A World of Cannon Solutions for Composites

Refrigerator Industry Confirms Cannon as Global Supplier

New Solutions for Refrigerator Doors and Cabinets

Grommets and Steering Wheels for Automotive

Thermoformed Panels for Refugee Shelters

New Perspectives for Epoxy & Polyurethane Composites
The sound of silence

by Cannon

Discover a world of solutions for NVH - Noise, Vibrations and Harshness - reduction in cars and trucks.

The Polyurethane chemistry provides today sophisticated formulations, designed to protect efficiently the passengers of a vehicle from noise and vibrations.

Cannon supplies the dedicated foaming equipment required to utilise these new materials for:

- Sound deadening carpets and mats
- Car body cavity filling
- Insulated roof liners
- Engine shields
- Wheel covers

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Editorial

We once found, at a trade show, a minor Chinese manufacturer of Polyurethane dispensing machines. His models were – again – dramatically similar, in design and type of components, to our most known and diffused ones. Since we knew the firm’s owner for many years, we frankly asked him the straightest question: “Why don’t you stop copying our machines, why don’t you develop something original on your own, once in life?”

The reply was frank, quick and... flattering: “Because you make them like that and they work fine! If you spend all that money to define what works well, why should I get crazy looking for something different?” His logics made sense, if you don’t mind details like ingenuity, pride or intellectual property.

Opening paths in virgin woods is not an easy task, but once they are cleared anyone can walk them. Fortunately things are not so easy, and – since the devil truly is in the details – most of the times these cheap copies fail when they meet modern formulations, tough cycle times, long runs or lack of maintenance. Details are time taking, expensive to refine, and can kill you.

Welcome to the real World.

Something like this seems to be happening for the latest developments in Composites. Some Polyurethane equipment manufacturers simply take a PUR machine and feed it with an Epoxy formulation, with minor adjustments in the most “visible” areas of the circuit, with a similar approach for molding presses or molds. Then the mechanical properties of the molded parts, or the surface aspect, or their cycle time, are not as expected, and one asks why. Imagine.

Success, respect and leadership are not for sale on Amazon. We conquered them through investments, hard work, dedication and... luck.

Read about our dedication in Composites, for HP-RTM, wet molding (we call it Liquid Lay Down) or vacuum impregnation, at pages 2 to 8 and 19, 22 and 23 of this Cannon News.

Discover why the leading manufacturers of refrigerators are confident in Cannon solutions for their cabinet and door foaming lines and for their storage tank farms (see pages 10, 11, 14, 15, 21 and 26).

See how an industrial thermoforming solution helps UNHCR, Médecins Sans Frontières and other humanitarian associations to provide a comfortable shelters for refugees and victims of natural calamities (pages 24-25).

Welcome to the Cannon World!
Why a Cannon Machine for Composites?

CANNON PROVIDE – UNIQUE AMONGST ITS COMPETITORS – THE COMPLETE SET OF TECHNOLOGIES AND EQUIPMENT FOR THE INDUSTRIAL MANUFACTURE OF LIGHTWEIGHT COMPOSITES, MADE AT THE LEVEL OF AUTOMATION AND PRODUCTIVITY DEMANDED BY THE AUTOMOTIVE INDUSTRY. SEVERAL DIFFERENT TYPES OF EQUIPMENT CAN BE FOUND AT CANNON UNDER ONE SINGLE “UMBRELLA” OF RESPONSIBILITY.

Cannon have, in their 50 years of history, developed a number of Polyurethane-related solutions that contributed to the reduction of the environmental impact of human activities, providing technologies for a more efficient thermal insulation of buildings, for the replacement of Ozone-depleting foam’s blowing agents, for the manufacture of energy-efficient vehicle components. In more recent years a whole set of technologies and equipment – all industrially-capable solutions – has been developed by Cannon for the manufacture of lightweight Composites based on both Polyurethanes and Epoxy chemical formulations. The available integrated Cannon solutions for the production of Composites can be summarized in eight groups of products.

Smart Preformers
The manufacture of complex, three-dimensional Composite parts requires that the reinforcing material – usually composed by one or more layers of glass- or carbon-fibers – is preformed precisely. Dedicated machines for glass- or carbon-fibers have been manufactured by Cannon in the past 20 years for the major OEMs and Tier One producers of Composites. Characterized by a patented Intelligent Gripping System and Automatic Unrolling System these preformer have been used for many years by BMW and Lamborghini for preliminary development of all their composites parts, and are now industrially producing large Composite parts.

Dedicated Presses
Special presses are required for the polymerization of parts, made by the impregnation with chemicals with the HP-RTM technology, or for the molding process of Prepregs. Designed and built upon customer specifications, they must provide a number of sometimes conflicting performances such as, for instance, fast closing operation and precise control of the parallelism. These two requests can be fulfilled using a short-stroke press with Active Parallelism Control. For all composite applications (thermosets and thermoplastics in a wide variety of technologies) more than 500 Cannon presses have been put in operation, worldwide, with platen dimensions of up to 4x5 meters, with up to 1.5 meter vertical draw and up to 3,500 Tons of clamping force, with possible extension of these sizes according to specific needs.

Molds
A mold designed for Composites includes today an impressive number of parts and functions that must be strictly monitored and interfaced with the remaining equipment. Mastering in-house the design and manufacture of molds, as Cannon do, guarantees smooth set-up of the molding process and constancy of results.

New Dosing Units
Innovative dosing units for HP-RTM are available from Cannon, featuring innovative characteristics and practical advantages. Available for both Polyurethane and Epoxy resins, their output range covers the most typical demand of this technology, between 20 and 200 g/sec with the possibility of reaching lower or higher limits in case of specific needs. A third component – the release agent – can metered by a separate Plug&Play dosing unit into the resin’s stream through a static mixer built into the mixing head.

Mixing Heads
Cannon have developed, patented and sold numerous types of heads suitable for the HP-RTM process. Designed specifically for Epoxy or for Polyurethane chemicals, these heads feature a very compact footprint...
and can be mounted on thin molds, used to produce very small carbon fiber reinforced Composite components. In addition to the fast injection technology for HP-RTM in closed molds, Cannon have developed the **LLD (Liquid Lay Down)** system: an Epoxy formulation is laid over the Carbon mat in “liquid ribbons” that impregnate the reinforcement, limiting the possibility of air inclusions in the part.

**Controls**

Cannon develop in-house their own electronic controls through the **Automata Division**; specializing in dedicated automation systems. Working with proprietary as well as commercially available electronics, Automata builds the integrated controls according to the specifications pertaining to the individual plant.

**Finishing**

Cannon provide the full integration of third parties 5- and 6-axes milling and contour-cutting equipment and of all handling robots used for trimming rough edges or piercing holes in the molded parts.

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**Final results of LIFE CRESIM project presented by Cannon at EXPO 2015**

The CRESIM (Carbon Fibre Recycling by Special Impregnation) project is finalised to the development and demonstration of innovative processes for fine-tuning, prototyping and launching on the market of composite parts with high mechanical and aesthetical characteristics obtained with **Recycled Carbon Fibre (rCF)** derived by very expensive scrap. These are a classified waste, whose current disposal method – landfilling – would otherwise have a high negative impact on the environment. The landfilling of such products in fact, in addition to the waste of expensive material, is about to be banned in many EU countries because of the future implementation of the "Circular Economy" (the reuse of all the wastes) among the European Nations.

The final results of the CRESIM project, which the Cannon Group developed within the frame of European Union’s LIFE+ co-financing program, have been presented to the public and to the stakeholders during a full-day international conference held in the Auditorium of Palazzo Italia, in the heart of EXPO 2015 International Exhibition, on October 7, 2015.

The innovative and environmentally friendly nature of the CRESIM project, the economic and technological advantages that the new process can provide, combined with the fundamental aspects of the Carbon Fibre technology, have been illustrated by an international panel of speakers which, in addition to a number of Cannon Group members, included professors of Gifu University in Japan and of Politecnico di Milano, Italy, representatives of rCF suppliers (KARBOREK, Italy) Epoxy resins (Hexion Research, Belgium), Composite parts (STR and LOGON, Italy) and Gurit, UK) and R&D public and private organisations (Italy’s CNR-National Research Council, and CETMA, Italy).

The environmental and more political aspects of the project have been commented by the representatives of prestigious authorities, such as...
the European Commission, the Italian Ministry of the Environment and the Italian Confederation between Machinery Producers Associations (ANIMA - a member of CONINDUSTRIA).

The processes and technologies developed for the CRESIM project aroused great attention and interest by the conference attendants related to a strongly reduced process time, good appearance and mechanical performances, and, in parallel, important environmental benefits because of the lightness of the parts and for the energy and cost savings resulting from the reuse of the Carbon Fibre.

The CRESIM pilot plant now available in Cannon Afros R&D Laboratory in Caronno Pertusella, north of Milano, Italy, can handle three different technologies for the impregnation of recycled Carbon Fibre (rCF) using Epoxy, Vinyl Ester or Polyurethane:

- Liquid Lay Down: a thin layer of resin is poured by a robot onto the rCF mat in open mold
- HP RTM: the resin is injected into the mat already compressed in a closed mold, at high temperature and under vacuum conditions
- Gap Injection: the mat of rCF is impregnated in a closed mold while maintaining partial vacuum conditions and a clearance of about 1 mm between the two mold halves

More than ten different parts have been developed in the 42-months duration of the project, including hundreds of test samples for the characterisation of the formulations and of different types of rCF, improved satellite dishes for defence communications, a skate board for sport and leisure applications, automotive parts for German and Italian vehicles or Japanese bikes and an innovative hollow part for the arm of a packaging robot working at very high speed.

Cannon developed in the past years a complete range of dedicated metering, mixing, handling, preforming and clamping solutions for the industrial re-use of rCF, and welcomes inquiries for the definition of complete molding plants specifically conceived for this innovative application.

For further information about the CRESIM project visit www.life-cresim.com
Cannon ERGOS: the Large Project Specialist

A Cannon short-stroke press for Composites can be designed to work with HP RTM, Gap Injection, Wet Molding and SMC.

