You’re Welcome at Cannon!

Yes, this is a repetitive title, we know, but it’s not a “copy and paste” from previous Cannon News editions. It’s our sincere feeling. Come and see us.

In this interconnected world — where we see our relatives on Skype and we could live without our mobiles — we still trust old-fashioned manners, we like to see you in the flesh, shake your hand, look you in the eyes, feel from your tone the untold messages which make the difference between the “business as usual” courtesies and the real concern for an unpredictable future. And if you can’t pay a visit to our factories or offices spread around the world, come and see us in one of the shows where our Group presents their latest technologies and industrial solutions. We still trust the fair, the technical shows, the congresses. There ain’t no Internet that can replace a honest handshake.

In the first part of 2009 several Companies of the Cannon Group will be present at the major specialised exhibitions touching their fields of interest. Specifically talking of Plastics processing activities we wait for you at the following events:

- the Plant show in Milano, Italy (March 24th – 28th)
- the JEC Composites show in Paris (March 24th – 26th)
- the UTECH Polyurethanes show in Maastricht, Holland (March 31st – April 3rd)
- the ModBuild Construction show in Moscow, Russia (March 31st – April 3rd)
- the PowerGen show in São Paulo, Brasil, May 4th – 8th
- the CWEME show for electric motors in Berlin, Germany (May 5th – 8th)
- the Interzum furniture show in Cologne, Germany (May 13th – 16th)
- the PlastExpo show in Casablanca, Morocco (June 2nd – 5th)

If you are interested in Energy, Ecology and Water Treatment technologies, you are welcome at the Cannon BONO booths in:

- the RomiTherm show in Bucarest, Romania (March 5th – 7th)
- the Amiga Foodtech food show in Cologne, Germany (March 10th – 13th)
- the Aqua-Therm water & energy show in Kiev, Ukraine (May 13th – 16th)
- the PowerGen energy show in Cologne, Germany (May 26th – 28th)
- the OGAS oil & gas show in Kuala Lumpur, Malaysia (June 10th – 12th)
- the Mingei Oil & Gas show in Moscow, Russia (June 23rd – 25th)

You’re Welcome at Cannon. It’s not a slogan, it’s a style.

Grow With Us!

(Brazil, Russia, India and China) area: most of the organisational efforts of the past five years have been spent in these four countries, where now the Group collects a significant portion of its business, especially in terms of new customers. Read more about them in the next pages.

In the developed world the situation is tough, no doubt about it. Investments are on hold, industries keep using their old equipment, they have learned that a machine can be modernised and used for a longer period. Only the providers of reliable solutions, with a good structure of customer service and local sale forces can serve them properly with ideas, labour and spares — and have a chance to survive.

Those who close their local offices lose their contact with the local market. Read how the major Cannon branches worldwide help their customers, refurbishing their existing plants and supplying new equipment tailored to their available budgets. Call them if you need advice and a quote.

If we try together we can progress, in spite of the headwinds. Maybe we can even use them in our favour: sailors and windsurfers did it for centuries, after all.

Grow With Us!

"Grow With Us!" is our slogan for this difficult year. A provoking invitation? A bold statement? Where is the space for expansion? We want to mention a term which implies the concept of expansion when the whole world shrinks under the wave of a common recession? There are ways to grow, if we agree on what "growth" means.

If we mean to simply expand volumes, we are probably dreaming. The only possible way to expand volumes — not only in the machinery business — is to eliminate a few competitors while the demand stays constant. The first condition might happen any day but the second won’t, in the short term.

If we mean to increase profits, it’s wishful thinking. We can plan on some price reduction in raw materials, but we can forget about higher margins, at the current market prices. For a while, at least.

If — instead — we mean "growth" as a way to enrich our capacity of generating profitable business by producing more efficiently, by wasting material and energy, by generating less scrap, by putting "clean" innovation in our processes, by making use of renewable resources — then probably we’re on the right path.

