accuracy and speed of response.

As far as component recycle is concerned, this can be performed at low pressure directly through the mixing head, by keeping the Re.Co. Air injectors fully open. In this way, the dosing unit does not need to be equipped with additional stream distributors.

Try it at home, and buy the Kit!

Upon evaluation of the equipment in use, the Re.Co. Air can also be supplied as a retrofitting kit which can be easily integrated into all high-pressure metering machines of virtually any brand.

The relatively simple configuration of the new Re.Co. Air has led to the creation of an interesting portable demo-kit no bigger than a normal tool-box. Using this instrument, Cannon’s technicians can make “on site” demonstrations all over the world by interfacing the kit, through simple operation, with the dosing unit and the mixing head in production. In this way the operator can directly test the efficiency of the new Re.Co. Air within their own working process.

Cannon’s offices worldwide will be happy to provide technical information about the new Re.Co. Air, scheduling real demonstrations directly at your factory. Make the most of this opportunity and contact your nearest Cannon service department immediately.

If you try it at home, you’ll like it, you’ll keep it!

The new Re.Co. Air demo kit - available from all Cannon service centres - fits in a toolbox!
For Refrigerated Trucks

From the beginning of 2005 the German company Riedel Fahrzeug GmbH is going to produce with a dedicated Cannon plant, sandwich panels up to max. dimensions of 10,000 mm x 3,000 mm to be installed in cold-storage vehicles. They will use metal facings and Pentane as the blowing agent.

The complete tailor-made Cannon production line - which mainly consists of the foaming station, the panel press and the pentane safety equipment - will be built in accordance with the European safety standards for this technology, in close coordination with the German TÜV.

The metering unit - a Cannon “A-System 200” Penta Twin Double - ensures precise dosing and high-quality mixing of the components. The configuration, with two 300 litre jacketed tanks and four dosing pumps equipped with magnetic couplings, allows simultaneous foaming with two mixing heads. A perfect foam distribution inside the panel is achieved by pouring into the open mould. The complete metering unit is sited on top of the panel press, to save space.

All relevant production data will be monitored for reliable quality control. The new Touch Screen Operator Panels, now fitted on most Cannon high-pressure machines, allows not only an overview but also easy access to detailed analysis of the machines and process data. Adjustable limit setting and corresponding fault reports make the operator’s life easier. Maintenance schedules with electronic protocol are a big advantage and an additional help for the operator. Depending on the customers needs, the export and storage of the process data on a separate PC is also possible.

The Mami 2+0.5 press is designed according to the shuttle principle. Three heated press plates, driven by an electromotor, allow automatic feeding of the metal sheets. The lower sheet is handed over to the turning device and then laid down on the preheated press plate. Following automatic centering, the preheated cover sheet is shuttled into the press and drawn in as another framed panel emerges from the press. Unloading of the finished panel is carried out automatically. While the third press plate enters the press with the preheated lower cover sheet, foaming takes place.

Afterwards the press closes and the upper metal sheet is hooked on. Of particular note is the plant’s modular design which permits easy extension of the press at a later date. Cannon employs a programmable Siemens S 7 PLC to handle all communication tasks between each part of the plant, connected to free standing operator panels. The state of the art technology of the plant also extends to the electronic visualization system.

Penta Twin metering unit and one Cannon OVS with output visualization system.

For Insulated Pipes

The production of insulated pipes for district heating is the core business of one large European Cannon customer. The most important aspect of these products is the avoidance of heat loss. Until now, both discontinuous and continuous production processes have been used, but the continuous one only in combination with low pressure technology. In close cooperation with the customer Cannon optimized this process at existing plants by installing two new mixing heads.

But more targets have been set: the implementation of high pressure technology for the continuous process will become a reality during 2005. Cannon is manufacturing the complete foaming plant using its extensive experience in other continuous processes, i.e. the self developed Pipe-in-Pipe technology.

The Cannon supply comprises one premix unit for Pentane, one premix unit for the catalyst, one Cannon “A-System” 20 Penta Twin metering unit and one Cannon OVS with output visualization system.

For Households Refrigerators and Freezers

One of the largest European manufacturers of household appliances is investing in new foaming plants for its different production plants. Cannon has developed and delivered complete manufacturing systems, comprising both “wet” and “dry” equipment for the production of doors and cabinets for refrigerators and freezers. As expected, this customer also prefers to use Pentane as blowing agent.

The door projects consist of several Drums-7 and Drum-8 units, fully automated to include mixing head movement, unloading of the framed parts and mould change systems - to facilitate short cycle times. A heating system with forced air ventilation pre-heats the door panels prior to their automatic transfer into the Drum.

The wet side of the plant, different models from Cannon’s “A-System” Penta Twin high pressure systems, are equipped with FPL 18 HP and FPL 24 HP high-pressure mixing heads. The cabinets are manufactured on a dedicated plant with stationary Rotoplug-2 fixtures. A barcode reader identifies and selects the prepared cabinets at the integrated preheating station and sends them to the relevant foaming station. The Rotoplug-2 is designed to accommodate two different fixtures and to switch between them without loss of time. The automatic loading will be carried out using a preheated transport carrier which, during the transport, Nitrogen-inertion will take place. Also, in this case, the plant offers the shortest possible cycle times.

A platform across the plant provides enough space for storage of the plas, using a crane and rail system, and for the necessary metering units, including the automatic mixing head carrier.

The plant is controlled by the programmable Siemens CPU in combination with modern touch screen operator panels, which are now standard on all Cannon PU machines to ensure optimum process control.

This customer also chose the Cannon Pentane safety technology with gas sensors, ventilation system and special alarm control panel. Cannon place much importance on close co-operation with the German TUV and have together developed an alarm logic which offers the highest safety for the operator.

“Pentanisation” gains various markets
Customer Service

Continuous surveys on Customer satisfaction are run by the Customer Care staff, in co-ordination with the Integrated Quality System, to provide timely and qualified answers on specific technical and technological aspects of the business.

The Customer Care unit is therefore able to guarantee a common and co-ordinated service support to all Cannon Units and to their customers, with the set target of promoting their competitiveness on the international markets, maintaining an efficient productivity (of men, machines and processes) guaranteed all over the World:

- similar organization inside each Unit, according to international norms UNI EN ISO 9001
- common work tools
- common technical data bank
- efficient and similar worldwide services
- exchange of information among Units
- fast and easy communication

The Aftersales Global Service offers to Customers tailor-made preventative maintenance and updating services, to keep their foaming equipment in the best conditions.

The Aftersales Global Service offers to Customers a complete mixhead, and process specifically designed for this market, which gives the manufacturer the ability to produce economic imitation leather parts while maintaining excellent quality and performance.

The small, lightweight mixhead and spray system has proven very flexible in trials, and - due to the geometry of the specially-designed mixing chamber - successful spray skins have been produced at a variety of mixing pressures and flow rates. The chemical flows, and consequently pressures, were varied by as much as +/-20% throughout the shot, and the mix remained excellent throughout the entire part. This can be a major advantage due to the fact that it is usually necessary to vary the flow of the Polyurethane throughout the pour to accommodate the varying features of typically intricate automotive parts.

New: Colour or third stream additives!

Again, the versatility of the Cannon mixhead has allowed the introduction of a third component - a pigment - during the spray process which permits the processed skin to be produced in colour variations as desired by the customer. In addition, the colour injection could be turned on and off at will allowing more versatility in final skin production.

The success of this testing has resulted in Cannon producing two separate versions of their spray skin mixhead: a two component head and a three component head.

While both incorporate the same basic components that have produced superior mixing capability, each head has unique differences. However, both heads are small in design, capable of handling a third component for adding additional elements such as pigment or other components, and both utilize the hollow wand for the spray applications.

As demand for PUR spray skin parts increases, Cannon will be in the forefront with the equipment and experience necessary to assist its customers with this technology.

Today you have the alternative: try the Cannon solution!
In the last two years the Cannon's range of low-pressure metering machines has been completely redesigned and optimized. A comprehensive restyling of the standard models - dedicated to cover the wider range of general purpose applications - and the development and industrialization of a new series of units - to meet the needs of specialised market niches - has been successfully completed.

The range of available Polyurethane low-pressure dosing units has been enlarged, consolidating the presence of Cannon in sectors where micro-shots, small outputs or very high outputs are required, and opening new interesting opportunities towards what are generally called “Specialties” dosing equipment also suitable for Silicones, Epoxy resins and elastomers.

Modern approach: continuous evolution

Progress is driven by the ever-growing market demand for metering machines requiring simplicity of management, high technical and quality standards, efficiency and reliability, with the need to keep investment costs low to produce more and implement highly-automated processes.

The Cannon low-pressure machines are the actual response to these needs for several reasons: they are the sum of the experience gained dealing with hundreds of different projects and of the analysis of the inputs collected with a constant and close cooperation with the customers. They are designed and manufactured following modern engineering procedures and applying high-quality electronic controls, mechanical and hydraulic parts.

These metering units can solve the production problems of the small and medium-size businesses, combining simplicity in operation with advanced technological content, guaranteeing the highest level of performances and final product's quality.

Although their use has been reduced by the advent of more modern high-pressure metering and mixing equipment, however the specific nature of some applications (very low outputs, small production volumes) requires features that only the low-pressure foaming process can offer. For these applications - and also thanks to the development of alternative and more ecological washing systems based on chloride-free solvents - the low-pressure technology it is still nowadays a suitable, competitive - and some times the only possible - solution.

For general-purpose applications Cannon produces two families of low-pressure machines, which can be used in different foaming processes:

- Cannon “B-System”, characterized by submerged pumps in the component tanks. This is the right solution to avoid problems of potential leakages from the pump seals, reducing maintenance and environmental impact.
- Cannon “BP”, where pumps are traditionally positioned outside the tanks. This “base” machine configuration is extremely suitable for those users who require frequent changes of production.

The main information on parameter values and processing data are managed and monitored in real time by an operator panel interfaced with a PLC. According to the machine model and to specific customer's requirements, the control interface is available in two different, intuitive and easy-to-use configurations: LCD display with keyboard or touch screen panel.

Low-pressure machines: complete restyling plus new models

A dedicated machine version with closed loop control of the component metering is also available. In this case the set values are constantly compared with those measured in real time. Whenever deviations beyond the allowed tolerances are detected, the control system automatically adjusts the metering parameters, keeping output and ratio values constantly stable.

Cannon offers a wide range of low-pressure heads which can be combined with a great variety of nozzles characterized by different shapes and designs, responding to the most specific application needs.

Cannon heads guarantee, up to the injection nozzles, the mechanical separation of each component stream thus avoiding any contamination, obtaining excellent foam quality and preventing any risk from blocking the mixing head during the foaming process. The component pressures are normally adjusted by means of conical injectors mounted on the mixing head.

The internal head's geometry has been specifically designed to avoid pre-flows, placing a dedicated pre-mixing area before the main chamber. The whole control is automatic and can be set by means of a timer.

Microm Shots and Low Outputs: Specific applications require to meter and mix formulations different from the Polyurethanes. To meet these specific needs Cannon engineered dedicated mixing heads, dosing equipment and processes able to work with Silicones, elastomers and Epoxy resins. For these applications Cannon offers integrated solutions and complete turnkey systems including metering machines with a pumping capacity from 0.2 up to 30 g/s, together with automated systems to move the mixing head and load/unload the manufactured products, guaranteeing the accuracy and the complete repeatability of the process.

Gasketing Technology: A complete production system for Polyurethane or Silicone gaskets. Read the relevant articles at pages 14-15 of this Cannon News.

PostMapping Technology: Dedicated to the encapsulation of electrical devices and components (printed circuit boards, wires, capacitors, connectors) allow the use of Polyurethane or Epoxy resins. See article here on the right.

Silicones: These performing resins are generally used for the production of technical articles (i.e. seals and rollers for paper mills and printing, such as for bending machines) and soundproofing insulations. The need to work with high-viscosity components means that the metering machine must be equipped with pressurised tanks, frequency controls on all the motors and special flexible pipes improving the Silicone fluidity.

Elastomer Casting Technology: Technical articles, roller blade and skateboard wheels are typical casting applications. Components are dosed at low or high temperatures. The metering group is supplied with pre-heating and degassing unit, as well as a heating unit for water/oil temperature control.

High Outputs: Blocks of flexible, semi-rigid and rigid foam, produced by discontinuous processes, are used for specific applications in the insulation, furnishing and car industry sectors. The suitable production lines require very high-output metering units, able to pour large quantities of material in a relatively short time. Other typical high-output applications include the production of rigid low-density blocks for insulation, integrated and compact compounds (e.g. with glass micro-spheres) for the insulation of offshore piping and rigid medium-density blocks.

Your application requires a low pressure technology? Talk to Cannon: the solution might be there ready for you.

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Potting: the encapsulation system for electrical components

One of the latest results of Cannon R&D efforts is a new dedicated low-pressure dosing unit able to mix and meter both Polyurethane or Epoxy resins, using formulations with component ratios up to 10:1, high viscosity materials and very low output rates, usually from 0.2 to 1.3 g/s. This new machine is designed for those applications which commonly go under the name of Potting.

First unit in Italy

After a series of successful trials run with the prototype unit in Cannon’s laboratory in Caronno Pertusella near Milan the first unit in Italy for Potting has been installed at ICEL, an important Italian manufacturer of plastic film capacitors, R-C networks and interference suppressors for a wide range of needs in the electronic and electric professional fields. Their products are typically used in conjunction with motors, power units for electronics, medical and industrial equipment, traction drives, UPS, SMPS and telecommunication equipments. Specialising in the design and production of custom components and capacitors having a high technical and qualitative standard, ICEL exports more than 50% of its total production all over the world, in particular to USA, EU markets, Taiwan, China and Korea.