CANNON ERGOS, THE ENGINEERING COMPANY OF THE CANNON GROUP, RECENTLY DELIVERED A NUMBER OF LARGE SYSTEMS FOR COMPOSITE MANUFACTURING TO CUSTOMERS IN THE AUTOMOTIVE AND TRANSPORTATION INDUSTRIES AS WELL AS EQUIPMENT FOR OTHER INTERESTING APPLICATIONS.

A very busy year the 2015, for Cannon Ergos! Their two-year-old, 3,000sqm-large assembly plant has been churning out some of the largest-ever pieces of equipment made by Cannon and will continue to do so in the future for several months. The activities of various Cannon companies have been brought together under the same roof. Individual machines and entire lines take shape and are tested in the same place and at the same time. The visitors touring the plant seem to find the experience very inspirational, especially if they have been visiting the factories of Cannon most qualified competitors.

A complete line for large composite elements has been supplied to a major multinational supplier of automotive parts in Germany, who works for a leading car manufacturer. The line can use different technologies: HP RTM, Gap Injection and SMC. It consists of two dedicated machines: a carbon fibre preformer and a clamping press, both of which are huge. The automatic preformer can work from either rolls to make conventional parts or pre-assembled sandwiches made from different fibres pre-cut in irregular shapes. It can handle preforms up to 2.5 by 2.5 metres, with a clamping force of 3,000 kN. Acting like a giant iron to the fibres, an energy-efficient heating station brings the fibre temperature up to 200-220°C in less than a minute optimising cycle time. Two sets of intelligent grippers pick up the hot sandwich and transfer it to the forming station where an in-mold, integrated hold-slip frame ensures optimum draping control of the carbon fibre layers when pressed in the forming mold. In less than a minute a complex preform is made, which is then extracted by a robot as the next hot sandwich comes in from the heating station.

After preforming, the process continues in the huge polymerization press: it is a short-stroke clamp with active control of parallelism and is designed to work with HP RTM, Gap Injection and SMC. This offers excellent production flexibility and return on the investment. The size of the platen can be up to 4.3 by 4 metres and more than one large part can fit on it with two molds mounted side by side. With a clamping force of 36,000 kN, this press combines very fast opening and closing phases, executed at speeds up to 400 mm/sec, with a very accurate final clamping phase, which can be set from 1 to 20 mm/sec.

A special design allows to use a semi-closed mold when resin is injected and then shut it completely to squeeze out all the air trapped in the bulky fibrous preform. This design makes it possible to have some vacuum in the mold even when the press is not completely shut offering the benefits of vacuum molding and those of squeeze molding.

Solutions that Bring Benefits
Numerous advantages characterize the Cannon ERGOS presses versus the conventional presses for composites: customers are happy to find that the Cannon units are 30% less tall, which helps streamline the layout of their factories, and provide for a 20% reduction in energy consumption.

Faster cycle time is also to be mentioned. The design of these presses is such that it can work on a limited amount of hydraulic oil leading to shorter pressure build-up time. Customers also appreciate the dimensional consistency between the parts, which is hardly negligible when dealing with bulky, irregular preforms that can interfere with the closing of the press. Active control of parallelism is of great help.

A Busy 2016
Cannon Ergos is supplying two similar lines to major Italian manufacturers of composites for the automotive industry. More details will be released during the year. Cannon Ergos also provided, in December 2015, a complete line, consisting of a preformer and a press, to a US customer, who will use it to make an innovative product for the transportation industry. The project is still confidential but, when the line becomes operational, it will hit the headlines and not only in plastics trade publications!

The composites industry is healthy and the solutions for its industrialisation are available. It has been hard work to penetrate this market, but Cannon Ergos identified what the industry needs to comply with the demanding cycle times of auto and auto parts makers, and the results are showing!
Siemens & Cannon: a Long Lasting Cooperation for Quality Wind Blades

RELIABILITY IN OPERATION, ACCURATE METERING, ERGONOMIC DESIGN, QUALIFIED INTERNATIONAL SERVICE: THESE ARE THE MAIN REASONS FOR SIEMENS WIND POWER TO CONFIRM REGULARLY THEIR TRUST IN CANNON APROS DX 35 MACHINES.

THIS DEDICATED EQUIPMENT FOR THE INFUSION OF EPOXY FORMULATIONS IN THE BLADES FOR EOLIC GENERATORS IS TODAY SUCCESSFULLY WORKING FOR SIEMENS IN THREE CONTINENTS.

The international Siemens Group, through its Wind Power and Renewables Division (www.energy.siemens.com), is a leading supplier of reliable, environmentally-friendly and cost-efficient renewable energy solutions. Driving down the cost of wind power is their key target as they strive to make renewable energy fully competitive with conventional energy sources. Providing highly reliable and cost-efficient wind turbines, Siemens Wind Power (SWP) offers solutions to meet both business and environmental needs. With over 27,000 megawatts of wind power installed, their wind power solutions deliver clean, renewable energy from offshore and onshore installations around the world.

With innovations in blade design and generator technology, SWP boost efficiency while, through systematic modularization of their product range, they are allowed to streamline the entire manufacturing and installation process. Siemens occupies a leading position within onshore wind power, having been awarded the world’s largest single onshore order to date: a 1,050 MW order from MidAmerican Energy in the USA for a series of onshore wind power plants in Iowa.

Recent years’ industrialization have seen Siemens set and break the records for the world’s largest offshore wind power plants, presently held by the 630 MW London Array project: it features 175 Siemens 3.6 megawatt wind turbines.

With an experience of more than 30 years in onshore wind power business and more than 20 years in offshore SWP is one of the world’s market leaders. Nearly 13,000 wind turbines around the globe with a total capacity of 27 GW help to provide the world with clean, renewable energy.

Visit SWP web page illustrating their innovative Blades Technology!
Proudly Supplying a World Leader

Cannon have been developing dedicated equipment for the wind power industry since 2007. The availability of Cannon Afros to produce bespoke machines, according to the specific needs of its client, and the dedicated marketing activity promoted by Nortec-Cannon, the Cannon local office operating in Europe’s Northern Countries since 1969, convinced the management of the Siemens Wind Power Danish factory to try one Epoxy resin metering unit built according their strict specifications. The positive test gave birth to a continuing, fruitful cooperation between the three companies.

A Dedicated Solution for a Difficult Task

These machines are custom-made, suitable for the peculiar design of the SWP blades—built in one monolithic piece rather than in glued shells, as all their competitors do—and for the long infusion cycles demanded by these large parts. Siemens remains the only wind turbine manufacturer to use blades cast in one piece in a closed process: their IntegralBlade® technology eliminates glue joints to deliver blades of optimum quality, strength, and reliability.

Their longest blades incorporate Aeroelastically Tailored Blade (ATB) technology, to flex with the wind rather than resisting it. They can reach up to 75 meters in length, requiring several tons of resin to be dispensed in some hours of uninterrupted, precise metering. This operation generates a progressive pressure build-up, due to the resistance created by a very large mass of glass fibre mats to the flow of the viscous resin.

This effect demands a specific pumping solution to adjust component’s output and pressure on-the-fly, according to the progress of the operation, to guarantee the constant rate of infusion that provides the same mechanical resistance values across the whole length and section of these sophisticated blades.

Cannon Afros designed a dedicated metering system that fulfills this fundamental need, and the machines quickly became a standard equipment for the SWP factories.

The Main Advantages of the DX Series

SWP have been confirming their trust in Cannon solution mainly for four reasons:

- **Machine's metering accuracy:** Cannon guarantees a dosing precision of 1% both in output and component’s ratio. Competitors usually offer 2.5% accuracy only. Since the whole blade must be made with the same mechanical resistance in every point and the TG (Glass Transition Value) of the cured matrix is very much influenced by the resin/hardener stoichiometric ratio, it is of paramount importance to guarantee the strictest output parameters during a very long infusion cycle. The Cannon DX machine does this better than others.

- **Reliability in operation:** one can imagine what would be the result of a major machine’s fault in the middle of a hours-long infusion: the whole part would probably be scrapped, with material and manpower costs in the order of hundreds of thousands euros, disposal costs almost equivalent and huge environmental problems to be dealt with. Cannon provides sturdy machines that, until now, have never failed to perform their task.

- **Ergonomic design:** the machine is compact, easy to be transported on wheels. Cannon holds to the other, provided with efficient remote controls to be operated from very far away in a large production hall. A magnetic joint on the dosing pumps of the Cannon DX 35 avoids the leakage of components even after years of service.

- **International presence and Service:** Specific technologies require specialized personnel to ensure smooth operations and efficient repair work. Cannon have an international network of Local Units and Agencies present in over 50 countries. Most of these offices provide local Technical Customer Care and Spare Parts Service. Dedicated technicians have been trained to assist the Epoxy infusion range of products when one of them has been installed on their territory. Frequent technical meetings and efficient exchange of information ensure a constant updating of the involved personnel on the latest manufacturing technologies.

At press time, **30 Cannon DX 35 metering units** have been purchased by SWP for their plants in Denmark, UK, USA and China.

The continuing machine’s business with SWP is a matter of pride for Cannon and its international network of offices. Being repeatedly chosen by a world leader in a strategic sector confirms the quality of a whole Company, of its products and of its service.

Cannon strives every day to maintain this level of excellence and hopes to continue for a very long time to be honoured with Siemens Wind Power’s preference.
Wind Power, a Growing Business for Cannon

REPEAT ORDERS FOR CANNON AFROS FROM LEADING PRODUCERS OF EOLIC GENERATORS HAVE CHARACTERIZED THE 2015, AND THE TREND SEEMS CONFIRMED FOR THIS YEAR.

NUMEROUS NEW DISPENSING AND GLUING MACHINES ARE CURRENTLY UNDER CONSTRUCTION FOR MAJOR INTERNATIONAL CLIENTS.