We’ve been applying the "sustainable development" concept for a while, at Cannon. Efficient production methods have been developed for all our Plastics processing technologies. See in this Cannon News the articles concerning new efficient manufacturing systems for the thermal insulation of piping and of building panels. Then the same innovative approach has been applied to Aluminium die-casting, and very soon the results have shown up, as you can read in the article dedicated to wind generation.

In the meantime the Energy Division was conceiving, developing and offering to the market thermal solutions based on renewable sources, and today they are a hard fact. Read the success story about the powertherm which is generated from the spent grapes. The next major area of concern for the world — the supply of fresh water — has been strongly approached by Cannon and it is now, after years of efforts, bringing great results. And we could continue.

On the International scenario, we all know what is going on.

The major troubles are coming from the old economies, where a sick banking system has hit the true economy and affected its main vital parameters: among the emerging countries there are signs of slow-down in growth, but not yet of serious crisis in their situation. So the situation are still weak for development and growth, in quality if not in quantity. Cannon have paid great attention — and investments — in the well known BRIC
Cannon do Brasil, the South American challenge

Cannon opened their new Brazilian branch: Cannon do Brasil – a registered representative office fully-owned by the Cannon Group – is active since 2008 with offices in Santana, near Sao Paulo’s international airport.

An experienced staff provides to the numerous Brazilian clients commercial assistance for all the products manufactured by the various Group’s Companies and technical service for Polyurethanes.

The decision stems from the need to consolidate the Group’s presence in South America, a traditional stronghold for Cannon.

The leading Brazilian manufacturers of domestic and commercial refrigerators, automobiles, insulating panels for building industry, furniture and technical articles have been using for various decades Cannon equipment for their Polyurethane, Thermoforming and Aluminium Diecasting technologies. Cannon have been present in Brazil for many years through local Agents, providing service and spare parts with local technical staff.

The need to ensure continuing presence in this growing market has convinced the Group’s management to open a direct office – a fully-owned Cannon Location – in Brasil.

Cannon do Brasil Representações Ltda. is managed by Guido Pelizzari, a Brazilian resident of Italian origin with a long experience in the plastics processing industry.

An experienced sales and technical team provides service and assistance for the whole range of Cannon products, including Polyurethanes, composite materials, thermoforming, aluminium diecasting.

Cannon do Brasil at Feipur 2008

Cannon do Brasil was present at the 2008 edition of Feipur, the Brazilian show dedicated to the Polyurethane technology. Held in the exhibition complex of Expo Center Norte, in Sao Paulo, the show was run together with Feiplar Composites 2008 on November 11-13. This combined exhibition – featuring also a comprehensive program of technical presentations – attracted nearly 13,000 visitors. The traditional Cannon customers, from the largest corporations of the refrigerator and automotive fields to the medium-small manufacturers of panels, furniture and technical parts, expressed their satisfaction for the decision taken by Cannon to establish a direct presence in Brazil.

A mixed allocation of the fair’s booths – with composites and Polyurethane technologies shown side by side and not in dedicated areas – generated an interesting “blood transfusion”: visitors usually interested only in one of the processes could easily see, learn and discuss the advantages of the other one while crossing the various areas of the show. This allowed Cannon do Brasil to meet a number of new potential customers interested in one of the Group’s plastics technologies, opening several new relationships.

A complete set of decoration panels for Mercedes Benz truck interiors is manufactured in Brazil by Simoldes with Cannon StratoTec technology, using Polyols 100% derived from vegetable sources.
It’s a well-known fact: Russian industries consume on average significantly more energy per unit of production as compared to their Western equals. A high degree of 'energy intensity' can pose a threat to growth and profitability, especially when energy prices – which have historically been well below the world average – begin to change. Rusheat energy prices – which have historically been well below the world average – began to rise rapidly in 2011 in Russia – are rising rapidly. Timely investments in energy efficiency will prevent energy costs from eroding companies’ profits and will help companies maintain their competitive edge.