The new Cannon C2P is a compact machine where all units are housed on a single frame: day tanks, dosing group, mixing head and control panel. Fitted with wheels this unit is easily movable from one production site to another, while its open structure allows excellent accessibility to all the parts for easy maintenance and cleaning operations.

Components are stored in small 40-litre jacketed tanks pressurised up to 4 bar and provided with visual level controls which can be equipped with an automatic re-filling system. The temperature in the circuit is kept stable using a separate thermostimulator.

Ensuring process repeatability, the metering group is fitted with high precision dosing gear pumps mounted above the control panel for more compactness. By varying the speed of the motors, through the operator panel, it is possible to automatically modify the component ratio and output. All vital functions of the machine are monitored and controlled in real time by a PLC, which is interfaced with a dedicated touch-screen control panel. The system is able to memorise up to 19 pouring programs each one consisting of program number, pouring time, component ratio and output.

Having a remote mixing motor, the lightweight mixing head is ideal for manual and robotised pouring operations.

A compact mixing head is ideal for manual and robotised pouring operations.

Where micro-shots with very low outputs are required. This technology - commonly called Potting - is dedicated to the encapsulation of electrical devices and components such as printed circuit boards, wires, capacitors, connectors and many others.

The potting process is based on the use of a “pot” or shell where the electrical component to be insulated is placed. Once the insulating material is poured, case and circuit become part of a whole and unique finished capacitor. This is the most common method used, especially when high production volumes are required. The major advantage of a potting or encapsulation system is to ensure a complete protection of the component: this could be for protection from moisture, chemical attack, illegal copying or simply for sealing-off the part. Also potting is used to provide heat dissipation, flame resistance and cushioning from shock.

PUR and Epoxy resins, thanks to their ineretic chemical and physical characteristics, are the most suitable insulating materials for the applications when chemical resistances, adhesive and electrical properties are strongly required. In particular, Epoxy resins are very stable materials before and after hardening, characterised by a high chemical resistance up to 200°C, excellent chemical resistance and excellent adhesion to metals and porous surfaces. The Epoxy resins are hardened with many chemicals (i.e. amines, acids and anhydrides), which give them a full range of properties.

As far as urethanes are concerned, they also give a broad range of hardnesses and a great thermal stability at low temperature being particularly suitable for SMT PCB board potting. Furthermore, since their gel time can be easily modified without modifying the relevant properties, PUR offers a great formulation flexibility meeting specific hardening requirements.

A dynamic or a static mixer can be used with the new machine.

In addition to these already mentioned, the potential application fields of Potting technology cover a wide range of products such as: circuit boards, door locks, electrical and electronic components, insulators, micro- and proximity switches, plugs, power tools, relays, sensors, transistors, transformers, telecommunication equipment, thermal cut-out switches, pumps, surge suppressors, connectors, coils, resistors, solenoids, power line filters, timers, etc.

Many technical components need to be insulated and protected from the environment by being encapsulated or embedded within polymeric resins. The new C2P unit is designed to meter, mix and dispense multi-component formulations, ensuring reliability, consistency and repeatability: Cannon offers integrated solutions and complete “turnkey” production systems including the automation required for loading/unloading the manufactured products.

Potting? Cannon!

Cannon in Spain under the spotlights

Cannon exhibit technologies for in-situ gaskets and seals at the Matelec 2004 fair, held in Barcelona, Spain on October 26-30.

The Matelec show is an exhibition - held in Barcelona, Spain - fully dedicated to the lighting and illumination world. This industrial sector features a growing utilisation of in-situ foamed gaskets and seals made with PUR or Silicon foams. Indoor- and outdoor light holders for domestic, commercial and industrial applications, high-power light holders for sport, conventions or parking lots, large and small house buildings, white appliances, automotive and packaging industry: in each of these applications a foamed in-situ gasket or seal provides a superior performance in comparison with conventional ones.

Cannon presents the complete range of production solutions for PUR and Silicon foam low-pressure, low-output metering machines and mixing heads, automated handling and storage systems for finished parts, automated head manipulators and robots.

Come to Barcelona in October, visit Cannon at Matelec 2004!
The Application Fields

seals which are manufactured with a two-component soft
lighting:
other kinds of gaskets.
and the raw materials are cheaper than those used to produce
an gasket inventory is no longer required, the flexibility of the
last but nor least, other economical benefits lie in the fact that
assembling.
additional finishing stages, such as gasket gluing and products, significant cost savings can be achieved by eliminating
reduction in labour, one of the main components of the total
automation: this means that only one operator is the regular, and sometimes reduced, size of the
reducing any possible production scraps,
meeting quality standards and consistency in the process,
allowing high repeatability and high repeatability and
characteristics lay in a given range of specifications, the final results are not bound to the use of a
specific formulation or brand.

Advantages of in-situ foaming

In-situ gaskets - which are foamed without recognizable joints or ear ends - are characterized by excellent performances in comparison with other types of seals. The material, during the curing phase, forms an external skin eliminating any open cells on the gasket surface, guaranteeing a superior barrier against potential leakages.

In order to achieve a very accurate gasket lay-down, allowing high repeatability and repeatability and consistency in the process, meeting quality standards and reducing any possible production setups, the foaming phase must be executed technically.

The regular, and sometimes reduced, size of the final products allows for a high level of automation: this means that only one operator is usually needed to drive the entire system, with a significant reduction in labour, one of the main components of the total cost of a seal or gasket. Furthermore, since the foam-in-situ process foams the gasket with perfect adhesion onto the end product, significant cost savings can be achieved by eliminating additional finishing stages, such as gasket gluing and assembling.

Last but not least, other economical benefits lie in the fact that a gasket inventory is no longer required, the flexibility of the foaming process enables the processor to create a dedicated gasket (exact dimension and pattern) according to his current specific need, gasketing in a “room temperature” technology (no heat or energy is required to start the chemical reaction) and the raw materials are cheaper than those used to produce other kinds of gaskets. All these factors contribute to an investment pay-back in very reasonable time.

The Application Fields

Lighting: Lamp holders for industrial indoor and domestic outdoor applications - as well as fixtures for outdoor lighting - use seals which are manufactured with a two-component soft Polyurethane foam, while for high-powered outdoor lamps (for buildings, stadiums, sports courts) requiring high temperature resistance, seals made with two-component silicone are recommended, achieving high IP protection values.

Electrical and Electronics: Electrical enclosures and housings require good protection against dust and water penetration. In this case a thixotropic PUR blend is foamed onto the enclosure cavity, door and panel.

For smaller electrical junction and terminal boxes, characterised by narrow grooves holding the seal, specific soft PUR foam formulations are used.

Containers and Packaging: Gaskets for container lids, where high productivity rates and fast production cycles are needed, benefit from the reduced cycle time provided by the high automation level of the Cannon foam-in-situ process.

Automotive: Car hoods, supporting plates for pedals and steering wheels, fire plates and a range of panels (which separate the coolant from the engine), encapsulated quarter windows, heating ducts, ventilation grills, tail and headlights, air conditioning systems and internal door panels are only a few examples of the applications for foam seals and gaskets in the automotive industry.

Its main features are low maintenance, ease of use and the capability to process any kind of raw materials. In order to process different formulations the Polyol tank is supplied with an air lubrication system. The machine is equipped with an electronic process control (Siemens PLC S7) and a friendly operator panel. Cannon’s R2Gasting mixing head has been specially designed to cover an output range from 0.2 to 7 g/s, and it can be also customised for the highest outputs required to produce air filters for automotive.

Mixing Head Handling Systems: The quality of seals and gaskets mainly depend upon the precise pouring and distribution of the foam. For this reason Cannon have developed dedicated, automatic Cannon’s handling system for the mixing head, able to follow complex patterns with extreme accuracy and reproducibility.

In order to meet the widest customer’s production needs and technical specifications, offering more flexibility to end-users, the mixing head can be fitted on leading brands’ anthropomorphic robots which are fully integrated by Cannon in the production island.

Appliance: Cooker plates, rear and internal panels for house holdings, trim plates for washing machines and tables.

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distributing the foam. In this case a thixotropic PUR blend is foamed onto the enclosure cavity, door and panel.

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Cannon’s Gasket Foaming System

Cannon has applied its manufacturing philosophy - to be at the customer’s disposal to provide bespoke, engineered solutions, and increasingly featuring higher process flexibility in order to suit a wide range of production needs and quick production changeovers - to this specific market, and has become in a very few years a worldwide supplier of complete Gasketing production systems.

Dedicated dosing machine and machinehead: The Cannon R2Gasting is a low-pressure dosing unit specially developed for micro-shots.

EcoCleaner, an environmentally friendly system: The mixing head’s cleaning system allows the use of chlorine-free cleaners. Depending on the cleaner used, the final mixture is generally classified as a non-toxic waste that - in some cases and countries - can be disposed of as a municipal waste. Cannon EcoCleaner is equipped with a dedicated recycling system allowing most of the cleaners to be re-used several times.

Part Handling Systems: The handling equipment locates and moves the parts into the correct foaming position, holds them in place during the foaming process, removes them from the process area after foaming and stores them during the polymerisation period.

A variety of different solutions is available, depending on part size, required productivity, space availability and possible integration into existing production lines, such as:

• automatic bumper forming system complete of compressor belt, variable geometry holding system for the different part sizes and pallet stacking system for foam-in-situ parts
• pallet dispatching tables of different dimensions
• in position foaming drum, reducing the plant’s space and increasing its productivity
• pallet carousel
• turntable for single- and multi-cavity moulds

Dedication & freedom

As usual at Cannon, dedicated solutions can be engineered according to the specific needs of each customer, and the well-equipped laboratory located near Milan, Italy provides a complete technical support and possibility of trials prior to the purchase of a complete foaming island.

Good relationships with several suppliers of raw and formulated materials allow Cannon's customers a total freedom in the choice of the chemical side; if the components' characteristics lay in a given range of specifications, the final results are not bound to the use of a specific formulation or brand.

Already manufacturing foam-in-situ gaskets and seals, or a newcomer to this interesting niche of market?
Talk to Cannon, together we can make it!
Fresh Gasketing News

Activity in Russia

Electrical and lighting markets are growing very quickly in Russia. Many manufacturers from western Europe are moving there to install production plants and also many local companies have begun new activities encouraged by business expansion. Already established in other parts of the world, Cannon gasketing technology was introduced only last year into the Russian market.

Dedicated sales and technical specialists have been trained to deal with the specific enquiries and needs of this production sector. A presence at dedicated local lighting fairs, such as Interlight and Elektro were planned and organised through the long-established Cannon Moscow facilities.

With great interest, customers embraced Cannon's gasketing technology and - as a result - orders for the first two gasketing plants, have been signed.

A well-known lighting company based in the Moscow region confirmed their first contract. Originally they were just assemblers and dealers of lamp components manufactured in Germany. The business progressed and they also moved into manufacturing with their own direct processing facilities and installation of all the necessary production equipment. The foaming system supplied by Cannon is dedicated to the production of Polyurethane gaskets on waterproof lamps. Cannon managed the engineering and prototyping phases of the new lamps in close contact with the customer's mould maker. Cannon's ability and capacity to support customers with prototypes (requested for the issue of the IP65 certification) and pre-production facilities were recognised as unbeatable strategic strengths.

The second plant was delivered to a fast-expanding electrical enduser company close to Nurnberg. This line is characterised by higher production flexibility, being based on a three component storage system. In order to meet customer's specific production requirements, the dosing machine is able to foam thiol-terminated Polyurethane gaskets for typical sealing applications and, on changeover of the formulations in use, produce PU based glue for glass and doors.

Stainless steel sinks in Iran

The biggest stainless steel sink maker in the Middle East market has recently purchased from Cannon a complete dispensing system for gasket foaming. Due to the large production volumes and the request for improvement in quality, the manual process was no longer affordable or suitable. On this basis Cannon was contacted in order to analyze technical requirements and design a dedicated system.

The new line is fully automatic allowing the Iranian customer an annual production capacity of more than 600,000 sinks. This is a well-known application in Europe, but is one of the first plants commissioned in this area. Cannon's experience, gained from several projects in this sector, made the difference!

Appliance: new applications in the cooking industry

An important Italian leader in glass/metal gluing, a main sub-supplier to the appliance industry, chose Cannon as a partner in the development of a Silicon gasket to be dispensed onto glass ceramic cooking plates. The project put around the table the specialists from Cannon, the customer, appliance manufacturer and raw material supplier, who originally joined forces to improve the quality of the foamed gasket already in use.

The trials gave excellent results right from the outset, so the customer decided to replace its old production line, based on a static mixer, with new Cannon equipment complete with a dynamic B1 Multi mixing head. The plant, able to gasket more than one million pieces per year, will be operational from early Autumn 2004, foaming a super soft Silicon formulation especially developed for this application.

Silicon foamed gaskets: new developments on domestic boilers

Recently, in close cooperation with one big Italian domestic boilermaker, trials have been carried out with foamed Silicon gaskets, opening up an interesting new opportunity. Results obtained exceeded expectations and showed here - thanks to the intrinsic Silicon properties of heat resistance and compression set - gasket performance and life expectancy can be improved.

The ability to carry out dedicated trials with the customer's own parts and raw materials is a key requirement of the market in evaluating, in advance, each possible error. Furthermore it gives the chance to define equipment and production parameters, saving costs and supplying the foaming line ready for start-up with minimum installation time.

Silicon foamed gaskets? Talk to Cannon!