Cannon Afros offers a range of dedicated machines to the manufacturers of eolic blades:
- The DX Series Epoxy infusion machines
- Dedicated degassing units for Epoxy resins
- The G-System to apply Epoxy glues

SUZLON (www.suzlon.com) an Indian leading producer of eolic generators, ranked as the world’s sixth largest wind turbine manufacturer, has ordered in 2015 12 Cannon DX 35 Epoxy dispensing units and 12 G-System gluing machines. Excellent technical performances, an affordable price and a prompt local service, guaranteed by specialized personnel from Expanded Polymers, the Cannon agency in India that, through a dedicated team of 10 engineers, is servicing more than 250 Cannon machines operating in India, were the reasons that granted to Cannon Afros this significant growth in this competitive market. Suzlon appreciated in particular the accurate dosing performances provided by the DX 35, whose actual output precision is guaranteed within 1% of the set value. The usual value guaranteed by most competitors is usually 2.5% only. The TG (Glass Transition Value) of the cured Epoxy matrix is very influenced by the resin/hardener stoichiometric ratio: the guarantee of remaining for the whole injection phase within very strict output parameters ensures a more consistent TG, thus a more uniform matrix, in the whole blade.

The Spanish giant manufacturer GAMESA, (www.gamesacorp.com) ranked as World’s #4 producer of eolic plants, confirmed in 2015 a third lot of five Cannon DX infusion machines and two degassing units for Epoxy resins, adding other machines to those already in operation in their plants.

GAMESA was pleased with Cannon Afros capacity to fulfill their tight technical specifications and to provide high CPK indexes, that measure the ability of a process to produce output within specification limits.

CARBON ROTEC (www.carbon-rotec.com) is a famous German producer of wind blades able to make some of the world’s largest onshore rotor blades from glass fiber and carbon/glass fiber composites for turbines with rotor diameters of around 120 m. The company also repeated an order to Cannon Afros for a very sophisticated and totally customized infusion system for resin mixing and distribution.

Above: The G-System, dedicated dispensing unit for Epoxy adhesives for wind blades.
Left, top: The DX dispensing unit comes with a three-components version for higher process flexibility.
Left, bottom: A new Degassing Unit is available for Epoxy resin formulations.
Below: The DX dispensing units are produced in series at Cannon Afros, near Milano, Italy.
Wherever you are in the world...

... with us the best technology for Insulation Panels.

- Building
- Cold Stores
- Warehouses
- Roofs and Walls
- Sectional Doors
- Soundproof Cabins
- Prefabricated Structures
- Ducts and Air Conditioning Systems

www.cannon.com
FISHER & PAYKEL (A HAIER GROUP COMPANY SINCE 2012) PRODUCE DOMESTIC REFRIGERATORS ON A GLOBAL BASIS: OPERATING IN 50 COUNTRIES, WITH FACTORIES IN NEW ZEALAND, CHINA, THAILAND, MEXICO AND ITALY, THEY ALWAYS HAVE STRICTLY COOPERATED WITH CANNON FOR THEIR FOAMING EQUIPMENT. IN 2015 THEIR THAILAND PLANT HAS BEEN SUPPLIED WITH A ROTOJIG MACHINE FOR CABINETS, ONE OF CANNON LATEST INNOVATIONS IN TERMS OF POLYMERISATION FIXTURES.

IN SUMMER 2016 A NEW VAI (VACUUM ASSISTED INJECTION) CABINET FOAMING LINE WILL BE DELIVERED TO THE SAME PLANT FOR THE MANUFACTURE OF A NEW, INNOVATIVE SERIES OF DOMESTIC REFRIGERATORS.

Cannon have supplied in the first quarter of 2015 one innovative Rotojig line to Fisher & Paykel Thailand. The machine features two polymerisation jigs mounted on a rotating structure, in order to allow for the curing of one cabinet while the service operations and the foam injection are performed on the other one. This first line is used for new model’s development and also for regular production. Another supply for F&P Thailand is currently being manufactured in Italy by Cannon Ergo: six foaming lines for cabinets and a three-component high pressure dispensing unit will be delivered around mid 2016. The foaming line has been designed according to the latest innovative concepts developed by Cannon for the manufacture of domestic refrigerators. Each foaming fixture is equipped with a VAI (Vacuum Assisted Injection) system allowing for the use of vacuum during the injection of the liquid PUR formulation and the expansion of the foam in the cabinet’s wall cavities. This method allows for a quick demolding time, improved thermal insulation capacity, optimum adhesion of the foam to the metal structure and lower consumption of energy during the cabinet’s life.

Since each foaming fixture is a RotoPlug 2 type, this line allows for a model change in Zero-Time: when one size of cabinet has to be temporarily replaced by another in the foaming process, the rectangular platform holding the male plugs, on the upper side of the station, rotates by 180 degrees. The new male plug, already thermally conditioned to the correct temperature, is brought on the lower position of the platform, ready to start its cycle of foaming processes.

The plug going off-duty is sent on the upper side of the platform, where it can wait for its new cycle of injections or it can be manually replaced or adapted to a new cabinet design. The adjustment operation on the upper plug can be executed while the lower plug is regularly producing. The major advantage of this system derives from the increased flexibility guaranteed to its users: a very small production series of a given model can be easily inserted with a very short notice with out perturbing the output cadence.

Stocks of finished cabinets can be dramatically reduced, since it’s no more necessary to produce numerous units of each model only to justify the loss of time deriving from a mold change operation. The Cannon high-pressure dosing machine supplied for this plant is characterized by a three-components circuit for chemicals: one isocyanate and two blends of Polyol, allowing for the use of two different blowing agents ( Cyclopentane or Solstice) in the same production line. The two formulations are always available and, thanks to a double mixing head system, it is possible to switch among them in zero time with no cross-contamination. The innovative features of this new equipment and its intrinsic advantages will again contribute to reinforce Fisher & Paykel’s competitiveness on their markets in the years to come.
THE REFRIGERATOR PRODUCTION PLANT OF HAIER AMERICA IN CAMDEN, SC, IS UNDERGOING AN EXPANSION PROGRAM THAT INCLUDES THE INSTALLATION OF NEW FOAMING AND THERMOFORMING EQUIPMENT.

CANNON IS ACTIVELY COOPERATING WITH HAIER AMERICA WITH NEW, INNOVATIVE PROCESSING SOLUTIONS THAT WILL CONTRIBUTE TO THE IMPROVEMENT OF THEIR MANUFACTURING CAPACITY AND OF THE ENERGY EFFICIENCY OF THEIR REFRIGERATORS.

A subsidiary of China-based Haier Group, the world’s leading appliance brand, Haier America will invest $72 million more to its existing $40 million facility, creating 410 new jobs in Camden within the next five years. As a part of the expansion, Haier America will invest heavily in state-of-the-art equipment and tooling, as well as construct a 250,000-square-foot addition to the existing 365,000 square-foot facility, allowing the company to increase its annual refrigeration production up to 500,000 units. Cannon have been cooperating with the Haier Group on a worldwide basis for many years, providing creative solutions that have improved the energy efficiency of their refrigerators and the efficiency of their foaming operations. Several innovative foaming plants have been supplied in the past years to Haier factories in China, Russia, Italy, Pakistan, Indonesia, Thailand, Venezuela and, more recently, to Haier America’s R&D Centre in Evansville, Indiana. For the Camden expansion Cannon USA, based in Cranberry, Pennsylvania, will supervise the supply of four different production units that will be manufactured in Italy and in the USA: two major foaming plants for cabinets and doors, and two large thermoforming machines for their plastic liners.

A Proven Solution for Cabinet Foaming

The Camden plant will be provided with a foaming plant featuring RotoPlug cabinet foaming fixtures, complete with a mezzanine for the metering machines, entry and exit conveyor systems and pre-heat ovens. The RotoPlug solution allows for a Zero-time plug change when a different model of refrigerator has to be put in production: two different male plugs can be mounted on the opposite faces of a flat platform, that rotates by 180 degrees when a model change must occur in a given foaming station. The switch occurs in few seconds, during the cycle time, and allows for great flexibility in manufacturing operations and significant savings in the stock of finished fridges. The minimum economic batch of production with a RotoPlug is down to one unit!

A custom specified A-200 high-pressure metering unit made by Cannon USA, servicing Cannon FPLSR 18 mixing heads, will provide the required chemicals from the mezzanine of the cabinet foaming plant.

A Compact Door Production unit

For the flexible manufacturing of doors, Haier America preferred a Cannon Drum unit with multiple molds, capable of foaming complete sets of doors in mixed models, with automatic unloading and remote manual loading. The choice of this winning production tool – over 350 Drum units have been manufactured by Cannon in more than 30 years of life of this product – has been driven by its compact footprint and high productivity, combined with a limited use of human resources.

For the door plant’s wet side Cannon USA is supplying a custom specified A-100 high-pressure metering unit, serving multiple Cannon FPL14 mixing heads.

A Complete Pipework and Blending Unit for Chemicals

The wet side of both plants has been completed by Cannon USA with the supply of a dedicated blending system to prepare a precise mixture of chemicals using a Cannon 40+8 EasyRoth unit and a 500 gallon holding tank. A new plant distribution system for Polyol and Isocyanate, using existing bulk tanks, completes the scope of supply of the PUR foaming plants, whose full installation will be completed by Cannon USA.

Thermoforming Solutions for High Efficiency

The first impression on a new fridge is usually built on the quality and look of its interior: a perfectly thermoformed liner helps in raising the s score, and a robust performance of its mostly stressed corners helps in maintaining the positive impression for many years. On the other end, economics call for a progressive optimization of thickness of the plastic sheets that must be formed in a smart way to provide an even protection to the underlying layer of insulation foam.

The stringent requirements demanded by Haier America in order to guarantee the high quality level of their liners has been tackled by Cannon Ergos that has designed two different thermoforming concepts for cabinet and door liners. These machines are characterized by numerous interesting technical features:

- Fully automatic operation
- Multiple stations (2 loading bays, 1 pre-heating, 1 heating, trimming, piercing) to shorten the cycle time and optimize energy consumption
- Pressure forming at 3 bar
- Suitable, without modifications, to handle Side-by-side, Top Mount, Bottom Mount, American size cabinet models
- Built to American standards with Allen Bradley controls

These technical characteristics generate significant advantages in terms of overall quality of the formed liner, reduced cost of production, protection of the investment and safety for the operators. The supplied systems have been completed with a complete set of tools. Cannon USA will provide full installation service for the whole equipment, including the two thermoformers made in Italy.

The expansion of the Camden facility demonstrates Haier’s continued investment in the U.S. market, highlighting Haier’s continued commitment to meeting the needs of American consumers and the importance of the U.S. in the company’s international expansion.