Energy efficiency investments are also becoming increasingly profitable as energy prices continue to rise. High energy consumption and inefficient performance may become a bottleneck for future capacity and production growth, as industries are faced with high charges for new connections to the power distribution system and other limits on energy consumption. Investments into efficient equipment and processes often bring along positive “side effects,” improved product quality and productivity, not forgetting a higher appeal towards foreign investors looking for efficient Russian partners to do business with.

Most of the inefficiencies so common throughout the Russian industry were inherited from the Soviet times, when energy was cheap and construction designs were restricted with little consideration towards a rational use of energy. These inefficient buildings are still in use: at least one third of them are more than 20-25 years old. This explains why most Russian companies are far below international benchmarks for energy consumption levels. High energy intensity and inefficient refrigeration negatively affects overall the whole Russian economy.

These very good arguments lead many industry managers to look for more energy efficiency, new equipment, less waste of precious heat – even in a gas-rich country that could reuse this as a secondary source of concern. This efficiency translates into a rising demand for insulated buildings, which fetches in a few centimetres of Polyurethane rigid foam the best answer to their needs. Energy-efficient more than any other competing media, energy efficiency will prevent energy costs from eroding profit margins and will help them maintain their competitive edge.

Success in Russia and C&SI, where energy counts...

When a District Heating (DH) system provides heat and warm water to thousands of households in a cold country, its efficiency must be total and guaranteed. If the heat transfer media is hot water, special attentions must be paid to its chemical and physical conditioning, otherwise it will soon be a source of real troubles: dissolved gas, alkaline salts, bacteria can kill pipelines and tanks before the system reaches the "drinking age"!

BONO ARTES, the Cannon Group's Company specialising in water treatment plants, have developed and successfully installed numerous complete plants destined to keep these fluids within a strict tolerance as far as chemical, physical and biologic parameters are concerned. Various technologies are used for both the primary circuit – where the hottest water is kept in closed recirculation till the heat exchanger – and the distribution network, where water circulates at a milder temperature for chlorneters. BONO ARTES can supply basic dosing equipment for the addition of anti-scaling agents, biocides and corrosion inhibitors, up to the ion exchange systems used to soften the salt-rich waters.

One aspect that is thrilling BONO ARTES is this moment is the possibility to de-gas the refluxing water - in particular for the secondary circuits – using vacuum technology instead of steam, as it is usually done in conventional deaerators.

The major advantage is a substantial saving in energy, since the steam-based system implies that, during the de-gasging operation, water must be boiled and later cooled to the operating temperature of the network, usually around 50-60 °C – an evident waste. Vacuum-based degassters, instead, work at the current temperature of the water, while oxygen transfer to the gas phase is enhanced by reducing its partial pressure under vacuum conditions. A common practice for BONO ARTES, these vacuum deaerators are successfully used also in degasising injection water to enhance crude oil production and in all cases where water should not be boiled for the industrial use.

Water treatment for District Heating

The plant – delivered in the first quarter of 2008 – is in full production and allows Liassit to face the new demand for these energy-efficient elements, much demanded by the Russian and neighbouring market. Cannon have provided reasonable solutions to all the customer’s requirements, confirming their advantages over other bidders – not due to the lowest price, as the prices submitted by other bidders were lower, but with regard to such selection criteria as structural, engineering and performance characteristics, operation and maintenance warranty.