Cannon are expecting a growing interest in this technology as more manufacturers consider this solution for future investment, and welcomes their requests for information on this new multi component equipment.

The use of new generation cleaners allows perfect elimination of any residual material, so that the mixing chamber is always ready to process the new formulation.

Cannon are expecting a growing interest in this technology as more manufacturers consider this solution for future investment, and welcomes their requests for information on this new multi component equipment.

Silicon foamed gaskets? Talk to Cannon!

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Company Name

Function

Processor Non processor

Management Sales & Marketing

Production Purchasing

Research & Development Other

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Silicon gaskets for the lighting industry ...with a bright future!

Cannon recently undertook a joint project with producers of foamed gaskets for high-temperature lighting systems - typically floodlight lamps and streetlamps where the operating temperature is too high for conventional Polyeurethane. The solution was found in foamed Silicone systems. As a result, Cannon began promoting in-situ foamed Silicone gaskets and have been successful in supplying dedicated lines to producers of large volume floodlight lamps.

Many of the potential manufacturers of Silicone seals lack the volumes that justify the investment for a dedicated machine. Most of these companies produce a wide range of more conventional outdoor lamps, which require gaskets able to achieve the IP 68 protection degree, but with working temperatures compatible with the use of Polyeurethane gaskets.

Under normal circumstances there would be only two possible solutions: to buy two dedicated lines (one for PUR foam and one for Silicone) with a heavy capital investment in equipment, or to use Silicone foams for all the products, a technically-viable choice for every type of lamp but economically inconceivable in the long term due to the higher cost of Silicone foams.

Cannon decided to carry out some development work in order to provide a single plant configuration.

The solution, the B1 Multi Component mixing head, allows four different components to reach the mixing chamber separately, with no risk of cross contamination.

The dosing unit has been designed in multi component configuration where two streams are dedicated to the Polyurethane system and the other two to the Silicone formulation. The multi purpose mixer also allows the processing of Silicone and Polyurethane in sequence, simply, with an intermediate flush.

Multi-component mixing head for Silicone and Polyurethane.

Silicon gaskets for the lighting industry ...with a bright future!
An innovative solution for the production of finished structural and aesthetic parts: the moulding of a glass-reinforced RIM Polyurethane over a vacuum-formed film in a single working station offers both cost and weight reductions, excellent mechanical properties and elimination of painting. This process is suitable for a wide range of industrial applications: external body parts for earthmovers and agricultural vehicles, household appliances, bathrooms and showers, televisions cabinets, etc.

The background: InterWet

Cannon has developed and currently supplies an innovative method for the co-injection of Polyurethane formulations with a large variety of fillers. The innovative aspect of this new technology lies in the excellent wetting of the fillers, which is achieved using a special co-injection concept within the mixing chamber of a specially modified Cannon FPT, an L-shaped high-pressure mixing head, well known for its mixing efficiency, compact design and versatility. This ensures a thorough wetting of the solid component and an homogeneous dispersion in the mixture, hence its name: InterWet (Internal Wetting).

By means of a specially developed pneumatic deflector device, mounted at the outlet of the mixing head, superior quality and optimum lay-down of the blends in open moulds, has been achieved. This excellent distribution of the mixture can be important when dealing with complex mould geometries. This process is characterised by high mixing efficiency and foaming performance, blend homogeneity and a significant production cost saving. Thin-walled moulded parts reinforced with non-reactive fibres, or filled with low cost fillers, can be produced with excellent chemical, physical and mechanical properties and characteristics.

Process advantages

The Cannon InterWet co-injection of Polyurethane and fillers offers significant advantages during the foaming process:

1. Increasing the productivity, eliminating most of the traditional problems related to the expensive dispersion of fillers into the raw material (i.e. possible absorption of additives into the filler, abrasion, clogging of lines and tanks, fluctuating percentages of filler in the liquid).
2. Reducing manipulation and logistical costs. This “lightweight installation” does not require additional equipment such as premix, cylinder machines, pre-formed part storage and handling.
3. Saving significant manpower and raw material costs, by utilizing low cost additives and fillers. Compared with glass and pre-cut glass fibre, glass fibre-molding is still very expensive.
4. Reducing the scrap rate, due to a fully automated foaming process. Furthermore, the mixing system is based on just a few standard parts, which are cheaper than specially developed ones and are easily maintained.
5. Significantly improving the physical, mechanical and qualitative characteristics of the final product, thanks to a homogenous and random long glass fibre dispersion in the PUR foam.
6. Improving the working conditions in the production plants, with a profitable and sustainable technology based on a solvent-free process that respects the workers’ health and the environment.

Cannon InterWet is suitable for use in a wide range of industrial applications. Reinforced parts for the automotive market, heavy trucks and earthmovers (i.e. door panels, panel shelves, tractor hoods, fenders, internal and external body parts, etc), all fields where the mechanical resistance and the product’s light weight are mandatory and unavoidable characteristics.

A synergic development from GMP, Italy

Cannon InterWet has been chosen by GMP SpA, Udine, Italy, as the fundamental processing step for their Foiled Pur Technology - FPT (GMP patent), which consists of the simultaneous co-moulding of a rigid glass-reinforced Polyurethane structure over a thermoplastic, decorated foil, which is positioned and vacuum formed in the same open mould.

Their FPT process produces a moulded part characterised by excellent aesthetic finish; when the piece is extracted from the mould it is ready for the assembly line: the painting phase is eliminated.

The most important advantages of this process include the elimination of the painting phase, higher production potential versus traditional technologies, up to 30% cost reduction compared with traditional RIM PUR technologies, freedom of design - due to the elimination of steel sheet forming constraints - extreme flexibility in colour and decoration on the aesthetic side, possibility to create undercutts and thickness reductions (for handles and/or other hollowed parts which catch the external surface) and the possibility to mould large-size parts.

The FPT Technology was initially introduced with great success by GMP for the production of domestic refrigerator doors. They began production of a new generation of domestic refrigerators featuring a rectangular door panel obtained by folding a metal sheet and foam-backing it with insulation foam on an all-plastic door with rounded corners. This technology literally opened the door to a new-style of refrigerator, very reminiscent of the curved designs of the early 50s, when fridges were still insulated with mineral wool within a thick steel sheet mantel.

Thanks to these excellent results in both aesthetic and economical terms, GMP saw the possibility to extend this process to other applications already very familiar to the company - agricultural, industrial and building machines - a natural marketing development.

The use of composite materials in internal and external elements for these heavy-duty machines (body parts, cabin structure and roof, dashboard, light holders, bumpers and spoilers) mainly aims at a global reduction of the vehicle’s weight, allowing fuel economies and longer working autonomy.

But the performances required by a master hood are significantly different from those specified for a domestic refrigerator door! Approaching these demanding sectors required significant improvement of technical, mechanical and economical performance to compete with the traditional technologies and justify the change.

Larger, lighter, stronger: FPT

GMP invested significant R&D resources into defining the production parameters required for the industrial manufacture of large, lightweight, impact resistant structural parts.
characterized by an even higher rigidity than a steel structure of comparable dimensions, ready to be assembled as soon as they were demoulded.

The experience of GMP in the production of large parts for industrial vehicles, using the classic InterWet technique, had already proven that parts could be designed and tailored made to the specific functional requirement: since the quantity and length of the glass fibres can be varied at will during the foaming process, different shapes of the same part can have different levels of reinforcement and strength. On this basis it is possible to produce moulds which are easily modified later and in several versions allowing for brand differentiation, model updating, etc.

The production cycle is slightly longer than a common thermoplastic processing technology but, thanks to the elimination of the painting step, it is still shorter than the equipment used in SMC and compression moulding processes, allowing an increase in the production volume with the same manpower and working hours. For example, considering a standard production based on two work shifts and four moulding stations, an annual production capacity of about 360,000 - 440,000 pieces can be achieved.

With reference to shrinkage and dimensional defects, it is noteworthy that the linear expansion coefficient of FFT moulded parts is very similar to that of steel and aluminium, with the consequent reduction in vibration and loud noise from working machines.

The use of a decorated, coloured film (scratchproof, UV-resistant, available in a wide range of surface finishes) allows for the elimination of the traditional painting process: this drastically reduces production costs - the complete elimination of solvents and related handling, suction and disposal procedures, with a low environmental impact.

The future is today

The commercial success achieved by InterWet and the related production processes based on it - such as GMP’s FFTechnology - has engaged Cannon in yet another challenge: the technology could be successfully applied to the production of other industrial parts, which are today made in multi-step or multi-product processes, such as energy- and noise-absorbing panels, structural parts for automobiles, furniture and cold chain industries, decorative parts, agricultural containers and insulating parts for building (Blocks, structure etc.).

Our basic research often stems from a long-term vision, and we always begin R&D work well before the relevant processing need is expressed by the market: in this case we like to focus on shorter-term needs.

If you have an application in mind, do not hesitate to contact us: we can evaluate together the development and the potentiality of your new product and, with the support of Cannon’s R&D specialists and facilities, it may be possible to arrange a program of lab trials.

But don’t wait: first-come, first-served! And a simple inspiration can become a reality.

The approach was pragmatic: if they could make this challenging part, the rest would be easy.

The flexibility of the InterWet process, combined with the smart method used to vacuum-form complex parts without leaving wrinkles in small radius corners and undercuts, smoothed this development phase and soon supplied a satisfactory result. (See the dedicated article, right)

The lightweights, impact-resistant, ready-to-mount part was successfully made and tested: the impact resistance was outstanding, and even when tested with a violent shock the surface of the part was reasonably undamaged. A steel part would surely have buckled, and would have been difficult to repair.

FFT Process advantages

The FFT uses aluminium moulds, significantly less expensive if compared to the steel moulds normally used in SMC and metal sheet forming processes. This feature is extremely important for moulders who play in market niches characterized by small volumes, offering an affordable and flexible technology for frequent model changes. It is possible to produce moulds which are easily modified later and in several versions allowing for brand differentiation, model updating, etc.

The versatility of the FFT process has also enabled the manufacture of moulds which are modifiable in several versions and different dimensions, indeed the greater length for the longer version of the hood and mudguards was achieved with the addition of a simple insert to the original mould. In this way it is possible to easily obtain brand differentiation, model updating, customization.

Engine hood for KOMATSU tractors, made in Italy by GMP with FFTechnology

GMP of Oderzo, Italy, manufactures several structural components for KOMATSU tractors using their patented Foiled FiberPur Technology (FFT). The most significant part is the hood protecting the engine: this heavy-duty piece is made out of three separate components, two sides and one cover, mechanically and chemically assembled. The mechanical assembly takes place with self-tapping screws that maintain the three components of the kit in a fixed position allowing the bonding agents, which is distributed in conditions prior to assembly from the mould, to cross-link and provide the grip that ties the three components together. This product replaces a similar one, which GMP was already moulding with traditional RIM-PUR glued to a protective shield of glass-reinforced PUR made with the InterWet Technology.

Technical advantages

Using a single technology and a single manufacturer for all machine body components has brought several advantages: Optimisation of parts design and weight, avoiding waste and trimming costs; Uniformity of colour shades throughout the vehicle, thanks to the use of a pigmented film, co-moulded with the structural material. The colour consistency is hence very secure and all the problems of colour matching are avoided. Greatly reduced problems with coupling tolerances and part interferences; Delivery of a piece ready for assembly. Guards, handles and inserts are all pre-assembled by the same supplier.

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Cannon debuts in continuous production of insulated panels

On March 27, 2004 the leading Italian panel-maker Lattonedil has officially presented their new plant for the continuous production of Polyurethane-insulated sandwich panels, supplied by Cannon. This important project and investment must be considered as a fundamental step in the history of both Companies: 36 years of activity for Lattonedil and the confirmation of Cannon as a qualified supplier of continuous-foaming panel plants.

Only two years ago did the Cannon Group decide to start the engineering and the production of continuous insulated panels lines, by appointing to this project a team of skilled engineers. The plant sold to Lattonedil for their Carimate factory, near Como, is the first tangible result of the intention to expand into new application indices: a strong signal in a period of global market economic slow-down. This is a tailor-made project developed upon the specific customer's requests and according to the best technical available solutions.

The presence of Dr. Carlo Fiorentini, President of the Cannon Group, at the inauguration of the new production line has actually strengthened the relationship and the cooperation between the two Companies. Lattonedil has strongly wished Cannon to be present on this official occasion to acknowledge the significant role played by the Group as a primary technological partner and to express their satisfaction for the choice made.

Inauguration in great style with more than 250 guests coming from all over Italy and Europe who could enjoy a glass of good wine while admiring the line in operation. The plant raised a lot of interest and caught the attention of all the guests for the number of technical details, the installed devices and for the highly sophisticated automation involved.

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High efficiency and customised production

The plant is extremely efficient, granting a high level of production flexibility; it has been designed to optimise the production changes by reducing the normal cycle times. The line will produce over 2,000,000 m² of panels per year: the minimum speed allowed is 15 meters per minute, and the panel thickness goes up to 200 mm.

The whole line is over 100 meters in length and includes two couples of metal sheet decoilers and a profiling unit for shaping the metal sheet connected to a pre-heating oven. Once the upper and lower metal sheets, forming the finished panel, are shaped and heated at the right temperature they enter the foaming station.

The continuous and discontinuous foam production processes permit manufacturing Polyurethane panels for structural and insulation applications. Studied to meet the technical and investment requirements of each customer, the insulation solution offered by Cannon are available in a number of versions, all of them characterised by high productivity level and optimum quality: complex plant configurations, ensuring high integration level among the different processes - metal forming, foaming, automatic handling, production planning and quality control - are today available from a single, qualified supplier.