The installation and start-up of the four production units is scheduled for the summer of 2016.
STEERING WHEELS PRODUCTION IS AN ONGOING BUSINESS FOR CANNON. A EUROPEAN LEADING MANUFACTURER, SUPPLIER TO THE OEM SECTOR, HAS STARTED IN 2015 A COMPLETE MOLDING LINE.

Cannon offers a wide range of solutions, specifically conceived for the production of steering wheels, both for the wet (foaming machines and mixing heads) and the dry (mold carriers, molds, stationary lines or turning tables) sides of the plant.

Colors can be injected through the axial port of the Cannon FPL mixing head or they can enter in the mixing chamber through the Cannon QCC (Quick Color Change) nozzle, specifically designed for the production of integral skin parts in different colors. Not forgetting the small multicomponent mixing heads in which colors are managed as additional, independent streams, just like Polyol and isocyanate.

**Easy Handling of Different Colors**
A variety of solutions are available with Cannon to bring colors to mixing heads, either from centralized color dispensing unit or from independent units dedicated to each foaming station, or from a combination of both, like in this plant.

**Turn-key Solutions for Specific Needs**
Cannon designs mold carriers and molds matching specific needs of each customer. Cannon mold carriers are designed for best ergonomy and they can be equipped with a tilting device, automatically or manually controlled. The platens can be easily customized to match any type of mold.

Cannon turn key plants are complete with ventilation system, safety devices compliant to the highest standards and other ancillaries (IMC, release agent spraying, etc.) on customer request.

Having more than 200 mixing heads currently in operation just for this application, Cannon’s experience in steering wheel plants drives you straight to the path of success!
IN THE AUTOMOTIVE INDUSTRY TERMINOLOGY

Molded grommets, made in rubber, soft plastics and expanded polymers, are commonly used today. To speed-up the assembly line operations these grommets are molded over a pre-assembled bunch of cables, allowing the operator to insert the whole kit through the car body in a few seconds. Polyurethane foams are increasingly used for the production of automotive grommets. Their reduced density, high mechanical resistance and attractive look provide an optimum solution for this application. The very large range of different kits that must be produced in just-in-time conditions, working on irregular inserts composed by a variable number of cables or pipes, requires skilled operators and a high degree of visual control to avoid faults in manufacturing. The industry demands for more automated equipment and smarter molds for this specific technology.

A Whole Range of Tools is Available at Cannon
Providing a turn-key solution, with a single interface and responsibility for the whole working island, has become the sole method for securing a rising number of projects derived from the development of Polyurethane grommets. Cannon offers dedicated solutions for this specialized operation, where sophisticated molds and electronic identification procedures are utilized to safely couple the cable kit with its own pouring program.

The molds represent the key of the production system: complex three-dimensional design with numerous “branches” of cables departing from a central core characterizes these long, flexible parts. The bunches of wires can reach in the most complex cases tenths of cables of different diameters, that must be pre-grouped in order to reach properly their individual insertion points through multiple male or female multiple plugs. These wires must be safely housed in different mold cavities, avoiding any possible pinching during the mold closing operation. To ensure this protection special Iris diaphragms are used, to drive the different groups of wires to the center of their assigned mold cavity. Electronic sensors are added in the most critical areas, to warn the operator in case of a misplacement of one bunch of cables.

Cannon developed dedicated molds that can be installed on rotary tables, with a unique foam injection point for all molds, or in stationary lines, where foam is injected with mixing heads mounted on pivoting booms.

A Demanding Chemistry Requires Proper Dosing Solutions
The chemical formulations commonly used for grommets are characterized by high viscosity at room temperature and, sometimes, by the presence of solid flame retardants. These features demand for dedicated high-pressure dosing units designed to work constantly at temperatures around 65-70 °C, with a piston dosing solution for the Polyol side when this is filled with solid additives. Typical molded densities range between 600 and 800 g/liter, with molded parts weighing from 50 to 1,000 g.

Compact mixing heads ensure optimum foam properties to the sophisticated formulations that have been studied for this market: the models recommended for these small parts are the Cannon FPL 7 or 10, with hardened internal parts when using abrasive fillers.

Specialized Service
The Cannon R&D specialists in Caronno Pertusella, near Milano, Italy, have matured a significant experience in the development of grommets, with a dedicated area of the laboratory available for customer trials and products characterization. The availability of the complete range of equipment necessary for this application – metering machine, mixing heads, molds, automation, with worldwide Technical and Spare Parts Services – puts Cannon in the privileged position of One-Stop-Shop supplier for the producers of grommets. Cannon supplied recently numerous complete solutions to major players located in Europe, Mexico, North and South Africa.

New enquiries are welcome!
Innovative Plant for Refrigerator Doors at Electrolux Mexico

ELECTROLUX MEXICO WILL START IN 2016 A NEW, INNOVATIVE CANNON FOAMING PLANT FOR REFRIGERATOR DOORS. A TRACK HOLDING A NUMBER OF SELF-LOCKED MOLDS WILL PROVIDE HIGH OUTPUT AND MAXIMUM FLEXIBILITY TO THEIR CIUDAD JUAREZ REFRIGERATOR FACTORY.

Electrolux & Cannon: the Cooperation Continues
Electrolux, one of the world leaders in refrigerators, has been cooperating with Cannon since decades in numerous projects, all aimed at the definition of higher quality products through increased productivity and flexibility. A new production solution for refrigerator doors recently developed by Cannon appealed and convinced the management of Electrolux Mexico.

A Fast and Flexible Solution
The new concept is based on free-riding molds running in a track where they are kept closed, during the polymerization period, by a continuous series of steel rolls mounted on rails. The line is conceived with a number of service stations, an injection point and a polymerization area. Each station is dedicated to only one simple action that can be executed in very few seconds. Two or three operators manually insert the door’s metal housings in the lower mold’s half. A pouring robot fills them very quickly with rigid foam and the mold is immediately transferred to a locking station to be fitted under the upper mold half. The locked mold, running on a mechanical conveyor, enters in a polymerization tunnel where it is kept closed under the pressure of steel rolls mounted above and below the track. The mold travels here for the whole curing time of the foam and leaves the pressurized area immediately before the mold opening station. Here the upper mold half keeps moving on a straight path, while the lower half is brought in a robotized unloading station. The cured doors are unloaded, then the mold is transferred through a cleaning station and then it’s manually reloaded again with empty door shells.

The line can be initially designed for a given polymerization time and in future, when the chemistry will allow for faster production cycles, adapted to a shorter one simply removing a few polymerization stations. Mold change can be performed in a dedicated station during the cycle time, without stopping or delaying the production.

Fast, flexible, simple... the new system convinced the management of Electrolux Mexico and an order was placed in December 2015 for delivery to their Ciudad Juarez factory.

The new door line is fed with the rigid PUR formulation by three 100 kg/min high-pressure dosing units operating in closed-loop control and connected with three FPL SR 18 mixing heads mounted on a head manipulator. This new head provide superb performances due to the design of their injection’s chamber cleaning piston: its scraping profile cleans the discharge duct of the head without creating friction heat, a “must do” for any head handling modern, fast reacting formulations.

MexiCannon, the Cannon Group’s local unit based in Mexico City, will provide the required support during the plant erection and start up, ensuring Electrolux Mexico with prompt and qualified technical and spare parts service for the years to come.

Above: the Cannon FPL SR mixing head, designed for refrigeration foaming applications.

Below: A new Cannon foaming line for refrigerator doors is based on free-riding molds running in a track where they are kept closed, during the polymerization period, by a continuous series of steel rolls mounted on rails.
Three Industry Leaders Join Hands in LIFE+ K12 Project


The household sector is one of the largest users of electrical energy in Europe, consuming approximately 29% of total electrical energy, 25% of which by refrigerators and freezers. The challenge to lower the energy consumption, stimulated by the EU legislation has been carried out through a fine balance between the use of new designs, chemical formulations and their impact on the environment. The energy labelling has significantly contributed to reduce the cold appliance energy consumption of about 65% from 1980 to 2015; although these consistent and continued technical improvements have been offset by the increase in use.

The K-12 project connects new chemistry with technology innovations, avoiding any use of Green House Gases as blowing agents with a new appliance production technology driven by reducing the carbon footprint of manufacturing operations, addressing any technology requirements and regional needs. Dow, Whirlpool and Afros have therefore initiated the K-12 Project which long-term overall objective is to contribute to drastic energy saving in cold appliances demonstrating the feasibility of an innovative technological solution able to hugely impact the thermal insulation market, starting from household cold appliances.

K-12 project combines the expertise of Dow, leading science and technology global company, Whirlpool, largest appliance-white goods global company, and Cannon Afros, a World leading engineering and Polyurethane equipment technology company, to bring radical innovation to the manufacturing process of household appliances, insulated by a microcellular high-efficient Polyurethane foam able to achieve about 30% reduction of thermal conductivity, thus significantly improve the energy consumption of refrigerators and freezers. New breakthrough technology processes to manufacture the K-12 foam are right now under development by Whirlpool and Afros.

EU Directive 2010/30/EU, established an energy consumption labelling scheme for household refrigerating appliances specifying an energy efficiency index EEI, based on annual power consumption, storage volume and type of appliance.

EU Directive 92/75/EC, replaced by Directive 2010/30/EU, established an energy consumption labelling scheme for household refrigerating appliances specifying an energy efficiency index EEI, based on annual power consumption, storage volume and type of appliance. EEI is rated with classes from A to G on the label, A being the most efficient. Categories A+, A++ and A+++ have been later assigned too, to acknowledge additional efforts from the industry.

The commitment of the appliance makers is mostly focused in the fields of new insulation technologies (new Polyurethane formulations, wide use of vacuum insulated panels, massive improvements in gasket design, material joints and reduction in leaks and thermal bridges) and cooling circuit technologies. All these steps have been achieved in compliance with Montreal and Kyoto Protocols, moving forward with reduction of Greenhouse Effect and Ozone depletion caused by refrigerant coolants handling.

Within this scenario, Dow Italia, Whirlpool and Cannon Afros are partners of the LIFE+ Project K-12 (LIFE13 ENV/IT/001238), aiming to demonstrate and show-case an innovative refrigeration technology to significantly improve the energy efficiency and reduce the carbon footprint of the Cold Appliance industry.