Cold storage at home, in shops and restaurants

Repeating and new orders came to Cannon Eurasia during 2008 from the leading and the emerging manufacturers of refrigerators in the CSI. The replacement of ancient blowing agents with hydrocarbons – mostly Pentanes – brings new technical requirements that can be easily solved when the supplier has grown worldwide experience in the field, with hundreds of new and renovated plants in operation. This is the reason that convinced Interklima of Donbuk, Ukraina and Frigofac of Ord, Russia, to select Cannon as their supplier for their new foaming plants for commercial refrigerators. Also the Finnish manufacturer Helkama made the same decision for the new equipment of their new factory near St. Petersburg, recently. Extension of an existing foaming plant took place in 2008 at Poulis in Zelenodolok, at Sepo in Savonlinna, both in the European part of Russia and Omsar in Osk in Russia near the border of Kazaksthan. The latest versions of Cannon FPI mixing heads – specifically designed for refrigerator applications – proved to be the solution for these applications where, now more than in the past, great importance is assigned to optimum filling of the cabinet at the theoretical set foam density, without wasting material to “overpack” the cavity according to the head of formulation. Another example of savings, this time in favour of the fridge manufacturer, that helps in containing the cost of these appliances even if energy-saving investments at the right level for the end user.

Cannon Eurasia welcomes the inquiries of other Russian and CSI-based innovative companies that have understood that investing in energy efficiency will prevent energy costs from eroding profit margins and will help them maintain their competitive edge. (www.cannon.ru)

Innovative Vacuum-degassers are proposed by Cannon BONO Artes for efficient water treatment in District Heating distribution networks.

Innovative Cannon foaming plants for insulated truck are becoming very familiar among Russian panel manufacturers.

Insulated trucks – long up to 16 m – are made with Polyurethane-insulated panels faced with metal/metal and glassUSTER linings. These CSI-based companies equip their factories with polymerisation presses able to produce several models of the same type. Plants of this size, top and bottom of the trailer are made in sequence in medium-small lots and stored until the assembly operation requires them. By doing so these manufacturers can have a factory-type and capital investment, still being able to follow the demand of their clients. A high degree of personalisation is therefore possible, with increasing satisfaction of their customers. Automation around these presses can be quite sophisticated, with multiple mixing heads for open and closed mould pouring – connected to one or two high-output metering machine – The mixing heads for open mould pouring are fitted onto head holders and the contemporary injection of two heads assure a very good distribution of the foam thanks to the pouring pipe distributor.
A growing Indian PUR Industry meets at PU Tech 2008

Busy time for everyone, at PU Tech 2008 in Delhi, India. Visitors, exhibitors, speakers and organisers had very little time left while they attended the most important event ever held in India for the Polyurethane industry. Reports speak of great growth for this polymers – and a lot more to achieve!

The Indian Polyurethane community met last year at the India Expo Centre in Greater Noida, near New Delhi, from March 12th till 14th to discuss the present – and try to tell the future – of their business.

Present...

Doubled in three years – from 100 grams/year per capita in 2005, Polyurethane foam’s consumption has already reached 200 grams in 2008 – the use of these innovative polymers is expected to reach – and exceed – 1,000 grams per person in 2020.

This was the target set by the Indian Polyurethane Association and announced by its Chairman, Raul Gautam, in his keynote speech during the opening ceremony of the event. “A adopting 1,200 Tons! Yes, because Indians are 1.2 billions, and even a small rise in their purchasing habits makes a huge difference for those involved in that field!” As Gautam pointed out in his speech “Today the GDP grows healthily at 9%, Forex reserves are close to 250 bn and the total economy has crossed the 1.0 Trillion mark.” This transformation has changed the country’s image from that of a country of snake charmers to an emerging super power with talented people in all walks of life.”

…and Future of Indian Polyurethane Industry

But what is the future holding for India? Gautam listed some forecasts widely shared by the local economists. In the year 2020:

1. India will have the largest pool of young and an educated work force. Estimated at 400 millions.
2. All necessary infrastructure, education & health systems will be firmly in place by then.
3. Taxation systems will be simplified, harmonized and at globally competitive levels.
4. There will be an enthusiastic Diaspora of over 30 million eager to invest in and support the Indian progress.
5. All political changes like past, will always be democratic and peaceful, unlike many of our neighbours. Exuding confidence in the investors.