The use of a special vacuum-assisted Polyurethane injection method has made it possible to manufacture high-quality panels with a discontinuous foaming method. This results in 30% productivity increase of the entire plant over the conventional production method.

Furthermore, Cannon's continuous commitment and passion for proactive environmental responsibility have resulted in low-impact technologies, capable of reducing the emission of gases into the atmosphere.

The increase of production volumes and the variety of possible applications (roofing, roof insulation, walls, sectional doors, prefabricated structures, ducts and air-conditioning systems) demands for a higher flexibility and - at the same time - for a higher production capacity. For these reasons the continuous production plants are the best - and sometimes the only one - possible alternative solution.

The double-belt conveyor features an air heating system.

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Mixed production for Dagard, France

The French leader in sandwich panel production, Dagard, commissioned the second Cannon continuous panels production line for their Boussac, France, factory, where a relevant number of Cave, Miami discontinuous production lines successfully operate since many years with high-pressure, high-output multi-head machines and flexible multi-cavity polymerisation processes.

The supplied plant fulfills a quite ambitious requirement: the line must produce panels insulated with Polyurethane (PUR), Polysiocyanurate (PIR) or mineral wool (MW).

When operations involve PUR and PIR the classic foaming processes occur, as described above. The line can reach a maximum speed of 18 meters per minute, which is quite a standard production rate for the 40-mm thick panels made with this plant.

When MW has to be used as insulating material, a semi-automatic MW feeding line - parallel to the metal profiling area - starts operating. The main PUR foaming unit is stopped, and size of MW is manually fed to an automatic staker and dispenser. This device feeds the regularly-cut slabs between the two metal sheets, immediately after a station where a two-component PUR binder has just been applied by spraying the inner metal surfaces using a double dispensing machine and two transverse mixing guns.

The sandwich enters the double-belt 30-meter long continuous press, where the adhesion between the treated steel faces and the MW is promoted by pressure and heat: the press can reach 60 °C.

A patented, innovative drive has been applied for the first time on this machine: two independent electric motors operate two endless screws mounted above and below the two belts. Each screw of steel composing the belt is provided with a sturdy, oversize pinion which is caught by the endless screw and drives the endless belt - as well as its own - at high linear speed: the endless screw can be adjusted to any desired speed lower than the desired length by a double rotating van, setting on both sides of the panel to keep all the sharp burrs inside. The production mix - i.e. the combination of the required lengths of panels - is remotely decided and controlled by the production manager’s office, far away from the continuous line.

This solution provides higher efficiency and more linear speed. The resin within the short residence time under pressure: for this reason the temperature up to 60 °C, to improve adhesion and cure of the foam within the short residence time under pressure: for this reason the temperature up to 60 °C, to improve adhesion and cure of the foam.
On exposure to heat, expandable graphite (EG) begins to expand through decomposition at 200°C and attains a maximum volume at 1,100°C. Given free expansion, the final volume may be as much as 280 times the initial volume. After expansion it turns from a flake into a vermiciform or “serpent-like” form with very low density. One condition must be met to obtain this effect: the efficiency is linked to the original size of the EG flakes. Powders obtained from eroded flakes do not provide the same expansion effect. The tremendous expansion that EG offers makes it more effective than conventional intumescents. EG is extensively used in numerous high-technology industries to limit the damaging effects of fire; for instance, if applied to building steelwork it forms a protective char when subjected to heat which shields the substrate and prolongs the integrity of the structure.

For a long time the flame-retardant properties of EG have attracted the formulators ofPUR foam systems, but until now the difficulties of processing it—mostly the particle breakage, which affects its expansion properties—have prohibited its use in this specific application.

The Cannon effort was focused on working towards a complete technology with the ability to dose, mix and pour a blend of Pulpoly and EG in a correct and efficient way. In cooperation with a major raw material supplier and several customers, the central Cannon R&D department planned intense testing activities. Particularly important, therefore, was the initial selection of an appropriate grade EG suitable for use in combination with PUR formulations: thoroughly rinsed, acid washed and treated, with flake sizes stipulated at between 0.3 and 1.0 mm. Initially several solutions were available to Cannon in the search for the right processing method.

Mixing solids to liquids: what is available?

In recent years Cannon has developed reliable and affordable solutions for the addition of solid fillers to PUR formulations: glass fibres, iron powder, mineral fillers (expanded calcium carbonate, marble and quartz, granulate, barite, sand), recycled PUR etc. These technologies have been fine tuned and adapted to dose and mix a wide range of solid, very efficient flame retardants, which include not only inorganic products such as EG but also melamine, aluminium hydroxide, red phosphorus and polyphosphates. Depending on the type of filler to be used, Cannon offers different techniques specific to each material:

- Small particles (<1 mm), not fragile: dosing of filler in a single component or, where necessary, in a two-component system. The filling is performed with machines equipped with metering cylinders and hardened head nozzles. This innovative SoliStream kit avoids the use of these special components, and basically comprises a storage tank with an anchor stirrer, for the Polyol—graphite blend, a pumping group for metering the slurry, a mass flow transducer to measure the output and a Cannon FPL/3 head for the axial injection of the filled Polyol, together with the usual radial injection of unfilled Polyol and Isocyanate.

Cannon SoliStream Technology

We call “slurry” a highly-viscous component made up of many solid, dusty particles dispersed in a small quantity of a liquid carrier. Conventional PUR dosing machines are unable to properly handle such a muddy, viscous material. Recently developed to allow the addition of recycled PUR powder into conventional PUR formulations, an innovative Cannon “slurry injection system” has shown enough versatility to be successfully applied to the dosing of EG.
The tank’s stirrer keeps the whole mass of slurry in motion in order to avoid separation of filler and Polyol, although if this does happen, e.g. if the stirrer stops over the weekend, the slurry is easy to re-homogenise. In order to ensure the best slurry viscosity, a submersed electrical heater and a water-cooling circuit have been utilised. It is also possible to recycle the slurry at low pressure, inside the mixing head. Low pressure recycling also avoids stagnation of the slurry in the hoses between metering pump and mixing head. Stagnation in the hoses would decrease the slurry temperature, resulting in higher viscosity, which gives pressure peaks when pouring is performed. The low-pressure recirculation of the blend directly through the mixing head is achieved by a special pump characterised by its very low speed. Correct dosing of the graphite slurry is achieved by closed-loop control of the output.

When the head is open, the slurry is introduced into the mixing-chamber axially. The diameter of the inlet for this filled component is 3.5 to 4 mm, so there can be no risk of blocking. Up to 25% in weight of filled slurry can be added to the blend without affecting the mixing quality and efficiency, while the total concentration of EG can reach 10 - 12% of the weight of the foam.

No small advantage, the use of EG offers a high flexibility in production because - using the right techniques - it is possible to obtain quick product changes by modifying the formulations “on the fly”. As the main Polyol stream is left unaltered, it is sufficient to vary the percentage of EG in the premixing stage to quickly obtain a foam fulfilling a different fire resistance specification.

**Good results**

Thanks to the cooperation of Dow Italia, who supplied experimental formulations, and also the assistance of many customers worldwide who kindly agreed to run industrial trials with the new SoliStream kit, Cannon has completed several tests across a range of different production processes. From decorative structural parts and synthetic wood moulded pieces for the furniture industry, right through to the production of insulated sandwich panels, the Cannon SoliStream kit for dosing expandable graphite has confirmed its reliability, demonstrating its suitability for both continuous and discontinuous processes.

Table 1 shows a typical formulation, with 7% of EG on the total foam weight, suited for both moulding and continuous foaming tests. The only difference was that for the moulding sessions an FPL/3 mixing head was used, while for continuous panels a dedicated three-component head was designed. The slurry pressure, in the second case, was as low as 30 bar, guaranteeing a very smooth handling of the EG particles, for an optimum quenching performance in case of future expansion under the effect of heat and flames.

The results obtained - see Table 2 - show that an increase in the amount of expandable graphite significantly reduces the height of flame in the DIN 4102 test, and does not degrade the mechanical properties of the foam. Evaluating the fire behaviour, a considerable increase in LOI (Limiting Oxygen Index) values - in a linear way with the increased content of expandable graphite - has been observed.

The best flame reactivity properties are obtained using a mixture of additives. Further trials - not documented here due to lack of space - have shown that the combined action of EG with liquid flame retardant, such as TCPP, can achieve excellent results.

This system is commercially available

The evaluation of the first experimental results - from both lab and production trials - confirmed the initial positive feelings: using appropriate methods for dispersion, mixing and dosing of the solids particles, the addition of expandable graphite increases the flame resistance performance of a standard PUR formulation without affecting the insulation and mechanical properties of the foam.

To integrate the SoliStream kit and allow for rational preparation of the slurry, Cannon have designed a dedicated premix-station with a special feeder for solid particles, which can be used for automatically feeding the kit's storage tank. This electronically controlled, closed-loop-operated premix can be used for both continuous and discontinuous foaming processes.

Thanks to its properties, expandable graphite could be just the right solution to replace a wide range of materials used to make flame retarded foams, decreasing the problems caused by smoke which normally occur in a fire.

Enabling formulators and customers to skip typical processing limits, offering an industrial, affordable and reliable solution which can be added easily to any new or existing machine - no process solid flame retardant material, the new Cannon SoliStream kit with the axial injection of the slurry has been proven to give excellent results in terms of foam quality and processability.

The first commercial SoliStream kit has been sold to a German manufacturer of specialty foamed automotive parts. They will use it to make blocks of rigid, very low density foam to be cut into slabs and used under the bonnet, in combination with other facings, for the protection of the engine-compartments in case of fire.

Cannon offices will be glad to demonstrate how the SoliStream kit works and to discuss the possibility of organising dedicated trials based on specific requirements and needs.

Talk to Cannon: we know how, and we would like to share it with you!
New trends for European fridges?

If you visit an American friend at home, ain’t you curious about his two-door fridge? Never opened the smaller door, just to understand how the ice-dispenser works? Well, once you have seen and used one of these larger, side-by-side and wide-bodied single-door refrigerators you wonder how the ice-dispenser works? Well, once you have seen and used one of these larger, side-by-side and wide-bodied single-door refrigerators you wonder whether you could fit one of these king-size cabinets in the euhide they sold you as "The Kitchen" - but that’s another story, of course.

The average dimensions of a typical European apartment, purchasing habits based on frequent visits to a local shop and a cooking style based on fresh ingredients, have been the reason for a very slow introduction of "side-by-side" and wide-bodied refrigerators in Europe, over the past thirty to forty years. In the meantime, these large fridges were becoming very popular in the States, where the house (not an apartment) and its household rotate around a large kitchen, shopping is done mostly at the weekend, and "cooking" means opening a can and mixing its content with that of another box and then microwaving the whole lot while the family is already sitting around the table. (OK, American folks, this is a bit rough, but the space is limited and we must cut it short, right? )

Things are changing in Europe. The size of an average house has not grown much in the past thirty years, the cooking habits is - slowly - changing, and the distributions channels of food are looking for new trends.

First plants in Europe

One of the first plants for these large models started production in Italy last year, and was further extended early this year. The equipment comprises five stationary Rotoplug-2 fixtures and automatic handling system for cabinets, plus a special Drum-7 system for doors integrated with a rotary table for the preparation of the doors to be foamed. The door plant includes an automatic unloading system and mould change during cycle time.

Technical improvements

The increased mechanical stresses deriving from larger foaming tools, mean that these new models require slightly different foaming equipment. Conventional polymerisation jigs, operated by electromechanically-driven screws, show some technical limitations when they operate at full speed and require larger, energy-hungry electric motors. A new generation of hydraulic jigs seem better able to move - precisely and quickly - the heavy tools required for these fridges. The hydraulic operation of the jig allows a more precise tuning of the closing - clamping - opening cycle - the use of special valves on the oil circuit permits speed control as well as the ability to vary the speed in the same stroke, thus making it possible to use maximum acceleration during the approach stroke, with a slower, more careful operation when clamping the jig over the mould plug. This reduces the risk of marking the inner plastic liner against the vertical sides of the plug, and reduces the number of scrap parts.

Cannon Crios - the Group's Technology Centre dedicated to the refrigerator industry - have manufactured these hydraulic jigs in various dimensions and versions, including the Rotoplug, the Cannon patented plug-rotating system that permits a real-time change of model during production.

New European fridges? New trends for European fridges? multiple foaming options on the same Drum unit, a new mould transport system, automatic mould change on conventional Drum, electric drive - the innovation spans more than 20 years!

Refrigerator door foaming: open-mould pouring or closed-mould injection? No longer a dilemma. A new version of the well-known Cannon Crios Drum unit allows for both operations, permitting maximum flexibility to those fridge manufacturers requiring both methods. A large number of Drum 2 units - each of these equipped with two transverse head holders for open-mould pouring and two lateral head carriers for closed-mould injection - were recently supplied to a major Mexican fridge manufacturer. Maximum flexibility, high productivity, minimum space.

Refrigerator door foaming: several models with different polymerisation methods? No problem: a new generation of hydraulic jigs, with electric drive rather than the usual hydraulic one - for a Drum Unit! No problem: it's done. Three electromechanically-Driven Drum units are in construction, destined for two European factories belonging to a major German producer. The customers preferred this type of drive because of the easy control over the speed, acceleration and breaking, in comparison with the hydraulic systems. An automatic mould-change system - allowing for a set of two moulds to be replaced within the Drum’s cycle time - characterises this sophisticated version of Cannon Crios preferred door foaming machine.