For further information, visit: www.dow.com/en-us/K-12
A DELIGHT TO THE EYE CELEBRATED BY VAN GOGH IN MANY OF HIS PAINTINGS, SUNFLOWERS ARE A MAJOR SOURCE OF CLEAN, RENEWABLE ENERGY AND RAW MATERIALS. BONO SISTEMI IS DEVELOPING A COMPREHENSIVE TECHNOLOGY PACKAGE TO RECOVER ENERGY FROM SUNFLOWER PROCESSING WASTE. TO BURN THIS MATERIAL A SPECIFIC SOLUTION IS REQUIRED. RUSSIA AND UKRAINE ARE THE COUNTRIES MOST INTERESTED IN THIS DEVELOPMENT.

Also known as heliotrope, from the fact that it turns towards the sun, the sunflower is originally from Mexico and Peru, but it is now grown in many tropical and temperate regions of the world.

The fruit of the sunflower comes in a shell called hull. When dried, the hull comes apart to release a white seed rich in edible oil. Sunflower seeds are refined to manufacture mayonnaise, sauces, margarine, soap, cosmetics, colors and frying oil, which is rich in polyunsaturated fatty acids and has a high smoke point. The plant’s green parts are used as fodder while the fruits can be used as birdseed or are eaten by man like pumpkin seeds. Cattle-cake can be obtained from crushed seed waste.

In short, the sunflower is a lot like pork: nothing gets wasted! This year’s production of sunflower seeds is estimated at 40 Million tons worldwide. In addition to Russia and Ukraine, which alone account for about 50% of the total production, the other big producers of sunflower seeds are France, Spain, Turkey, China and Argentina.

The Seed Hull is a Source of Energy
Once picked, the sunflower fruit is processed to separate the seed from its hull. The shell has a very high calorific value (3,800-4,000 kCal/kg) – twice that of common wood with average moisture content – and a very low specific weight. The combustion of this material poses a number of practical issues, all related to the high combustibility and extreme lightness of its particles. Combustion must be controlled to maximize the generated heat and prevent clogging of the combustion grate and chamber. Biomass ash is not only very light and bulky, but it is also rich in silicon, which is highly abrasive and can easily damage the metal parts it comes into contact with. Therefore, recovering energy from the combustion of sunflower seed hulls requires a technology set that leaves no room for improvisation.

BONO Sistemi has the Solution
With over 50 years of experience in fuel combustion and 60 biomass fuel boilers installed worldwide, BONO Sistemi has gained significant expertise in the field of energy recovery from renewable sources. After successfully addressing the combustion issues posed by difficult materials such as winery waste, rice husk, olive waste and every type of wood, BONO Sistemi specialists have turned their minds to sunflowers. Building on their experience with extremely light and easily flammable fuels, they have developed an integrated heat recovery system complete with storage and conveyors that can provide very high energy yields (about 90%) to boiler systems running on solid fuel. The combustion process takes place in a chamber where sunflower seed hulls are burned on a travelling grate specially designed for this type of fuel. Combustion is controlled to maximize heat exchange with the tubes of the overhanging boiler. A system designed to recover heat from combustion fumes allows to increase the energy yield of the installation while emissions into the atmosphere are controlled by a large unit designed to filter and abate the generated dust. This type of installation is ideal for the large sunflower by-product factories of Russia and Ukraine, which can produce up to 500 tons of sunflower shells and waste per day. However, BONO Sistemi can design the very same systems to fit smaller-capacity plants, which are more typical of Western Europe. Do not hesitate to submit your request for information; it will receive our utmost attention!
Lightweight Composites Technology

No Limits for Cannon!

Looking for a reliable and affordable production line for Lightweight Composites?

- Preformers for Carbon and Glass Fiber Mats
- Impregnation Equipment for Urethane and Epoxy Resins
- Polymerisation Moulds & presses with Control of Parallelism
- Solutions for the Industrial Use of Recycled Carbon Fibres
- Robotised Handling & Trimming Equipment
- Production Planning and Quality Control Programmes
- Worldwide Technical Service Centres

Ask Cannon for a complete package of technologies.

www.cannon.com
Gel Helps to Refresh the Memory!

AN INCREASING NUMBER OF CUSTOMERS HAVE CONTACTED CANNON VIKING ABOUT THE LATEST TREND IN THE PRODUCTION OF VISCO-ELASTIC OR MEMORY FOAMS. THE INTRODUCTION OF NEW VISCO-ELASTIC APPLICATIONS INCORPORATING GEL OFFER NEW MARKET OPPORTUNITIES TO EXISTING VISCO PRODUCERS, ESPECIALLY IN AREAS OF THE WORLD WHERE EXTREME CLIMATE CONDITIONS CAN OFTEN MAKE VISCO-ELASTIC MORE UNATTRACTIVE DUE TO ITS HEAT RETENTION PROPERTIES.

Gel foams are a result of previous developments in the medical industry where gel was used in foams to prevent and alleviate pressure sores on those who were confined to a bed. The same pressure-relieving and comforting qualities are what has made gel foams an increasingly popular option for foam producers.

Visco-elastic technology has now been around for many years and Cannon Viking has now supplied over 75 customers around the world with equipment for the production of visco-elastic and memory foams, including the pioneers of this increasingly popular type of foam. Cannon Viking can not only offer equipment for the production of gel foams but they are able to do this on both a continuous basis using the Maxfoam family of machines or alternatively for smaller orders and to increase flexibility of production, using the Blockmatic discontinuous machine which is able to produce visco and gel foam blocks on a block by block basis.

The advent of gel foams has been due to the demand from certain customers who have commented that visco-elastic foams are incredibly comfortable to sleep on but their main drawback is that visco proves very difficult to dissipate heat and the customer often finds themselves becoming too hot on the mattress; especially in warmer climates and during the hottest months of the year. This is due to the normally higher densities of memory foam that mean that it often traps body heat and also retains it for long periods which can often interrupt or disturb sleep.

Refresh the Memory!

Gel foams have been introduced to reverse this trend and their unique properties allow for cooler sleep and a much faster rate of dissipation of heat by the gel. In addition, gel foams also offer improved weight distribution as well as reduced transfer of movement on the mattress and superior support.

There are two methods for production of gel foams at the present time, both claiming to offer the best solution for provision of cooling properties required in gel-foam mattresses. Cannon Viking is currently working with a major European mattress producer to develop a bespoke blending and metering system for the provision of gel foams.

Gel as a Filler

They produce their gel foams using a gel bead which is handled like a filler and blended with polyol before being used to produce the gel foam. Obviously due to the size of the gel bead particles, special metering and handling is required for this process and this is something that Cannon Viking already has extensive experience of dealing with. With this method of production, the gel is locked into the actual structure of the foam so there is no danger of the gel escaping, plus through efficient mixing and blending, the gel is evenly distributed within the foam, ensuring even and consistent properties to the finished product.

Gel as a Layer

Alternatively, some foamers prefer to actually add in an additional gel layer onto the top of the visco-elastic foam. This was initially seen as a very costly way of producing gel foams but more and more producers are changing to this method as costs come down due to improvements in processing. The finished product is effectively another layer on top of the visco-elastic which gives optimum distribution of the gel and therefore has an even greater cooling effect than the traditional method, where it is pre-blended with the polyol just like a filler.

Whatever your requirements for visco-elastic, filled or gel foams, Cannon Viking can help and advice on the correct equipment for your needs either as part of a new machinery package or as an upgrade to your existing equipment.
Kangde Composites Invest for Electric Cars “Made in China”

The contract signing ceremony, in Beijing: (left to right) Wong Lee Meng, MD Cannon Far East, Zhang Bao Ping, General Manager, Kangde Composites, Alberto Zarantonello, MD Cannon Ergos

CANNON IS PROUD TO ANNOUNCE THAT IT HAS BEEN AWARDED OF A VERY SIGNIFICANT ORDER FROM THE CHINESE COMPANY KANGDE COMPOSITES CO. LTD. FOR HIGH VOLUME PRODUCTION OF CARBON FIBER BASED COMPOSITE PARTS MADE WITH HP-RTM (HIGH PRESSURE RESIN TRANSFER MOLDING) TECHNOLOGY.

The project is finalized to the production of lightweight Composite parts for new electric cars to be made in China. A government plan, aimed at the reduction of emissions from the transportation sector, foresee the manufacture of five million electric cars by 2020.

Kangde Composites Co. Ltd., a member of the Kangde Investment Group – producers of film laminates for packaging, optical industry and decoations – is going to invest in technology and equipment to manufacture the wide range of CFRC (Carbon Fiber Reinforced Composites) parts required to provide the necessary energy efficiency to these cars.

The contract is covering a whole range of technologies and equipment:
- **Carbon fiber stacks production** (with a dedicated nesting software to optimize Carbon fiber yield and minimize handling).
- **Carbon fiber stacks preforming system**.
- **HP-RTM** (High Pressure Resin Transfer Molding) and LLD (Liquid Lay Down) **production cells**.

Delivery and installation of the large Cannon HP-RTM molding plant is foreseen within 2016.

Dow Selects Cannon Press to Expand their Composites Technical Centre Capabilities

A 400 tons Cannon press designed for the production of Composites with reactive formulations allows for the production of the largest parts demanded today by the market.

DOW OFFERS A COMPREHENSIVE RANGE OF HIGH-PERFORMANCE VORAFORCE™ COMPOSITE SYSTEMS BASED ON POLYURETHANE AND EPOXY FORMULATIONS, FOR A WIDE SPECTRUM OF APPLICATIONS, INCLUDING AUTOMOTIVE, AEROSPACE, INFRASTRUCTURE, CONSTRUCTION AND MANY MORE. THE LATEST CHEMICAL SOLUTIONS ALLOW AN INJECTION TIME OF 20 SECONDS FOLLOWED BY A FULL CURE IN AS SHORT AS 30 SECONDS!

THESE REACTIVE FORMULATIONS PROVIDE THE INDUSTRY WITH HIGH-PRODUCTIVITY PROCESSES THAT REQUIRE PROPER METHODS AND EQUIPMENT TO BE IMPLEMENTED. CANNON ERGOS HAVE RECENTLY SUPPLIED THE HOREN R&D LABORATORY WITH A MODERN PRESS FOR THE DEVELOPMENT AND THE CHARACTERIZATION OF THEIR COMPOSITES.