This will mean – thinking of Polyurethanes – on one side a steady expansion of consumers, characterised by higher attention to quality and to the concept of “value for money”, and on the other by the need of the industry to adapt, grow and cope with the demand for higher standards of environmental, work and health respect.

Concluded Gautam: “Global Enterprises are shifting base to India. All products will not only be marketed locally but also manufactured locally. The Indian industry has been completely unshackled and is hungry to grow … the future of India and the future of the Indian PU industry is full of opportunities.”

Through the show

The area destined to the exhibitors had been more than doubled, compared to the 2005 event – and still some firms could not find a place for their stand: 42 Indian firms – and more many from 63 foreign countries – welcomed 2,100 visitors in the three days.

The reasons behind the above predictions are strong and well founded:
1. India will attain a significant geopolitical clout – A seat at the Security Council and a Membership of G-8 along with China
2. Some of the largest global enterprises will be of Indian origin. Already today in steel Arcelor Mittal is a leader.
3. The international sales force of Cannon attending the show celebrated the 25th year of successful activity of Expanded Polymer Systems as sole Cannon Agent in India.
4. There will be an enthusiastic Diaspora of over 30 million eager to invest in and support the Indian progress.

The quality of the visitors was extremely good, as witnesses Mukesh Bhuta, head of the Indian Polyurethane Association’s Organising Committee for this show: “The response of the industry has been overwhelming. Most of the visitors were either the owner or the Managing Director of their Company, often accompanied by two or more of its senior managers. Decision makers that have given a sound and pragmatic approach to the meetings with the exhibiting Companies. There was serious business discussed in every booth, and satisfied people, at the end of the show!”

A comprehensive program of technical presentations was set up by the Organisers, with 39 speeches presented in nine dedicated sessions. Well attended by the visitors, these presentations provided the local industry with the state-of-art information covering all the applications of this multi-faceted technology, from Thermal Insulation to CASK, from Automotive to Footwear, from basic R&D to Performance Testing, through Safety & Health and Processing, and much more.

To relieve the spints – and the bodies – after a long day of meetings and talks, a superb evening show was organised in the court of the Congress Centre, featuring the performance of local stars of the show business and a vast selection of…
The PU Tech 2008 show in Greater Noida, New Delhi attracted more than 2000 visitors in three days and exhibitors from 64 countries.

Indian dishes – representing the very many faces of the local cuisine – both much appreciated by the numerous attendants.

Cannon at PU Tech 2008
Represented in India by Expanded Polymer Systems since 25 years – the event was happily celebrated with staff, customers and friends in a private party – Cannon were present at PU Tech 2008 with an international team of specialists which helped the local sales and technical staff in welcoming the numerous visitors. Cannon count more than 250 foaming machines and plants installed in India, with some excellence-points installed at famous brands like LG, Whirlpool, Godrej, Toyota Boshoku, etc.

The presence of very qualified personnel in charge of sales and technical service, as well as the long familiarity of Expanded with the chemistry of Polyurethanes, are the winning factors which explain the reasons of a market leadership in the field.

Two presentations were given by Cannon at the Technical Conference, one dealing with an innovative method for the production of multi-component noise insulators for automotive engines and the other presenting a large foaming plant for the production of insulated rocks for refrigerated transports.

Interest and curiosity for Cannon's latest technological developments – presented in the booth through technical videos and didactic posters – was widely demonstrated by the Indian industry. Several projects were discussed – and some of them even finalised – concerning all the fields of application of Cannon's PUR technologies.

All in all, a very good show in a very promising country, with an excellent outlook for the future! Polyurethane will expand in India, Cannon will be there to make it rise! (www.cannon-india.com)

The media is being scrubbed by the cleansing fluid in the "scrubber" vessel, and the cleansing fluid exits the media is being scrubbed the cleansing fluid exits the "scrubber" vessel carrying the contaminants with it.

The scrubber and bottom screens prevent any media from exiting the vessel and allows only the contaminants to flow with the cleansing fluid.