Still looking for the best foaming solution for your next door plant? Talk to Cannon Crios: it might be there already - waiting for you!
Two-station machine

A recently delivered two-station machine achieves a hourly production rate of up to 38 liners, starting from HIPS sheets of 2,000 x 1,000 x 4 mm. The first station, with a loader, includes the automatic centering device, to avoid the manual pre-alignment of the plastic sheets on the pallets. The pre-heating features control in pairs, that allows an increase in production of at least 20%.

In the second station the final heating occurs: its upper and lower heater banks have individual controls, the upper one equipped with 125 mm ceramic elements. A fundamental feature here is the closed-loop control of the heating power working on the actual temperature of the heating elements as seen in the former machine. Heater bank movements are hydraulic to preserve the delicate quartz elements.

The forming station includes a pre-stretching vacuum bell, with a patented solution to favour the control of freezer and refrigerator double bubble liners in a flexible manufacturing environment.

Several dedicated solutions have been implemented to speed-up the production: fast cooling system, plug assist, hydraulic movements for maximum control and speed, and a fast mould change system with 4-4 air in and water connections for high degree of control of the mould movements and of the temperature.

The mould base design allows the interchangeability of the moulds. If various models of one family of refrigerators share the same freezer or refrigerator design, the need to duplicate the moulds can be avoided and one tool can be moulded on another base. This of course has the drawback of limiting the flexibility of the production system, but avoids a considerable investment in duplicated tools.

 Siemens control, for a friendly operation “on a click of the mouse”, providing more information on a wide display. This solution guarantees easy-to-find spare parts and maximum future expansion and connection capabilities.

The peripheral trimming of cells is done with servo-motor table for maximum precision and guided with vertical movement, in order to avoid V-shape cuts, maintaining the tolerance and improving the quality of the cut.

A scrap removal system is included, as well as a punching press with a tool adjustable to the different sizes. These machines are completed by an overhead pick-up system, with four stations and three heads, and are equipped with the same Windows-based PC interface of the Siemens control described before.

CannonForma has the tailored solutions that your unique production system requires!
ESU Cannon (UK), reports: positive news from UK market

Taylor Engineering Plastics, Rochdale, England, continue to invest heavily in production equipment to process RRIM and other plastics components for the Automotive industry. Their success, despite the gradual shrinking of the UK automotive industry, is credit to their expertise in mould making and strict quality control systems providing a first class nursery service to their customers. Critical to this success is their ability to supply this service at the right price and this could not be achieved without the help of their suppliers.

RRIM Moulding: ESU have provided two large RRIM moulders for clients this year, specifically engineered to TEP requirements - a bespoke solution at an economically viable price. The two new presses will be working alongside their two existing 400 tonne clamping presses so, in fact, doubling TEP’s RRIM moulding capacity. These two 250 tonne mould carriers each have platen sizes of 2,300 x 1,500 mm and both top and bottom platens can lock 45° towards to operator for ease of access to moulding tools. The chemical systems used require fast cycle times and the presses are specifically engineered to handle these.

DCPD Moulding: In addition to increasing their RRIM moulding capacity, TEP also report success with DCPD moulding and have taken delivery of a DCPD press and machine from ESU Cannon. ESU have just delivered and installed their 7th special mould carrier for the processing of DCPD RIM resin. The specially designed high tonnage presses are all used to manufacture exterior body panels for commercial vehicles. DCPD (DiCyclopentadiene) RIM polymers have high rigidity, excellent impact resistance and, as well as having a good surface appearance, are resistant to corrosion, making them the ideal choice for this application. The DCPD catalyst system allows control of the starting point of the chemical reaction opening up the processing opportunities for the manufacturer and making it possible to produce very large plastic components.

As an agent and manufacturing centre for global plastics machinery supplier Cannon, ESU design and build these presses, ranging from 50 tonnes to 150 tonnes and with platens up to 2,500 mm and daylights of 1,200 mm, for Cannon customers throughout Europe, including the UK, and feel there is a rapidly growing market worldwide.

The presses are installed alongside Cannon’s DCPD high pressure mixing units, which are specially adapted for processing this flammable and vaporous liquid safely and efficiently. The hydraulic DCPD mould carriers incorporate particularly long and fast downstrokes to accommodate large moulds.

Growing composite door market relies on ESU experience

Predictions, two years ago, that the Composite Door market would grow rapidly over the next five years certainly seems to be on track in 2004. Enquiries for equipment to foam fill these doors continue to flood in and ESU’s multi daylight, vertically clamped door presses - which were specifically designed for this application - are much in demand.

The increasing trend towards Composite Door Manufacture has been a global one, with the industry very much alive in South America, USA, Europe and the East. The complete and automated roll forming-assembly - gluing - foam filling package is available from ESU, who now have more than 14 years experience building equipment for this specific application. This experience not only ensures a proven product but also results in design detail which has been developed and refined over a period of time to maximise quality and production output.

This year ESU have built and installed several of these vertical presses in the UK ranging from 6 to 15 daylights and incorporating raw material bulk storage and BRC handling, hot melt adhesive and assembly plant and Cannon high pressure metering units. Features include up to 15 daylights, press tilting through 90 degrees to vertical for improved foam flow, press sizes up to 2,250 x 1,200 mm, hydraulically driven main head traverse system; on which is mounted the Cannon PPE head, up to 150 kg output high pressure metering units, complete “Pentane ready” plant and Pentane blending system.

Investment in composite door plant has not been restricted to clamping presses but also includes completely integrated ESU roll forming equipment for metal skin production and Cannon thermofoming machinery for production of PVCU skins. Glue lines and automatic assembly plant are also supplied with the presses.

Latest installations include hot melt adhesive pumping unit with head mounted on an X-Y manipulator to accurately lay-down adhesive on door frames and skins to pre assemble door prior to foaming adhesive.

TEP invest to more than double moulding capacity

Taylor Engineering Plastics (TEP) have just delivered and installed a new 750 tonne press with a specially designed 9400 mm clamping plate, by ESU Cannon, ESU design and build these presses, ranging from 400 to 2500 mm, with daylights of 1200 mm, for Cannon customers throughout Europe, including the UK, and feel there is a rapidly growing market worldwide.

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The Cannon Group opened this year its Mexican subsidiary. The decision stems from the Group’s intention of being present directly, with a strong sales and service team, in Mexico, a country that is undergoing an impressive rise in industrial development.

Until now Cannon was present in Mexico with different Agents for its various products lines. The need to rationalize the strategies and the approach to this fast-rising market pushed the Cannon Group’s management to invest considerable financial and human resources in a direct and unified presence: MexiCannon will be in charge of sales and service for all Cannon’s plastics processing technologies.

In line with the Group’s policy of having local staff and management in its subsidiaries, the direction of the new branch has been entrusted to Ing. Juan Manuel Muñoz, who bears a long experience of industrial production management in the Mexican plants of a multinational appliance manufacturer. A team of local specialists has been created to serve the Mexican market with all Cannon’s plastics processing technologies.

Based in Tlapaepante, one of Mexico City’s northern satellites, the new office is ideally positioned to provide prompt technical service and spare parts to the Mexican clients of Cannon to reinforce the Group’s nature of this local branch, it also hosts the Mexican Agency for Cannon Bono, the Group’s Energy and Ecology Division.

Your new contact in Mexico is:

MexiCannon S.A. de C.V.
Ave. De los Reyes, nº 257, Los Reyes Ixtacala,
C.P. 05640 Tlalnepantla, Estado de Mexico
Tel. +52 (55) 26262351/53846989
Fax +52 (55) 5318 8203
E-mail info@mexicannon.com
Web www.mexicannon.com

The Composite Door market relies on ESU experience

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More foam-makers install CarDio™ for CO₂ slabstock production

Recticel, France
When French legislative pressure dictated the phase-out of Methylene Chloride, after evaluating all the commercially available systems on the market and taking reference from existing CarDio™ customers, Recticel at Louviers in France elected to install the CarDio™ process from Cannon Viking.

Of special significance for this project is that the CarDio™ system was selected to be installed on their relatively new Hennecke MultiFlex slabstock machine.

Key factors in the decision-making process were:
- The widely acknowledged processing latitude of the CarDio™ system, with various chemicals and CO₂ levels
- The reasonable capital investment cost
- The ability to easily integrate CarDio™ within the existing Hennecke equipment
- No requirement for the complex, and expensive filtration systems
- Optimum block shape derived from the full width gantry laydown device
- Ease of use of the newly supplied RS (Rectangular Section) equipment
- Assurances by Cannon Viking that the conversion of the existing mixing head to accommodate essential CarDio™ components would not jeopardise quality foam production, despite a 'hybrid' mixing head being operational.

Even though this was the first conversion of its type, the project was a success and is a testament to the dedicated and detailed planning, engineering and teamwork of Recticel and Cannon Viking personnel.

The Customer’s experience with CarDio™ and CO₂ production has grown rapidly in a relatively short period of time. As the relationship grows there is interest from both parties in working together in the next phase of the airless gantry development to further improve this already successful process.

The smooth laydown of foam in a CarDio™ slabstock machine.

Yunnan Qujing, China
With a good co-operation from the customer a total of nine trials resulted in the successfully completion of CarDio™ at Yunnan Qujing No. 2 Plant in China.

The different grades of foam - 14 kg/m³, 17 kg/m³, 20 kg/m³, 25 kg/m³ with 20% filler and 32 kg/m³ - were produced.

The foam properties for each grade were tested at the Plant laboratory. The parameters of process, equipment and foam properties - like density, hardness, compression set, tensile strength, elongation - complied fully with specification requirements of the contract resulting in acceptance by the end user.

CarDio™ Process training with the customer was also completed such that the final few CarDio™ runs were made under complete control of the Qujing No. 2 personnel. Two further projects were completed later this summer for other Chinese customers.

The smooth laydown of foam in a CarDio™ slabstock machine.

CarDio™ Foam Production at Yunnan Qujing No. 2 Plastics: Cannon Viking and Qujing personnel.

Set the trend with Cannon in Germany!

The three German corporate companies Cannon Deutschland, Sandretto Deutschland and Windsor organized a 2-day event for their German customers at their facilities in Hanau.

The focus of the so-called "Cannon Trend-Tage" - which was held on July 7th and 8th, 2004 - was the offer of a professional technological program - concentrating mainly on trends and process technology rather than on machine technology. The products from Cannon, Sandretto and Windsor were presented but were not to be the main subject of the meeting.

About 200 people attended the two-day seminar, showing lively interest and appreciation for the program agenda. All speeches were well attended, as was the one-hour motivation lecture given by Dr. Schmid prior to the elegant musical dinner buffet held on Wednesday night.

A diverse and interesting program of speeches was devised, covering technological themes from different areas of plastics processing technologies. Most of the speakers were external specialists (e.g. from Dow, Bayer, DuPont, Motan, TRW, de-c-s-ic, etc.).

As well as the speeches, there were 15 partner companies presenting their products and services. Most of them housed a small booth of their own, within the building. Among them were companies such as DuPont, Motan, Nordson, TRW, Wöhr Formenbau...

Last, but of course not least, some machinery was on show. For PU-technology were exhibited one A-Compact 60, one AP 10, one second hand low pressure machine and a show case with different mixing heads.

For injection moulding technology were shown one SNT Multi 230-860/185 + PingXPress WKT 1 equipped with SC-In-Mould-Assembly mould producing Volkswagen Golf air grilles; one SNMulti 170-860/185 equipped with 2C-mould producing a car interior switch; one SNT 500-4170 equipped with a mould from Vilda for the production of mop accessories; one SNS 130-650 integrated into a completely automated production cell (including robot and laser labelling) and one SNS 75-285 equipped with a mould for connectors, processing the exclusive material LCP.

To see the complete list of speakers and partners please have a look on the website www.trend-tage.de, where you can still find the 2-day program and - clicking on the "Foto-Gallerie" button - a series of pictures of this event!
Series Mega H
new compact two-platen units

The range of Sandretto two-platen machines and mid-large tonnage offers a new line. Between the two presses Series Mega T and Mega H it is now available a new line of compact presses from 600, 750, 850, and 1000 tons. Their project was developed mainly to propose a new clamping unit - hydroblock type - that, with an equivalent opening stroke between platens, allows to get a net reduction of the overall dimensions. Thanks to the mechanical solutions adopted, these presses are recommended for those applications for which the mould stroke is predominant for the size of the moulded piece (garbage containers, large cases, laundry baskets, etc.).

The engineering choice of a new compact clamping unit - hydroblock type - for the Sandretto range of presses Series Mega H with an all in one reaction and moving platen allows to get a particularly favourable ratio between the max clearance between the platens (stroke + max thickness) and the overall length of the press.

Debut of the Sandretto Electric Machine

The new electric machine presented for the first time by Sandretto is a two-platen press with 60 tons clamping force. It belongs to the range covering four models with a mould clamping force from 40 to 110 tons. Its features are:

- A patented mould clamping system that separates the mould approaching function from the mould clamping function. This assures high dynamic performances, reduced wear of moving parts, and a perfect parallelism of platens.
- A new control unit manages both the operator’s interface and the electric motor drives with a high degree of integration.

This machine uses electric drives to perform all movements as mould, ejector, injection and plasticizing. The electric axes are used for the following reasons:

- to control the dynamic processes thus assuring exceptional levels of precision;
- for the high mechanical capability optimizing the energy efficiency;
- to reduce the global environmental impact (chemical, thermal, and sound pollution).

The static type forces (mould clamping and nozzle contact) are applied through a hydrostatic system to reduce the overall dimensions and the wear of the electric axes.

It is evident that speed and precision of movement require other solutions from the application of considerable static forces.

The machine allows you to overlap all movements without reducing the performances.