The development of new applications and the characterization of new formulations is made in Dow Europe’s laboratories in Horgen, near Zurich, Switzerland.

Here Cannon Ergos have recently supplied a 400 tons press designed for the production of Composites with reactive formulations, using different processes. The 2,000 by 1,200 mm press platens, with a daylight of 2,000 mm, allows for the production of the largest composite parts demanded today by the market.

The supply only confirms once more the good relationship between Dow and Cannon, two Companies that have cooperated many times for the definition of innovative and efficient manufacturing methods for the industry.
PETROGAS and ARTES Together in Turkmenistan

The UK’s PetroGas is about to carry out a large-scale modernization project at the Turkmenbashy Complex of Oil Refineries in Turkmenistan. PetroGas has partnered with ARTES Ingegneria for the implementation of a large-scale technologically-trend-setting effluent treatment plant.

Turkmenistan, a country very few people can easily locate on a map, is now on the cover pages of business magazines. The Central Asian country sits on some of the world’s largest natural gas and oil reserves. Turkmenistan, with proven natural gas reserves of approximately 265 trillion cubic feet (Tcf), is the sixth largest natural gas reserve holder in the world and was among the top 15 dry natural gas producers in 2012. However, a lack of adequate infrastructure, along with geographical distance from buyers and other factors, have hampered the country’s efforts to export hydrocarbons in the past. The country now aims to triple its crude-processing capacity by 2030.

Turkmen government officials have said the country hopes to boost its oil-processing capacity to 700,000 bpd (barrels per day) in 2015, rising later to 400,000 bpd in 2020, 440,000 bpd in 2025 and 600,000 bpd in 2030. This will be accomplished by increasing capacity at its existing oil refineries and building 3 new refineries by 2030. The Turkmenbashy refinery, located on the Krasnovodsk Gulf of the Caspian Sea, is one of Turkmenistan’s two oil-processing facilities. Turkmen authorities launched the latest round of modernization work at the Turkmenbashy refinery in May 2012. In November 2012, Turkmenistan announced that South Korea’s Hyundai Engineering had been chosen to implement a US$354 million modernisation project at the refinery. In late 2013 London-listed PetroGas LLP has been selected by Turkembashy Complex of Oil Refineries as the EPC contractor for a vast rehabilitation program including the reconstruction of water supply, petrochemical plants and the construction of a modern waste water treatment plant. For the latter PetroGas decided to partner with the Cannon Group’s water treatment specialist ARTES Ingegneria, a well-known name in the Oil & Gas sector. PetroGas, who are already very much accustomed to the ambient conditions in Turkmenistan, took care of the land clearing, execution of civil works, mechanical installation, electrical and instrumental wiring and cabling, automation of the entire system as well as the site services including commissioning and start-up. ARTES focused on the technological part while providing the overall process design and the detailed engineering of the skid-mounted units: pre-fabrication of the critical equipment has been executed in ARTES’ own factory in Salerno, Italy.

The effluent treatment plant has an overall capacity in excess of 1,000 m³/h, among the largest industrial waste water treatment (WWT) in the world.

It is arranged on four WWT trains, a mobile sludge dehydration unit and a sanitary water treatment system. But capacity is not the sole challenge. In order to meet extremely stringent limitations on the concentration of various chemicals species in the treated water outlet, each train has been designed to incorporate an oil separation section, a biological oxidation and a tertiary treatment.

Oil separation is featuring Coalescing Plates Interceptors (CPI) and dissolved air flotation. The biological section features the “state-of-the-art” Membrane Bio-Reactor (MBR) technology that guarantees an extremely efficient oxidation of the organic substrate with a quantitative separation of all suspended solids, bacteria and viruses as only an ultrafiltration membrane can do. The tertiary treatment, which is in most cases useless downstream an MBR unit since all solids and bacteria are removed there, is targeted to the selective removal of those organic molecules that are difficult to be biologically oxidized. An advanced oxidation process with Hydrogen Peroxide injection, a specifically developed catalyst and an adsorption unit is therefore implemented to get rid of residual aromatics and toxic compounds down to ppb (parts-per-billion) levels.
Dedicated Storages for the PUR Industry

More than 100 complete storage farms have been built by BONO Sistemi for Polyurethane processors in more than 25 years. The largest tank ever made has a capacity of 200 m³. The world’s most important manufacturers of refrigerators and sandwich panels are on these Cannon Company’s reference list.

A massive international phase-out process involves since the 1990’s all chemicals potentially damaging the stratospheric Ozone layer or influencing the global climate. The replacement of dangerous solvents, refrigerants and Polyurethane blowing agents called for an important refurbishing of existing industrial plants. Cannon have been leading this technological effort developing new metering, mixing and storage solutions for the producers of rigid and flexible foams.

While Cannon Viking has been very active in manufacturing large storage farms for continuous slabstock plants producing flexible foams, BONO Sistemi have joined the sister companies Afros and Cannon Ergos in the field of rigid foams used for thermal insulation.
New Producers of Composite Parts Grow in Italy

IN A RATHER SLOW CAR MARKET, AN INTERESTING PHENOMENON IS TAKING PLACE, IN ITALY AND ELSEWHERE: NEW COMPANIES ARE INVESTING IN CFRP (CARBON FIBER REINFORCED PLASTICS) PRODUCTION EQUIPMENT, TO START THE MANUFACTURE OF COMPOSITE PARTS FOR THE TRANSPORTATION INDUSTRY.

TWO NORTH ITALIAN COMPANIES HAVE RECENTLY INVESTED SUBSTANTIAL MONEY WITH CANNON TO GET THE RIGHT MOLDING EQUIPMENT FOR AUTOMOTIVE STRUCTURAL AND BODY PARTS.

The Italian production of automotive parts is one of the few industrial sectors with a surplus between export and import. For more than twenty years the sector has been representing a positive reality of the domestic trade balance: in 2014 the exports of parts of motor vehicles totaled €19.27 billion and the positive trade balance was €7.54 bn. (Source: ANFIA).

The main customer of this industrial sector is the German automotive industry (22.7% of the total) followed by France (10.7%), Spain (8.2%), UK (7.1%), USA (5.9%) and Poland (5.1%).

The decrease in car demand in Italy and Europe caused an overcapacity in part’s production of around 30%. The European Commission presented the “CARS 2020 Action Plan” aimed at strengthening both competitiveness and sustainability of the motor vehicle industry in view of 2020, and based on the following four action lines: More innovation: Creation of a European Framework for competitiveness; Better access to the global market; Coaching and management as for re-structuring.

Stimulated by the increasing competitiveness of modern Composites versus conventional materials such as stamped steel or aluminium, numerous car parts producers have oriented their manufacturing strategy towards CFRP (Carbon Fiber Reinforced Plastics) technologies.

Cannon Ergos have received in the past 12 months more than 30 requests of information about their solutions for Composites from companies that are new to the plastics industry and intend to start a production of Composites.

Numerous inquiries come from Italy, and some of them have already generated supply contract for different types of presses.

Prepreg is Ready for Large Series

An Italian producer of car parts utilizing Prepreg with both vacuum bags/oven and autoclave technologies decided to increase the productivity of his north Italian factory introducing a new production line. The availability of a new generation of resins for Prepreg adapt to compression molding, able to provide faster cycle times than those obtained with conventional methods, convinced the customer to ask Cannon Ergos for a complete production line for these new materials.

The technical proposal offered a two-step manufacturing approach:

- A preforming operation of the flat Prepreg sheet, to drape it in an almost final shape, ready to be precision molded.
- A molding process in a fast-acting press equipped with hot molds and sufficient closing pressure.

This solution was required to guarantee the best final molding results when using an innovative product as a modern Prepreg is.

A bespoke solution allows for an efficient draping of the Prepreg sheet in the various sections of the mold cavity, avoiding the formation of wrinkles in the formed sheet. Heating by IR, vacuum forming and light compression molding complete the necessary steps to obtain suitable preform.

When the preforming has taken place, the part can be extracted and trimmed to final size, using either a punching press or a robotic contour cutter. This step is necessary to obtain a finished part in the following step. Both trimming solutions are available from Cannon.

A fast and precise Press: The preformed Prepreg must positioned in the mold cavity – that is kept at a temperature of 140–150 ºC – and immediately pressed. For this job a press with 2,500 tons (25,000 kN) of clamping force has been supplied, with 3.6 by 2.6 m platens and 2.8 m daylight, with two lower platens shutting on the sides.

The press features a very precise Active Control of Parallelism, able to adjust the pushing action of every hydraulic cylinder during the final
Each type of commercial Prepreg provides a nice result only if all parameters are kept under the strictest control.

In addition to modern Prepregs this plant will be able in future, with minor reconfiguration, to work with HP-RTM using one of the impregnation technologies available by Cannon for Epoxy and Polyurethane formulations.

**HP-RTM Advances in Italy**

A leading Italian manufacturer of structural parts and components in advanced Composite materials for the transportation and marine industries invested last year in a new Cannon production plant for HP-RTM technology. Specialized in autoclave and vacuum bags/oven productions for Composite parts destined to niche markets, the Company needed to expand their presence in the Automotive industry.

The production series and the unit prices common for the car industry being not compatible with the existing production equipment, the Company decided to explore the possibilities offered today by high-productivity technologies such as HP-RTM. Cannon Ergos was consulted, with other leading suppliers of this kind of equipment, and quoted a complete production solution.

**High Productivity HP-RTM Press**

Cannon offer included the machines required for high-productivity manufacture of Composites using the HP-RTM process with Epoxy resin matrix and Carbon fiber reinforcement:

- A three-components E-System high-pressure dosing unit for Epoxy formulations, with one LN 10 three component mixing head and closed-loop control of output and ratio.
- A short-stroke press with 2,500 tons of clamping force has been supplied, with 3.6 by 2.4 m platens and a very precise Active Control of parallelism for guaranteed planarity of the molded parts.