Polyurethane foam's consumption is expected to rise in India from the current 0.2 kg per head per year to a full kilogram by 2020!

Are we going nuts?

BONO ARTES – the Cannon Group company specialised in treatments for industrial waters – has been licensed by Absolute Filtration Industries Co. (Odessa, Texas, USA) for the design and manufacturing of HYDROFLOW™ Walnut Shell Filters. This technology enables great improvements to conventional filtration: by using black Walnut Shells as filter media it assures removal of up to 98% of the contaminants present in the feed water.

Walnut shells can be ground to a particle size around one-two millimetres, and their coarse structure, full of microscopic cavities, provides an ideal filtering media. Walnut shell filters are widely employed in the treatment of water from different industrial applications, "produced water" separated from oil, quench water in Ethylene plants, waste water from refineries and steel mills.

While the liquid passes through the filter media, oil and solids are trapped within it. The removal of oil and filtered matter from the media is done through the shearing action of a scrubber pump and separation implemented in a dedicated scrubbing vessel.

During the “backwashing phase” a pump installed on the top of the filter keeps the media circulating from bottom to top into the filter vessel and then down into a “scrubber” vessel in which the separation of the contaminants from the media occurs.

Walnut shells can be ground to a particle size around one-two millimetres, and their coarse structure, full of microscopic cavities, provides an ideal filtering media. Walnut shell filters are widely employed in the treatment of water from different industrial applications, "produced water" separated from oil, quench water in Ethylene plants, waste water from refineries and steel mills.

While the liquid passes through the filter media, oil and solids are trapped within it. The removal of oil and filtered matter from the media is done through the shearing action of a scrubber pump and separation implemented in a dedicated scrubbing vessel.

During the “backwashing phase” a pump installed on the top of the filter keeps the media circulating from bottom to top into the filter vessel and then down into a “scrubber” vessel in which the separation of the contaminants from the media occurs.

Walnut shells can be ground to a particle size around one-two millimetres, and their coarse structure, full of microscopic cavities, provides an ideal filtering media. Walnut shell filters are widely employed in the treatment of water from different industrial applications, "produced water" separated from oil, quench water in Ethylene plants, waste water from refineries and steel mills.

While the liquid passes through the filter media, oil and solids are trapped within it. The removal of oil and filtered matter from the media is done through the shearing action of a scrubber pump and separation implemented in a dedicated scrubbing vessel.

During the “backwashing phase” a pump installed on the top of the filter keeps the media circulating from bottom to top into the filter vessel and then down into a “scrubber” vessel in which the separation of the contaminants from the media occurs.

Walnut shells can be ground to a particle size around one-two millimetres, and their coarse structure, full of microscopic cavities, provides an ideal filtering media. Walnut shell filters are widely employed in the treatment of water from different industrial applications, "produced water" separated from oil, quench water in Ethylene plants, waste water from refineries and steel mills.

While the liquid passes through the filter media, oil and solids are trapped within it. The removal of oil and filtered matter from the media is done through the shearing action of a scrubber pump and separation implemented in a dedicated scrubbing vessel.

During the “backwashing phase” a pump installed on the top of the filter keeps the media circulating from bottom to top into the filter vessel and then down into a “scrubber” vessel in which the separation of the contaminants from the media occurs.

Walnut shells can be ground to a particle size around one-two millimetres, and their coarse structure, full of microscopic cavities, provides an ideal filtering media. Walnut shell filters are widely employed in the treatment of water from different industrial applications, "produced water" separated from oil, quench water in Ethylene plants, waste water from refineries and steel mills.

While the liquid passes through the filter media, oil and solids are trapped within it. The removal of oil and filtered matter from the media is done through the shearing action of a scrubber pump and separation implemented in a dedicated scrubbing vessel.