To keep the compatibility with the existing moulds, the machine is fitted with a hydraulic system to drive the possible cores present in the mould.

plastic form

SANDRETT "a CANNON company"

when experience makes the difference
A traditional Sandretto customer with over 100 installed presses, the SCAME Group confirm their trust in their supplier by awarding them an important job for four presses Mega T ES with 1,000 ton capacity and one press Serie Nova S with 400 ton.

This will lead to a consolidated relationship which was built over the years through the common achievement of important targets.

The SCAME Group was generated from the integration of two complementary companies with a long tradition in the plastics processing field. Copsa has a deep technical-engineering know-how for designing, prototyping, engineering and manufacturing of molds. SCAME Mastaf developed a sophisticated production organization for the moulding of quality plastic components for big lot applications. For 35 years they taught the group how to manage and integrate the complex stages leading from product engineering, through mould prototyping and manufacturing, to the production of components to provide the customers with a global service.

With production facilities spread over 9 different factories in Europe for a covered surface of over 100,000 sqm, the injection moulding division of the SCAME Group has a manufacturing equipment formed of 200 presses and a staff of over 550 employees in Italy, 100 in Slovakia and over 500 in Bulgaria.

SCAME is a leading company in the supply of plastics components for OEM’s in fields such as electric household appliance, mechanical-textile, professional tools, electromechanical and technical items in general.

The four Sandretto Mega TES 1,000 ton presses will be mainly used by SCAME for the production of components for electric household appliances.
Series Mega H

The fixed platen has a geometrically optimised shape according to minimum deformation criteria. The reaction-platen transfers the clamping force to the moving platen at the plating points defined by the harpenter of the mould shape. Therefore the forces application points to the moving platen, made out of steel, assure the lack of deflection under load.

The first fast approach of the moving platen is generated by two cylinders with a dedicated connection to the fixed platen and placed near the upper tie bar on the operator’s side and the lower tie bar on the opposite side.

On moving platen size four clamping nuts engage the tie bars, making possible the moving platen with the tie bars themselves. A dedicated device operates the simultaneous and symmetrical movement of each jaw.

Four high pressure cylinders with large diameter and limited stroke, built in the moving plate and placed on the diagonal of the moving platen, apply the mould clamping force.

The lack of deflection on the tie bars, which are never loaded by the mould weight and are never subject to other forces except the mould clamping drive, assumes an exceptional fatigue life.

The speed and force control of the millimetric compression stroke makes the clamping unit fitted for the injection-compression-moulding (IMD, IML) and every time it is necessary or convenient to reduce and even the mould instead processes (reduced stress and strain, increased moulding area).

The moving platen runs on sliding pads having a considerable longitudinal length, and they can therefore assure over the entire approaching stage the perfect parallelism of the platen, also with moulds with man allowed weight.

The clamping unit gives also the chance to easily remove a tie bar to allow for the fitting large dimensions molds.

As for the Senti Mega V and Mega H, these new models are equipped with a compact injection unit (from 4,710 to 17,780) with a cylindrical structure with all moving elements integrated inside.

The machine configuration can be equipped with injection having either a hydraulic motor (10 versions) or electric motor (ESD) to drive the screw. The electric motor used with these units allows one to obtain high speeds with low rpm, which are best fitted for high viscosity materials, e.g. PVC, PC, PMMA, but also high rotation speeds with a reduced torque (and reduced installed power) for materials such as polycarbonate.

The barrel is easier because of the fast releasing of the screw and the rotation of the entire injection unit.

The two-cylinder high energy efficiency assures that at any moment of the production cycle the flow rate and the pressure of the hydraulic oil are exactly those required by the load.

The extraordinary efficiency of this system is given by the speed of the screw driven by the high energy efficiency of the motor pump units, without using dissipative regulation systems, e.g. proportional valves, servovalves, and pressure values. The two pumps are driven by motors with a variable speed control by an inverter.

The average consumption is approx. 0.4 Wh/kg.

The control interface uses a touchscreen display with high resolution. The big dimensions (XGA-15”) increase the ease and the prompt machine manipulation. A special care is given to ergonomic: to assure access to all machine functions through few, simple and intuitive operations.

For this, the moving platen was designed to be loaded on the process monitoring area.

On the “touch screen” display also the keys for the manual commands of more sporadic use are “virtualised”, in favour of the visibility and accessibility of those more frequently used.

The software standards functions include:

- injection-compression control;
- sequence injection control;
- possibility to set parameters for absolute physical values.

The console is fitted with an integrated floppy disk drive, printer output, Ethernet connection for the interface with data supervision systems.

The internal memory can store up to 50 different programs.

The operator’s qualification occurs through practical practice, password protected.

Debut of the Sandretto Electric Machine

The cooperation linking Sandretto with Stefanplast, one of the largest Italian manufacturers of household appliances, garden vases, multi-purpose containers, bathroom fittings, will be consolidated also through the new line for items dedicated to our domestic faithful “friends”.

A Sandretto press Serie Mega H ESD 2000 ton, installed last year, has increased the number of Stefanplast manufacturing equipment that is mainly formed of Sandretto presses.

With its 130-employees, Stefanplast is one of the Italian leading manufacturers of plastic items for household, gardening, and more recently for the small pet field with its “Peter Pet” line.

The company was started in 1964 by the founder, Antonio Stefan, that understood the numberless opportunities of plastics application for items of everyday use. Stefanplast made its first steps on the market with an absolutely innovative product: the plastic bottle case that had immediately a great success.

The will to constantly grow is expressed by a management strategy characterized by flexibility, sensiveness, and reliability, aimed at improving efficiency and production standards.

The productive increase and the markets expansion went along with the evolution of the company’s organization, equipped with modern manufacturing facilities and advanced technologies. Strong is also Stefanplast’s international occupation, exporting today almost 80% of its sales, becoming a significant player in several foreign markets (Germany, France, USA, Mexico).

For the manufacturing process Stefanplast uses mainly highly technological injection moulding processes, with up to 8,000 ton capacity, and able to mould pieces with considerable dimensions. The production capacity is beyond 1,300,000 of finished products, with a quantity of about 20 million pieces per year. These figures place Stefanplast among the first Italian injection moulders of plastic items.

Stefanplast is today an industrial company that has grown in harmony with the market, giving their products that “something more” not only in terms of quality, but also of care for its external look and functionality.

To win new markets is the constant challenge urging the company expansion policy and fostering new ideas. So along with the traditional fields of gardening, agriculture and household, Stefanplast develops a new line dedicated to small domestic pets.

The dog’s bed called “Happy Home” which is unique all over Europe because of its technical and construction features, as well as the range of pets carry cases according to EATPA standards (to be carried on airplanes) show the company’s commitment in pursuing excellence in every single field.

For this particular product line, when the part sizes requires considerable quantity of material, Stefanplast has recently decided to update its equipment replacing a 1600 ton press with a Sandretto press serie Mega H ESD with 2000 ton capacity.

This is a press that has a high plasticising capacity with L/D 24 ratios, because it must process both hard materials having a high hardness degree and recycled materials.

The high production rate and the very low energy consumption are some of the peculiar aspects of this press which is equipped with an injection group fitted with an electric induction variable speed motor, with high dynamics and specific power to drive the plasticizing screw. This motor allows the press to have a high degree of flexibility of all movements, the constant control of the torque transmitted to the screw, a reduced energy consumption with a delivered torque and a speed/screw function perfectly matching the requirements of the various types of plastic materials used.

The choice of a Sandretto product consolidates the relationships between customer and supplier, that over the years has been able to offer technological solutions to meet the Stefanplast program of a constant updating of its manufacturing equipment, by installing alternately over 50 presses model and by offering a programmed technical service to guarantee a constant production level with a constant quality.

0453

Mould Clamping Unit

The moving platen is translated by four screws driven by an electric motor, the speed and torque of which are controlled through a solid state inverter. The missing of toggle allows the direct control of the movement parameters according to linear laws.

The movement of the moving platen generates, through a mechanical coupling, the rotation of the nut which by “tightening” to the tie bar allows you to make the moving platen one solid thing with the tie bar.

The mould clamping force is applied by pulling the tie bars through a high pressure hydrostatic system.

This design choice allows to separate completely the moving parts from the forcing applying parts.

The nuts of the fixed plates are tightened on the tie bars “with no contact”, therefore without any friction and wear.

The system assumes also the lack of deflection of the tie bars, which being exclusively driven straight, shows an exceptional fatigue life. The moving plates translates on pads of considerable length and able to assure the perfect parallelism of platens over the entire approaching stage, also for moulds with the highest allowable weight.

This allows to make a movement with reduced friction and reduced mould wear.

0454

0455
Since a few years from now the West side of France known as “Big West” has seen a process of industrial expansion which helped the establishment of new districts with high technological development.

In this plastic district, which is the second French pole of the plastic processing industry, there is a concentration of a few companies specialized in moulding of components for the automotive, electric and building field. Two important companies located in this district PR2 and SOGEMAP are using Sandretto’s technology for their production loads.

PR2
PR2 is a company specialized in engineering, development, and production of plastic components for the automotive field (e.g. dashboard, underhood and some parts for the driver’s seat). Sandretto press 99 T, 1,000 ton T Serie Nove S 3.90 ton, 2 Serie Nove S 220 ton, 2 Serie Nove S 485 ton and 2 Mega T ES 610 ton.

This supply is particularly important considering the quantity, type and complexity of the specifications of the moulded machines (sequential injection, press hot runners, ...). It becomes even more important if you consider that Pr2 had granted their trust in Sandretto for the first time in 2002 with the purchase of an injection moulding press Mega T ES 1.000 ton.

The trust PR2 has granted and reconfirmed in Sandretto is the result of the technological performance, the reliability and the precision of the pressures combined with the professionalism of the French subsidiary as well as with their near position to one of the several Sandretto technical service centers present on the French territory.

Besides the domestic market, PR2 want to expand their field of action also to their neighbouring countries. This expansion program includes also the investments to widen the production surface by another 1,500 sqm and the ensuing installation of another couple of Sandretto presses Mega T ES from 610 to 1,000 ton.

SOGEMAP
The “Water” Division of the SOGEMAP Group is one of the European leader in the moulding of fittings, pipes, and waterworks fields.

Because of the often extreme conditions of installation and the pressures put on the pieces once they are buried as well as due to the corrosion of chemical/physical agents, the entire production range of SOGEMAP products is made in polypropylene, a widely used material for automotive applications because of its good resistance to collision.

Considering the sizes of pieces and the quantity of material to be injected, SOGEMAP has recently added to the Sandretto press Mega H ES 1,600 ton a 1,750 press model of the same range fitted with an injection group with electric motor to drive the plasticizing screw.

The use of the electric motor allows you to perform the complete overlapping of all movements, to constantly control the torque transmitted to the screw, to reduce the energy consumption with the same torque supplied and to adjust the torque/speed function in order to be perfectly matching the requirements of the different types of plastic materials.

For the “Building” Division of the SOGEMAP Group, specialized in moulding of clamps, road signs, and safety components for building yards, a press model Serie Nove S with 485 ton will be soon installed. Due to the production expansion, an additional order for another press model Mega H ES is expected within the end of the year.

Sandretto’s growth in this emerging industrial area of France developing along with the technological and innovative expansion of the plastic district is a reward for the patient work done by the French subsidiary, that has been able to propose the right technological solutions besides offering a reliable and competent after-sale service.

Sandretto technology is solely used by important companies located in the emergent French pole of the plastic processing industry.

Sandretto is conquering the “Big West” of France

Richard Sankey has invested well over £1 million in new injection moulding facilities in order to manufacture the UK’s newest styled “wheel bin”, certified ECOMAX. Manufactured in High Density Polyethylene (HDPE) in two sizes, 240 and 140, Sankey believes that the advantage of its local manufacturing will give it a significant market share within a very short space of time.

“The there is a considerable opportunity in the UK ‘wheel bin’ market because of the higher prices currently attached to imported products,” says Terry Cheetham, Sankey Group Commercial Director. “We have chosen Sandretto again for all of the competition and the cost for improvement. We are now set to offer our UK clients the best value for money locally manufactured products, moulded to a new and innovative design.”

Richard Sankey and Son Ltd has been established for nearly 150 years. In 1853 the company was founded to produce clay for the Victorian garden products market. The company had begun injection moulding its products in plastics. A high level of experience entered with Sankey evolving into a leading supplier of plastic-based horticultural products using a wide range of moulding processes, including blow and rotational moulding. The company uses the technological capabilities of co-polymer polypropylene in this area of production.

Today, the company supplies these products under its own label to many of the UK’s main DIY garden centres and suppliers, as well as the price of ECOMAX. Its Nottingham-based manufacturing continues to be the injection moulding and rotomoulding of a wide variety of pots and containers, the largest of which is a large outdoor vase in natural terracotta colour, 1.5 metre in diameter.

In 1999 the Finnish based Fiskars Group became Sankey’s parent company. In late 2003 the decision to supplement the company’s garden products with manufacturing and marketing environmental waste management market was taken.

ECOMAX is the culmination of the first stage of that project. Production of the new Sankey bins began in June as the company launched its initiative at the annual Institute of Waste Management conference and exhibition, Swansea, June 14-16. Sankey’s current turnover, some £3 million, is based entirely on its proprietary range of moulded garden products which it sells to both retail outlets and trade growers.

At the heart of the new wheel bin production is a new Sandretto Mega H ES 2000 tonne locking force injection moulding machine. “We already run six Sandretto machines here,” says Cheetham. “We have chosen Sandretto again for the important task, mainly for the traditional qualities of reliability and dependability in performance and in service.”