Two lower platens shutting on the front and rear sides of the press allow for an ergonomic and precise service (part demolding, visual inspection of mold and cleaning, positioning of Carbon fiber layers) on a lower mold-half while another is curing a molded part, closed in the press. Cure time for HP-RTM parts can vary, increasing the mold temperatures, from 180 to 90 seconds, while injections are typically performed in less than 30 seconds, with a trend to reduce both values to increase productivity. The two-shuttle press design allows for a substantially higher efficiency, since the press is busy – i.e., it is closed – for most of the time, while one or two operators attend the service functions in the same time requested by the “press closing – resin injection – curing” sequence of operations. Through this advanced working island for HP-RTM this Italian producer, a very qualified manufacturer of high-end Composites for niche market applications, is now ready to enter in the very competitive arena of Tier One suppliers of CFRP parts for the Automotive Industry.

Cannon, being able to supply all the required technologies and equipment with a “single responsibility” contract, provides a One-Stop-Shop approach to the Companies that decide to invest in complete manufacturing solutions for Composites. This is a unique offer, in a competitive field populated by producers of single pieces of equipment unable to guarantee the final result when a complex plant has to be put together!
Better Shelters for Refugees in Greece and for Earthquake Emergency in Nepal

BETTER SHELTER HAS BEEN DESIGNED, IN FOUR YEARS OF INTENSE RESEARCH, TO CREATE A “HOME AWAY FROM HOME” FOR REFUGEES AND INTERNALLY DISPLACED PEOPLE. DEVELOPED IN COOPERATION WITH THE IKEA FOUNDATION AND UNHCR, THE UN AGENCY FOR REFUGEES, ITS DESIGN PAYS SPECIAL ATTENTION TO TRANSPORT VOLUME, WEIGHT, PRICE, SAFETY, HEALTH AND COMFORT. THE EXPECTED LIFESPAN IS THREE YEARS AND THE HOUSE CAN BE DISASSEMBLED AND REUSED WHEN NEEDED.

The house is composed of three individual parts: a metal frame, several thermoformed plastic panels and a photo voltaic (PV) system. All components can be assembled on site without additional tools or equipment and its modular structure is self-standing without guy ropes. The included PV system provides energy for several hours to the supplied led light or for charging a mobile phone.

A modular Design, a Simple Installation
These shelters have a roof, walls with windows as well as a lockable door, providing residents with a higher level of safety and privacy than those provided by conventional tents: in comparison with these, shelters are larger, higher, better insulated against light and cold weather; they are also provided with a roof-mounted Photo Voltaic panel generating the electricity used during the night for the LED light installed inside or - very important today - to recharge a mobile phone or use any USB device. It takes four persons four hours to assemble a shelter, composed by a metallic framework covered by wall and roof modules made in semi-expanded thermoformed plastic sheets that are connected one another with large male-female pressure buttons.

Better Shelter Delivered 1,220 Housing Units for Refugees to Greece
UNHCR data reveal that 640,000 refugees and migrants have fled to Europe during the first ten months of 2015. Many have travelled in unsafe and over-crowded inflatable boats from Turkey to Greece. As a result, UNHCR ordered 520 Better Shelter units for its operations in the country during late August – early September 2015. Other orders were placed in the following weeks, and as of today Better Shelters have delivered 1,220 housing units for refugees in Greece only.

Over 220 shelters have been installed in the Karatepe site, a transit camp in the Greek island of Mytilini (Lesvos), where as many as 3,000 persons arrived daily, while the winter was closing in and the journeys across the Mediterranean Sea became increasingly dangerous. These refugees, mostly Syrians, stayed here no more than a few nights, after having reached by boat from Turkey this first piece of European land. Whilst here, these families needed to rest and feel safe in a home away from their home.

UNHCR and the Red Cross have recently erected 96 Better Shelters in Macedonia. The shelters form transit areas in Gevgelija in the south, near the Greek border, and in Tabanovce in the north, where the country borders to Serbia. A number of these shelters host first aid clinics, while others have been equipped especially for children, with the support from UNICEF. The shelters have been so far used with different functions: temporary housing, health care clinic, administration and registration centers, in which UNHCR utilized the shelters’ modular design.

“It’s been rewarding to see refugee families move in shelters that we assembled the same morning, for some well-deserved rest behind a closed door...” stated John Tzanos, Head of Service at Better Shelter “Being able to support the UNHCR during the training and supervision of shelter assembly in Mytilini was important and the experience has been impressive. This mission has once again confirmed the shelter’s appropriateness in emergency relief operations”.

Quick Housing Solution by Better Shelter in Nepal
As one of the first respondents to the announcement of a new housing solutions for refugees, MSF (Médecins Sans Frontières) ordered fifty Better Shelter units for their operations in Nepal.
Cannon Viking Blockmatic Technology for Semi Rigid Foams

CANNON VIKING HAVE BEEN MANUFACTURING AND SUPPLYING THE BLOCKMATIC RANGE OF SINGLE BLOCK (BOX) FOAMING MACHINERY FOR MORE THAN 30 YEARS WITH MORE THAN 200 MACHINES IN DAILY OPERATION WORLDWIDE. ORIGINALLY THE EQUIPMENT WAS DESIGNED AND SUPPLIED FOR THE PRODUCTION OF FLEXIBLE FOAM BLOCKS USED FOR FURNITURE APPLICATIONS WITH MANY SUCCESSFULLY DELIVERED TO MATTRESS AND FURNITURE PRODUCERS AROUND THE WORLD. IN RECENT YEARS THERE HAS BEEN A GROWING DEMAND FOR THIS TECHNOLOGY TO ALSO BE USED FOR THE MANUFACTURE OF RIGID AND SEMI-RIGID FOAM BLOCKS.

One area of growing demand has been the application of semi rigid foams for sound insulation and head liner use in the automotive industry where there is a requirement for low density foams with high fire retardancy. One project example has been the supply of a special Blockmatic single block machine delivered to a major Tier One automotive supplier in the USA who is using the Blockmatic technology to manufacture low density semi rigid foam blocks impregnated with EG (Expandable Graphite) for sound insulation components in engine compartment of automobiles.

With these applications where graphite is used Cannon Viking developed a unique design of Blockmatic mixing chamber using a removable liner for fast and simple cleaning. The Blockmatic technology is available in a wide range of capacities to suit the foam block mold / box size and foam type.

This equipment has been supplied to the chemical raw material suppliers laboratories, for low output trials from a 30 kilo shot, up to equipment in production with clients requiring a 200 kilo shot capacity for high density rigid foam blocks.

The Blockmatic technology enables the capability of high volume production with the possibility of handling a wide range of filler materials such as Graphite.

All Cannon Viking equipment is of a modular design and a team of highly experienced engineers are on hand to assist with providing a dedicated custom equipment package to suit each client’s foam block requirements.
Whirlpool South Africa: a New Life for an Existing Fridge Plant

WHIRLPOOL SOUTH AFRICA HAS RECENTLY COMPLETED THE UPGRADING OF THEIR Isthbebe Refrigerator Factory, near Durban, South Africa, to the use of PENTANE BLOWING AGENT. A MAJOR STORAGE, PRE-BLENDING AND DISTRIBUTION SYSTEM HAS BEEN INSTALLED, BUILDING A NEW CONSTRUCTION FOR THE HANDLING OF CHEMICALS AND ADAPTING THE EXISTING 18 FOAMING FIXTURES, 3 DOOR FOAMING MACHINES AND SEVERAL CANNON DOSSING MACHINES. THE WHOLE OPERATION, THAT HAS BEEN MANAGED BY CANNON AFROS INVOLVING LOCAL FIRMS, TOOK LESS THAN THREE MONTHS TO BE SUCCESSFULLY COMPLETED.

The phasing-out process of Ozone-depleting and Greenhouse Gases dictated by Montreal and Kyoto Protocols re-designed the Polyurethane formulations utilized for the thermal insulation of refrigerators and sandwich panels. The use of new expanding agents, either gaseous or easily flammable, called for major technical changes in chemical stores, pre-blending stations, metering and mixing equipment, polymerization jigs and presses. The manufacturers of these widely used goods had the choice between investing in new equipment (an easy decision for new foaming plants) or refurbishing their existing hardware. Cannon have been very busy on both fronts, supplying new, innovative plants and providing hardware and human resources for the adaptation of existing factories.

Upgrading Whirlpool’s Plant in South Africa
Whirlpool's existing foaming plant in their Isthbebe refrigerator factory, near Durban, required urgently a technical upgrade. To start production using a new blowing agent within the deadlines dictated by international Protocols, the company had to replace their current storage system, to introduce a new pre-blending equipment, to adapt 18 foaming jigs (12 for domestic refrigerators and 6 for freezers), 3 Drum units for door foaming and several high-pressure dosing units.

Cannon Afros experience in this kind of jobs played a big role in their decision, as well as the availability of a good local technical support through Cannon agency REAC Polyurethane Technologies, located near Johannesburg, around 600 km from Whirlpool’s plant.

A detailed technical audit of the existing situation was made by Cannon Afros and the required hardware and labour were quoted. The offer met the expectations of the client, was the whole Cannon offer was more convenient than others and a contract for the complete job was signed. Cannon Afros, with the cooperation of local contractors for the supply of labour and ancillary engineering, took the responsibility of the whole job, including the civil works demanded for the new pre-blending station.

A new storage farm for liquid Pentane and pure Polyol was supplied, feeding a pre-blending station equipped with three PentaEasyFroth premix units. These dosing machines supply the formulated Polyol with a different percentage of blowing agent, according to its final use (cabinet or door foaming line).

The foam injection section demanded the upgrade of 18 existing foaming jigs, 3 Drum units and of 1 Cannon high-pressure dosing unit. Two new dosing machines with double pumping group were supplied, as well as a dosing group for Nitrogen, used to flush the cabinet prior to the injection of foam. The metering, injection and polymerization areas were fitted with gas detectors able to feel the presence of gaseous Pentane and with the relevant alarms.

All the electric circuit and metal structures were properly grounded, to avoid sparks of static origin. The supply was completed with a new set of electric control panels for the alarms, all required safeties and the ventilation system to remove large volumes of air from the injection points.

After three months of intense work, executed by three Cannon Afros specialists flanked by one colleague from REAC and several local technicians, the refurbishing job was completed, with full satisfaction of Whirlpool South Africa technical management.

This project confirmed once more that significant economies can be obtained refurbishing existing equipment, if the Pentanization work is executed with a correct planning and the supervision of experts in these projects.

Cannon Afros welcomes enquiries for similar jobs, wherever they are!
A Flexible Thermoforming System Specialized in Twin Sheet Pallets

TWIN-SHEET TECHNOLOGY PROVIDES AGAIN AN EFFICIENT SOLUTION TO A PRODUCER OF THERMOFORMED PARTS. CONTI3, AN ITALIAN TIER ONE SUPPLIER TO THE AUTOMOTIVE INDUSTRY HAS COMMISSIONED TO CANNON ERGOS A LARGE AND FLEXIBLE TWIN-SHEET THERMOFORMER FOR THE MANUFACTURE OF HDPE PALLETS. ANOTHER VALUABLE MANUFACTURING TOOL IS ADDED TO CANNON ERGOS' LONG LIST OF TWIN-SHEET REFERENCES.

Confidentiality agreements stipulated with numerous customers do not allow Cannon to disclose some of the most important developments made in the past few years in the Twin-Sheet technology, especially in the fields of fuel tanks and sport ware. What can be said, without breaching any Non Disclosure Agreement, is that the structures obtained with two bonded sheets, that can also be of different compatible thermoplastic materials, can solve numerous functional and aesthetic problems, providing an industrial finished solution in a single process that often also has economic benefits.

Special Pallets for the Automotive Industry

These custom-made large plastic pallets are used to precisely and safely hold large mechanical components or bulk materials in their trip from the Tier One production plant to the OEM’s car assembly line. Thermoformed with Twin-Sheet technology, they are composed by two different sheets of HDPE (High Density Poly Ethylene) bonded during the forming operation. A hollow structure is thus obtained, able to withstand a substantial weight and severe impacts from outside while protecting a number of mechanical assembled components during the trip and in the intermediate storage area.

The Conti3 Group, a manufacturer of plastic and metal parts for the automotive industry based in Caserta, Italy, will manufacture these pallets in different sizes using a dedicated Cannon Twin-Sheet thermoformer. Designed to optimize the cycle time while keeping a flexibility in terms of final thermoformed product. This machine features a forming area of 2,500 by 1,500 mm and has a closing force of several hundreds of kN. This wide working area allows for the simultaneous production of two pallets of 1,200 by 1,000 mm. The machine offers to the user the flexibility of producing also single sheet parts and allows all the benefits of fast tool change: reduction plates are adjustable, together with the clamp frame and all tooling has automatic quick locking systems. Servo movements with encoders and proportional valves for process control complete the flexibility of the machine. An additional benefit comes from the dual sag control, as the lower mold box is sealed and the pressure in the cavity between the two sheets is individually adjusted - this feature is extremely useful to optimally heat up the material and optimize material thickness during the forming process.

A High-Productivity Working Cell

An external station equipped with infrared heating elements performs the required preheating operation on the inner face of four plastic sheets, automatically positioned in place by an industrial robot. When they have reached the desired temperature they are unloaded by the same robot and transferred to the thermoforming station. Here the first two plastic sheets are precisely positioned on the aperture plate; the clamp frame is then automatically lowered and the remaining two plastic sheets are positioned on the moving intermediate frame. Two banks of halogen lamps quickly heat the four sheets, according to a computer-controlled heating pattern. A precise temperature control, performed via a fine grid of photocells, guarantees the necessary planarity of the sheets during the heating phase. The forming clamp locks the package and a closing force of hundreds of kN is applied to weld the two layers into a stiff structure. Pressurized air is blown between the two sheets, to ensure the best reproduction of the mold details and to provide an initial cooling effect. Immediately after cooling the mold and the moving intermediate frame open, to release two formed pallets. The robot extracts them from the mold and immediately puts in place another set of four pre-heated sheets. The cycle restarts, with a production cadence of 5 minutes.

The thermoformer features a fully adjustable reduction plate system for the lower platen - namely TRIPL, a Cannon patent - and a clamp frame motorized on two axes. Cannon Ergos has moved the tool loading access to the side of the machine, as the front area is dedicated to the action of the robot. All movements and adjustments for the tooling are motorized and a clamping system locks the lower frame on the four guiding columns during the last few millimeters of vertical stroke. This ensures a precise control of the parallelism during the pressure forming operation, to guarantee the perfect geometrical repeatability of the finished parts.

The thermoformer is designed to handle plastic sheets in the 1 to 10 millimeters thickness range, while for this specific job the HDPE sheets are typically 4.5 mm thick. The anthropomorphic robot performs all the handling functions:

- Pick-up and centering of cold sheets
- Positioning in the pre-heating station
- Transfer of hot sheets from the pre-heating station to the forming area
- Finished pallets extraction and positioning on a motorized conveyor

A sophisticated software controls the whole production cycle, optimizing all the movements and the heating operations - and the relevant energy cost - and allowing for a strict control of the product’s quality.

A Wide Range of Solutions is Available

Numerous Twin-Sheet products can be made with this kind of Cannon thermoformer, for applications that can vary from automotive, industrial transportation, marine, aerospace, refrigeration, leisure and packaging. As an example, amongst many available, these hollow elements can be easily filled with a rigid, expanded Polyurethane foam to provide efficient thermal insulation to large refrigerated display cases for supermarkets, ice cream parlors and shops.

Think Twin-Sheet? Think Cannon!

Ask Cannon for your dedicated solution and process automation.
Keeping Finances Under Control!

A CAREFUL CONTROL OF ALL FINANCIAL ACTIVITIES HAS BEEN ONE OF THE MAIN INSTRUMENTS FOR THE SUCCESS OF CANNON IN ITS 50+ YEARS OF ACTIVITY. DANIELA PIATTI, CFO OF THE CANNON GROUP, HIGHLIGHTS ONE OF THE LATEST ACTIVITIES OF HER TEAM OF SPECIALISTS.

Cannon News: How would you describe, Mrs. Piatti, the task of coordinating the activities of the Cannon Group?

Daniela Piatti: In few words? Hectic, but driven by ethics, responsibility and passion! Can you imagine handling the purse of a Group composed by more than 25 Companies, located in 12 countries of 4 continents, with 1,000 employees dealing with at least 10 major currencies? Many of these Units have a different past, having joined the Cannon Group at different stages during our 50+ years of history. Different mentalities and financial habits, different local laws to respect, a different approach to the banking world, etc. etc. It’s a challenging task!

CN: How do you control this complex picture?

DP: With clear rules, a good team of experts, and... a lot of patience! We were able to grow, in the past years, a good international team of financial experts, that keep this machine running well in spite of the difficulties that I have just summarized. The day-by-day work is all in their capable hands. The coordination of their activities is done in Italy, where, since all the balance sheets are consolidated in the Holding’s one, we must provide strategic directives and central help for every situation.

CN: How do you coordinate your people?

DP: Modern communications help a lot, but face-to-face meetings are still a good old method for solving problems before they grow and become unmanageable. For instance we have just organized a Meeting of the Italian Financial and Administrative Teams. More than 30 people gathered in Caronno Pertusella, north of Milano, Italy, on September 16, 2015. We exchanged information and experiences on matters regarding Finance, Accounting, Cost Control, Logistics and IT through presentations followed by open discussions. It worked well, we knew more of each other, everyone learned something new about the Group and its activities and we opened new channels of direct communication between people doing the same job in different companies.

CN: Which subject drew most attention at the meeting?

DP: We tried to introduce the concept of “Boundarylessness” among our colleagues. The opposite of bureaucracy, for an organization which looks beyond the borders of each Company in the search of the whole Group’s benefit. Not easy to transmit, but this is a fundamental concept in a diversified Group.

CN: Do you plan now similar meetings on an International basis?

DP: We run them already since many years for the Management. For the remaining 35 operative people outside Italy there are huge differences in legislation, language, Local Unit’s complexity! General meetings would not be effective enough. We prefer to stay in touch with them using videoconferences and other modern communication tools!

Expanded Has a Winning Team in India!


FOR THE LAST THREE YEARS “CANNON WARRIORS” WINS THE TROPHIES IN THE TOURNAMENT!

Different Cricket teams are organized for the tournament within the numerous staff of Expanded Polymer Systems, a large Indian company that deals with the production of Polyester and Polyester Polyls for Polyurethanes, distribution of various brands of foam production equipment and spray machines. The “Cannon Warriors” are part of the employees that deal directly with the Polyurethane equipment business, and they repeatedly win the Tournament for the past three years!

Hurrah for the “Cannon Warriors”, well done folks!

Expanded a Winning Company

Born in 1983, Expanded Polymer Systems (www.expanded.co.in) is the first and one of the six MNCs and local Polyurethane system houses in India, having ultramodern in-house facilities using state-of-the-art technology for producing both polyester and polyester polyls, and the blended Polyurethane systems. These production facilities are housed in three adjacent plants in Pawne, ensuring optimum proficiency in manufacturing and quality control. Innovation in both products and production technology is an ongoing process at Expanded, a research oriented company that takes great pride in developing technologies in-house. Currently their production facilities are located in the Pawne Industrial Area, just 25 km from Mumbai city and in a second, 50,000 m² production and bulk storage facility in Dahej, 40 km from Bharuch, on the Mumbai-Delhi corridor. Presently 180 people are working for the group, out of which, 10 engineers are dedicated for the machinery department. The “expanded chemicals” business is well complimented with the marketing of Polyurethane foam Cannon processing equipment. As its sole distributor in India, Expanded has supplied the maximum number of PUR Plants in the country. This venture has been augmented with marketing agencies for Polyurethane and plastic processing machinery from world-renowned companies.
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6-7 April, 2016 – Polyurethanes

PLASTIC JAPAN – Tokyo, Japan
6-8 April, 2016 – Plastics

Chinaplas – Shanghai, China
25-28 April, 2016 – Plastics

UTECH Asia + PU China – Shanghai, China
2-4 August, 2016 – Polyurethanes

SPE Composites (ACCE) – Novi, Mi, USA
7-9 September, 2016 – Composites, Automotive

CPI Tech. Conference 2016 – Baltimore, Md, USA
26-28 September, 2016 – Polyurethanes

SPE Annual Conference – Schaumburg, Il, USA
26-28 September, 2016 – Thermoforming

FEIPLAR-FEIPUR – Sao Paulo, Brazil
8-10 November, 2016 – PUR & Composites

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