The newest Sandretto is now being relied on to faithfully inject mould around 1,900 new wheel bins a day, 24/7, all year round. The mould tools weigh over 20 tonnes each.

Quality of production is ensured through the company’s ISO 9001: 2000 quality assurance standard which was attained in 1996. Sandretto UK has also supplied a full CNC Robert as part of the Machine cell, together with a new Chiller.

Cheetham notes that volume throughput will be vital for the new bin. “To add to the importance of this is the fast-cycling moulding machine that could deliver “state of the art” engineering. We do not intend to replace our investment for several years, so it’s got to wear well and be highly reliable.”

The new 2,000 tonne machine is the third new Sandretto machine purchased by Sankey within the last six months, including a new Mach III 270 tonne equipped to the full packaging spec. Sankey’s design and tooling investment in the new project included extensive Moldflow and stress analysis.

The range was conceived with the needs of the user uppermost in mind. A stringent development process was adhered to, involving direct feedback from trial users in the demo. The latest in CAD/CAM modelling techniques was used, together with predictive mould flow techniques to predetermine product strength and durability.

Nearer production, Sandretto became directly involved in testing and moulding the tools at Co-Regio (Italy) manufacturing works. ECOMAX has been designed to fully comply with BS EN 840-1 and is compatible for use with all standard conventionally sized vehicles as specified in BS EN 1501-1. Sankey is confident about introducing ECOMAX into the market: Cheetham says that “we intend to supply our new customers in public and municipal authorities with product in any colour and at any volume. Short run work will be undertaken and customisation is no problem. We have invested in our in-house facilities for hot foil printing, individual numerical stamping of bins, and electronic shipping for traceability. We also design and make our own hardware; we have invested in in-house facilities for hot foil printing, individual numerical stamping of bins, and electronic shipping for traceability. We also design and make our own hardware;"
In the production of disposables, where the moulding cycle is important in order to achieve high product volumes, Sandretto's technology turns out to be successful because of its reliability and performance. Over 50% of the presses installed by one of the most popular European moulders of disposable cutlery show a Sandretto trademark.

How many times do we find ourselves using plastic knives and forks without thinking of the thousands being produced and utilized every day. The coffee stirrers, the ice cream spoons, the straw holders, the thousands being produced and utilized disposable cutlery.

From the small company founded in 1984, Haval has now become one of the most important European moulders specializing in moulding disposable items. The activities of the 5 companies which have formed this Group are served by an in-mould labeling system, which the Dutch company “Haval” has invested over the years to become the market leader.

The very positive relationship of performance/reliability/price and the excellent service on site have confirmed Wiezoplast's choice of Sandretto, who was able to assist the customer in all development stages for the setting up of new projects.

Wiezoplast chooses Sandretto to preserve food

The food industry is always searching for new ideas for packaging systems meeting the pressing needs of practicality, health, and compatibility with the products to be preserved. Wiezoplast was able to interpret such needs through a production system that optimizes the injection moulding process by utilizing carefully selected plastic materials.

It is definitely not an easy job to achieve the acknowledgement as a reliable supplier of food packaging. It is necessary that all production setting parameters, from engineering to the choice of materials and processing systems, meet the standard requirements of the food industry.

The Dutch company Wiezoplast has succeeded in the past years in complying with the required parameters by setting up a production system based on their own experience and engineering capacity as well as on the choice of reliable suppliers.

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The market is always right: Sandretto do Brasil has very seriously defended this concept and used all their experience and technological know-how to develop and manufacture a series of tailor-made machines to meet the needs of a market segment demanding a cost-saving, strong, reliable, and repetitive technology, able to modernize and simplify the production processes.

This effort was rewarded by the customers’ final acknowledgement of the Serie LOGICA® as the best machine of its category.

Let’s see why:

- The technical resources offered are higher than the required specifications for this machine segment, thus obtaining a better quality / productivity and cost / benefit ratio.
- The components and materials used have an extremely high reliability, quality, and belong to the latest generation.
- Their precise, besides offering strength and safety to the operator, combines productivity, reliability, and repetitiveness with a lower energy consumption.
- Microprocessor multi-zone control system, developed for applications in industrial working environments.
- Pre. and after-sales service covering worldwide.

Operator’s Safety

The operator’s overall protection is assured by safety devices according to the ABNT NBR 13316 and EUROMAP standards.

Injection Unit

The injection unit with compact configuration and double cylinder solution for both injection and carriage approach, is characterized by the high injection volume, the high plasticizing capacity and injection speed as well as by the high speed and high torque hydraulic motor for the screw rotation. It assures a perfect precision and repetitiveness of the injected piece.

Clamping Unit

The clamping unit with five point toggle system, offers a high opening speed, precision, and repetitiveness of movements besides a perfect relationship between strength and reliability. This system, developed using a CAD / CAD method and the structural analysis of the finite elements, allows to make mild and precise movements with lower energy consumption. The wide spaces between tie bars, the greater overall dimensions of the platens and the wider opening stroke allows to use molds, besides a perfect relationship between strength and reliability.

Hydraulic Unit

To assure a positive energy output, a cost-saving consumption and a high response speed of hydraulic components there were the challenges overcome through this series of machines that guarantee precise and repetitive movements, with a closed loop control by the “SEF LOGICA™” system.

Control Unit

The “SEF LOGICA™” was specifically developed to be the most powerful and flexible control system existing on the market for this kind of machines. It consists of a multi-zone macro-processor of last generation, based on the Motorola technology, the most reliable one to work in an industrial environment. Thanks to the exclusive software developed for Sandretto, it is extremely easy to be programmed and assures flexibility of adjustment, reliability and very high response speed.

Serie LOGICA®

tailor-made machines

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Custom moulder PEP installs a new automotive component manufacturing cell

Precision Engineering Plastics (PEP) of Tottenham, North London, have set themselves ambitious targets, in the custom moulding sector, every year since they were formed in 1984. Every year they have raised their targets both in terms of growth and investment in new equipment.

The latest addition to their 16 machine (20-300 tonnes) engineering moulding facility in a Sandretto Serie Nove S 220 tonne together with a servo robot loading system and an automatic packing station. This addition re-implements the recent installation of 2-shot capability. The new machine is for a specific dedicated cell to produce a high volume insert moulded technical engineering component for a Tier 1 automotive customer. This addition to the highest tonnage range strengthens PEP’s position in the specialist close-tolerance sector serving the automotive, engineering, electrical and medical industries. PEP’s manufacturing site is being extended by 5,000 sq feet to cater for the company’s future expansion programme.

Mike Cox - Sales Director at PEP, explained that the equipment for the new cell was purchased to meet the specific requirements of an existing customer, as well as to meet the company commitment to stay ahead of the field in terms of expertise and equipment. Mike said “We have built the business by specializing in technical moulded components and by differentiating ourselves from other moulders in the UK through a “partnership philosophy” which we adapt with every client.”

Mike is confident that PEP’s continued investment in new machinery and a “one stop shop” approach will continue to pay dividends. “We are a Q1000 accredited company with in-house tooling expertise, modern state-of-the-art equipment and a firm commitment to full project management. We like to think of ourselves as an extension of the customer’s operation, committed to moving forward with our customers by offering the complete moulding package.”

The third Sandretto machine for educational trays

Tray specialist Gratnells has installed a new Sandretto Serie Nove T injection moulding machine at its Harlow plant in order to meet growing demand for its products and to assist in new product development.

The new Sandretto machine has a 500 tonne locking force capacity and is currently producing the larger size of educational trays for which the company is famous throughout the whole world.

Gratnells moved from its North London, Edmonton base to Harlow this summer. Establishment in the new location has seen output dramatically rising. Gratnells, one of three Sandretto machines is responsible for producing the bulk of plastic trays for use in UK schools. The company, previously in new mould formation, entered this niche of the plastics sector in the mid-1980’s and now leads the competition by some distance.

In production, Gratnells operates a tight co-continuous system of injection molding, 24 hours a day, 365 days a year. The new Sandretto Nove Otto moulding machines have been delivering fault free performance in the respect for the past 6-18 years. The Series Nove are a particular favourite on the shop floor. A fantastic work-horse, notes Steve Cadman, operations manager at the plant.

The machine record of consistency was a key factor in the Gratnell decision to source another moulding machine from the same company. Gratnell Marketing Director, Manny Hadlow says that “Although our customers are fiercely loyal, and maintain the product with our company name. The Gratnell range of machines is highly competitive, especially on price.”

Hadlow adds that the Sandretto performance, not only in terms of machine reliability, but also in terms of service and back-up from Gratnell, gives the confidence and consistency that we need to order up to the most competitive price.

The new Sandretto Nove T Plus replaces up-to-date existing machines, but for new box-shot tray capacity and for the development and production of a new tray for export markets which was set to launch in a few months time. Machine training on
The challenges coming from the market are always an opportunity for Sandretto to test itself on new projects. This occurred for the high speed moulding, for the multi-component technology and is occurring today for the PET. In order to specifically meet the needs of a configuration of machine/mould/ejector/dehumidifier for the production of PET preforms from 400 to 700 g.

Based on strict specifications provided by an important Lebanese manufacturer, Sandretto was awarded an order for the supply of one press Series T 4000/2650, fitted with an O.M.M.P. mould with double interchangeable cavity to produce PET preforms from 400 to 700 g to be transformed through a blowing process into 5 gallon cans for drinkable water (throwaway for the lighter model, reusable for the 700 g model).

Since the processing material was critical and above all the preforms did not have standard sizes compared to those traditionally used for beverages (in this case both the length and the thickness required special moulding and cooling conditions), Sandretto decided to supply the mould, the press robot, and the dehumidifier purchasing them from qualified sub-suppliers.

The moulding line configuration includes:

- a DEGA dehumidifier with visual level on the carriage for material treatment through a single-stage cyclone aspirator before loading into the hopper;
- a Sandretto press Serie Nove ‘T with 4000 kN and 2650 mm injection (overall barrel diameter 80 mm) and barrier plasticising screw with special profile for PET, L/D 24 with mixer;
- an O.M.M.P. mould with double interchangeable cavity, based on hot runners with 3 zone control, main runner with double injection flow and pneumatic shutters, triple hydraulic movement and overlapping air blast for preform ejection;
- a STAR robot with three driving axes, fitted on the fixed plate, with double interchangeable light duty handle for extracting and holding (operator control) and simultaneous cooling of preforms before pneumatic ejection.

Considering the time needed for moulding and cooling of preforms before unloading, the complete cycle is ca. 70 sec for the 400 g preforms (7 sec. of which for injection, 15 for cooling and the remaining time for mould opening/closing, extraction, etc.) and ca. 90 sec. for the 700 g preforms (9 sec. 45, and 18 respectively for the three main stages of the process).

The difficulties encountered during the setting up of the ideal moulding cycle are mainly due to the exact control of the temperature of the moulded part and of the injection speed: high temperatures or long stay periods in the barrel would degrade the material causing burning effects in the preforms; on the other hand, a too low cooling power with high injection speeds would cause crystallization effects to the material with consequent product blocking.

Due to the high thicknesses of preforms also problems of product transparency had to be considered. For the 400 g pieces there was no effect on the final result, for the 700 g preforms a light opacity of walls had to be accepted, which was caused more by an optical effect due to the high preform thickness (9 mm) rather than by the setting up of the process. Considering the customer’s satisfaction in the results reached during the setting up of the line and the process performed at the Sandretto factory in Collegno, we can fairly state that the new challenge Sandretto has faced was once again brilliantly overcome.

Starting from Spring 2004 people from Lebanon, Syria, and Jordan can drink water from the cans for which Sandretto has played an important role.

Sandretto toasts the PET

The moulding process is realized with sandwich moulding technology.

The first unit has been installed in summer 2002, the second followed in Spring 2003 and the third unit got installed in late summer 2004. Each of the three PlugXPress units with a screw diameter of 50 mm is installed on a 300 ton injection moulding machine for the production of two component PET preforms with a weight of 23 up to 45 g. Each of the moulds in use 48 cavities. This results in an average of 45-50 Mio. parts per mould and year.

The PlugXPress unit is installed horizontally on the non-operating side of the basic machine and different from the standard units it is fixed to the machine and not installed on the machine frame or columns with a mechanical interface which would allow an easy mounting and dismantling.

This is done, because the connection between the basic injection moulding machine and the PlugXPress unit is one of the most delicate parts of this particular system. Due to the fast cycle time a very high and secure stability of the second injection unit is requested. The total system has a big dynamic and therefore got also equipped with special vibration mounts.

Multi component PET preforms: PlugXPress to keep drinks protected

A Belgian company by origin specialized in the production and sales of PET preforms recently brought the third PlugXPress unit for the production of two component preforms.

The choice for the production with multi component technology is made in order to upgrade the preforms physical and chemical resistance. The first component is obviously PET and is injected by an injection moulding machine. The second component, which is injected by the PlugXPress add-on injection unit is a PA and ensures with its barrier properties that the bottled drinks remain fresh and protected.

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The sky's the limit for TT Ninefields with Sandretto

Wickford, Essex, based technical injection moulder TT Ninefields is set to increase its presence in the building services market by extending its successful proprietary product range of protective mouldings for building scaffolding.

In the past two years, Ninefields have sold over 4 million CubbyCaps® patented HDPE-moulded variety of scaffold fittings available with flanges for blocking and protecting the ends of scaffold poles. Now the company is launching a variant of a new clip on protective hinge cover - the Armadillo - that will shield hinge and joint work on building scaffolding; thus limiting the everyday hazards and safety hazards and liabilities of the building site.

Playing its part in meeting production of these is a new Sandretto Nove S 400 tonne injection moulding machine. ‘We only look to receive two services from our new capital equipment suppliers,’ says Martin Whyte, production director. ‘Firstly, the service in commission. And second, the annual service some fifteen years later!’

In all seriousness though, we do require fault free operations from our moulding machines and from the supplier. With Sandretto UK we can be sure that what we buy is going to be delivered on time.’

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Sandretto technology for everyday shopping

Glastonbury-based moulder, H&S Products is enjoying a very strong first quarter sales increase of over 20%. The increase has come through commissioning of a new Sandretto Nove S 400 tonne injection moulding machine together with Sandretto UK supplied and installed linear robot and related ancillary equipment.

The new machine is injection moulding a variety of polypropylene supermarket baskets and trolley components for a number of major retailers in the UK, Holland and Germany. H&S owner Clive Cable says that since production at end January the mould shop has thus far produced 30,000 items. He anticipates minimum order levels for 2004 of 20,000 mouldings. ‘In five years of trade moulding,’ he says, ‘this is our best ever start to the year.’

Cable notes that producing larger open mouldings such as these gives the UK a chance of fair competition with Far Eastern and East European imports. ‘Nobody pays to ship fresh air around the world,’ he points out, ‘and this new automated equipment gives us a chance to strengthen our business and business relationships for larger mouldings in a number of key markets such as retail, domestic appliances, and other sectors. We work closely with rotational moulder Ortitalia Plastics in satisfying orders for the larger mouldings market.’

Cable reports that ‘Sandretto UK engineers supported us from the corner. They took responsibility for the complete design and build of the new production system, including the placing and integration of the new machine, robot, robot hand and gripper, conveyor, product eays and product shielding. As a bonus, Sandretto UK engineers also worked with us on improving the average moulding cycle time of the basket product by approximately 40%.

That’s a lot of new capacity for us. Tooling and sampling of this product into full production was achieved within ten weeks.

The new production system was installed within four working days and has worked faultlessly since then - some six weeks ago. I have not had to call Sandretto UK once about it!’

H&S Products employs some 14 staff in its moulding shop, all overseeing production on some 15 injection moulding machines. The vast majority of these machines are Sandrettos - from 22 tonne locking force upwards - and pride of place is now taken by the two new Sandretto 400 tonners. Sandretto UK has been H&S’s moulding machine supplier for over twenty years. ‘Sadly, loyalty is a dying quality in our business,’ notes Cable, ‘but the continuing service from Sandretto is first class. They make it easy for us to buy again, he says.’

Before purchasing H&S Products some five years ago, Clive Cable ran toolmaking company, Cable Engineering. This company is adjaacent to the mould shop, employs four staff, and supplies some 75% of the mould shop’s tools - the remainder of the Cable Engineering work is contracted out to other moulders and clients.

A small percentage of H&S products is in proprietary products. Joint turnover of both companies amounts to approximately £1 million.

Cable expects annual double digit sales growth for the company over the next five years. H&S Products also plans to relocate within the next three years into a larger purpose built 20,000 sq ft site on the eastern side of Glastonbury that is currently being prepared by the South West England Development Corporation.
Progress on the Russian frontline

The regular presence of the Cannon Group at the main Russian exhibitions in its field and the constant commercial activity brought forth by a local marketing team working on the territory, a team organized so as to face all the inquiries coming from a country such as Russia, which is enjoying a constant economic growth and has technological skills equal to the most updated European know-how: this is what the market rewards.

Four are the successful projects in the injection moulding business over the last four months.

The first two projects are for O.M.O KSS - Brysys, in the cold Siberia, for two different applications, both in the white appliance field.

Two-Sandretto presses Serie Nove S 230 ton are now installed at O.M.O KSS, Brysys, for the production of handle to be fixed on 600,000 fridges manufactured per year. For this interesting application Sandretto proposed the co-injection technology by supplying with the presses and the moulds two Bauer gas-injection units. The handle weight is about 100 g, is asymmetrical, with an entirely Italian design, it produced in ABS with double cavity moulds and an automatic cycle of 70 sec.

Another two presses Serie S 400 ton are used for the encapsulation of glass-shelves for fridges. A PP frame is directly injected on glasses measuring 480 x 350 x 3 mm fixed in a steel mould with 2 cavities.

The customer’s choice was to use the manual loading of glasses on a cementing frame, where afterwards a purposely dimensioned cartesian robot picks up both glasses cemented in a definite position and releases them on the mould. The cycle continues picking up the glasses already encapsulated from the mould and releases them on a conveyor, where they will be manually piled up to be packed. The complete cycle lasts 45 seconds.

The third project concerns the KP-Plant headquartered at the Polymers Institute of St-Peterburg, which has been using for some years 3 Sandretto presses Serie S 315/178, to mould a detailed part of a boiler reinforced with glass fiber, and gives hope for a constant cooperation in the future.

A Sandretto press Serie Nove S 800 ton, a Serie Nove T 800 ton and two presses Sire Migo T ES 610 and 1200 ton form a technological package ordered to Sandretto by ASBOL of Lublan (Ljubljans region). ASBOL is a big supplier of Merloni Elettrodomestici, for which it will mould washer components, and represents for Sandretto another important reference in the white appliance market in Russia.

The president of the Russian company K.P. Plast credits to the Sandretto sales manager the permanent service and to the Polytech Institute of St-Peterburg.

The Plastics Museum of Pont Canavese, close to Turin, in northern Italy.

This is the first Italian Museum of Plastics, and one of the main ones on a worldwide basis.

The collection was initiated in 1985 and grew with the years, countin today more than 2000 catalogued pieces.

Nine years after the opening day, in June 1995, tens of thousands of visitors have enjoyed the rooms of Sandretto’s Plastics Museum.

0467

www.sandretto.it/museo
Injecting different and independent parts in the same cycle and mould

More with Less - using sequential valve gate technology

The sequential valve gate technology enables to use an existing one-component or multi-component injection moulding machine in a space- and cost-saving manner for the production of different and independent applications in the same cycle and mould.

The ever increasing price pressure for automotive suppliers and the resulting increasing need for more flexibility in production demand more and more for a variety of applications, as evidenced in the increasing requirements of the machine and mould concepts. Therefore the market requires innovative cost-saving solutions especially for the use of large-sized machines and their corresponding big moulds.

Double moulding offers the possibility to produce different parts made of different material in the same mould and cycle. With the installation and use of sequential valve gate technology, up to two additional injection moulding machines can be cut down.

Windsor offers their valve gate systems with integrated as well as independent control, both can be either driven by a hydraulic or pneumatic system.

Windsor stresses the fact that the sequential valve gates can be installed on machines of every size and type regardless of the brand type, which means practically every existing injection moulding machine.

The machine can be either prepared for the processing of one component as for the processing of two, three, or more materials.

The sea tradition that has made Genoa one of the absolute leading cities in the naval field has stimulated the creativity of local company owners to develop technologies and products related to naval, sport, and leisure activities.

This is the case of Guido Zoffoli, that over the years could transform his starring business as mould manufacturer into a new activity in the manufacturing of scuba-diving flippers at worldwide top levels.

Through an automated working station including two Sandretto Serie Nove BN Multi-Melt Syncro presses Diverplast can now export all over the world injection moulded flippers for the most famous international trade-marques.

Diverplast started after the war as a mould manufacturer for compression moulded rubber flippers and in the early 70’s added to this main activity the injection moulding of plastic flippers using a Sandretto press. Over the years the volume of this new activity grows as well as the number of models, the technologies used get refined and the machines park grows from 22 units from -70 to 270 ton - 15 presses of which are Sandretto’s.

The turning point occurred when Diverplast succeeded - among the first ones in the world and in cooperation with the most important raw material suppliers, in setting up the right formula combinations to be able to obtain a bi-material product that could survive the chemical and atmospheric agents’ etching of flippers.

Once overcome the first difficulties due to the compatibility of elastomeric materials with ethylene vinyl acetate used for the paddle moulding, Diverplast involved the press manufacturer in the process of finding a formulation for the moulding on the same press of two different thermoplastic rubbers, having different hardness and colours, to mould the boot and complete the flipper by making it more flexible and/or more colourful.

The Sandretto solution turned out to be the most fitted for the customer’s needs and Diverplast installed an automatic manufacturing line including two Sandretto Serie Nove BN Multi-Melt Syncro 165/860 presses served by an ABB anthropomorphous robot used for loading and unloading of paddles previously moulded with conventional presses.

The choice of these two Sandretto presses was due to the availability of a wide flexibility of distance between the centers of both nozzles eliminating the need of a link between the machine and a specific mould as well as to the horizontal position of both nozzles making the use of the manipulator easier for loading and unloading of parts.

Both presses are also fitted with an injector centering system that, once the positions are memorized, returns them automatically every time the mould is changed for a different model.

Considering the expanding market demand that Diverplast is meeting today with thousands of pairs of flippers produced per year, the present working station is expected to be doubled with a similar one.

Two different thermoplastic rubbers are moulded on Sandretto Serie Nove BN Multi-Melt Syncro machines for the production of thousands of pairs of flippers.
In-Mould Assembly with flexibly combined machine concepts

Even in economically difficult times, everybody looks for alternatives above all in case of new investments. In such a case, there is no difference between a company and a household. The question is to decide one way or the other. But why not think about the other possibility not only ... but also?

Together with TRW Engineered Fasteners & Components, the two German subsidiaries of the Cannon Group, Windsor and Sandretto (both situated in Hanau) demonstrate how to achieve a significant surplus value with "a "not only ... but also" combination of innovative solutions for multi-component technology.

In a complex manufacturing cell consisting of a Sandretto two-component injection moulding machine, Series Nove Multi 230/860/285, and a Windsor multi-component retrofit unit PlugXPress® WKT 0.6, air grilles for the automotive industry made out of several single components which are fixed together but movable to each other are produced already in the tool. The manufacturing cell has a cycle time of 40 seconds. This is the time needed to inject into each other the frame, the blades and the gate so that at the end of the cycle the finished part leaves the tool.

The part is manufactured on a hydraulic multi-component machine Series Nove Multi with a clamping force of 230 ton and a screw diameter of 30 mm in the standard injection unit and 33 mm in the second vertically situated injection unit, completed by a PlugXPress unit with a screw diameter of 18 mm which is placed horizontally in L-shape on the opposite central side. So the three materials are injected from three different directions.

First, the blades out of PBT Valox are injected from the vertical unit in the first cavity, then the index plate is turned by 120 degrees and the small connecting gate out of PPO Noryl 7 mm which is placed horizontally in L-shape on the opposite central side, is now also able to do acceptance runs for two-component systems.

For this application of the In-Mould Assembly Process three incompatible material components are injected into each other in such a way that a secure movable connection, without any external assembly afterwards, is produced already in the tool. For the production of this application all three injection units work parallel.

For this application the three incompatible material components are injected into each other in such a way that a secure movable connection without any external assembly afterwards is produced already in the tool. The manufacturing cell has a cycle time of 40 seconds. This is the time needed to inject into each other the frame, the blades and the gate so that at the end of the cycle the finished part leaves the tool.

The Highlight

The manufacturing cell is by using a standard two component machine as well as a multi component retrofitting unit highly flexible and quickly adjustable to actual production needs in spite of its high complexity, as both systems can also be used independently from each other without problems. These various usage possibilities represent a significant flexibility as well as financial surplus value. The presented manufacturing cell demonstrates clearly that the concepts of Sandretto’s Series Nove Multi and Windsor’s PlugXPress are complementary to one another and combinable without problems although designed for different needs.

All used Windsor and Sandretto injection moulding units are part of the standard program. This assures the compatibility of all parts and aggregates and a variety of possible combinations of screw diameters and injection volumes and thus can cover a wide capacity range for both concepts.

High end mould makers convinced about PlugXPress advantages

Several internationally renowned high end mould makers recently decided to upgrade their machine parks with a flexible Windsor PlugXPress retrofitting unit.

For their production of home appliances, such as electronic toothbrushes and hair dryers and so on, Braun GmbH, member of the internationally renowned Gillette group with their headquarter in the USA, designs and builds moulds for standard- and multi component injection moulding technology in their factories in Kronberg, Germany. For the acceptance runs of their moulds Braun maintains a laboratory with several injection moulding machines.

One of the existing multi component injection moulding machines with a clamping force of 80 ton got recently upgraded - from a 2-component to a 3-component system - by the means of a Windsor PlugXPress WKT 0.6 unit installed on the non-operator side of the machine with a screw diameter of 22 mm. Braun decided for PlugXPress in order to obtain the flexibility to move the add-on injection unit from one to the other existing standard machine.

Fohoba Firmenich GmbH is a traditionally grown German mould maker. Together with the Swiss AWM group they form the injection moulding division of the Adolf Tech group.

Fohoba builds moulds for each kind of injection moulding application. For the time being moulds for packaging, medical, cosmetics, automotive and telecommunication applications predominate their developments. They have a very strong position in two- and multi component injection moulding technology.

Fohoba bought a Windsor PlugXPress Unit WKT 0.6 with a screw diameter of 18 mm. This unit got installed on the non-operator side of a two-component machine in L-shape position.

The three-component system gets mainly used for the acceptance run of 3-component moulds.

Marta, a Spanish mould maker specialized in the development and production of moulds for high speed injection moulding in the packaging industry, upgraded a new high end injection moulding machine with a clamping force of 480 ton, positioning a Windsor PlugXPress WKT 4 unit with a screw diameter of 38 mm vertically on the machine’s injection unit to a 3-component system and is able to do acceptance runs for two- and three-component moulds.

The produced moulds are mainly for closures, caps, cosmetic packaging and other draw-off applications.