During the “backwashing phase” a pump installed on the top of the filter keeps the media circulating from bottom to top into the filter vessel and then down into a “scrubber” vessel in which the separation of the contaminants from the media occurs.
Cannon Far East – with its head office based in Singapore, together with its Zhongshan Shinnon, the company established by Cannon Far East 4 years ago in Guangdong province – have achieved great success in technologically demanding sectors in China for the last two years. We have interviewed Mr. Wong Lee Meng, General Manager, Cannon Far East Pte Ltd for more details on this achievements.

Mr. Wong, how can you explain Cannon Far East’s recent successful story in one of China’s most growing businesses, the domestic refrigerators?

"In the refrigerator market we have seen exponential growth in the last ten years. The top five local manufacturers, namely Haier, Hisense, Midea, Xinghe and Melling command together more than 60% of the market. They have increased their production capacity tremendously coupled with the recently announced Government subsidy for home appliance purchases to rural farmers - targeting the ownership of each family of home appliances ranging from washing machine to hand plans to refrigerators – the export and domestic demand has been strong and growing. In the upper market growth is even more significant, the local manufacturers are also growing up their technology to compete with famous brands such as Bosch Siemens, LG, Samsung, etc. The tie up of Cannon technology of SoliStream where fillers such as expandable graphite, PVJ particles, Alumina etc that are injected into panel as a third stream to enhance foam fire retardant properties has also aroused great interest in the market."

What can you tell us about the other booming industry, the automotive sector?

"In 2007 the automotive sales in China reached 8.8 million units, growing at 21.84% over the year before. Almost all major car makers have set up production facilities in China to catch the ever increasing domestic demand and big local market potential. In this respect, Cannon have been also very successful in supplying close to ten plants in the market, consisting of several sophisticated seating plants, steering wheel plants and interior parts for sound insulation, to top Japanese and European car makers. The plant has been incorporated with state-of-art patent process of Zero-time mould change system without stopping the line and innovative solutions that produce high quality in the production of steering wheels. The Cannon AX moving foams are able to produce six components with good moving quality, and the remote-controlled energy that give closed-loop control over the foaming pressure have been widely utilized to satisfy the demanding needs of the market to produce different formulated foam in the same mould. The CO2 technology in tandem Global Warming and the needs of energy saving have been in the world news these years. Polyurethane rigid foam have been able to provide good and effective insulation to building, furniture, cold room storage. During the last ten years Cannon Far East have been supplying panel production technology in China, but also in Thailand, Malaysia and Vietnam. Hautmann Polyurethane foam just installed in their newly-established, modern laboratory facilities in Shanghai, China, the latest technology of Cannon for panel system using Cyclopentane and other blowing agents. Cannon technology of SoliStream where fillers such as expandable graphite, PVJ particles, Alumina etc that are injected into panel as a third stream to enhance foam fire retardant properties has also aroused great interest in the market."

Apart from these two traditional application market, where did you find further growth in China?

"Cannon have been also successful in the specialty market in the Far East! Just an example when you are next riding on a train from Wuhan to Guangzhou, the train will be travelling on a rail track that is being designed with a special fastening system, in which a specially formulated elastomer foam pad is being installed to reduce vibration, wheel-track interaction and noise. This special foam pad is being developed and supplied by a world-renowned Austrian specialist company in this field, using Cannon patented process of moulding. Very soon, more and more rail tracks within China will be installed with this special system.

Another significant achievement of Cannon in the specialty market is the supply of a large elastomer machine to China. A new innovative process will soon allow a Chinese company to re-shred large tires for surfboards, eliminating any unnecessary increase in rubber use. A two-component Polyurethane elastomer will be injected in a mould containing the used tire, and a new tread will be cast over the existing sides and substrate. The whole operation will be much less capital intensive, less time consuming and by far more energy efficient than the traditional rubber reclamation. The whole process has been set up by the US-based Amerispray, who is licensing the Qingdao-based Qingdao Qinzhou Rubber Producer Co Ltd to use its innovation technology. The Cannon Group has been selected to supply the Polyurethane metering and mixing equipment for this large project in China and the project involved people from the Group’s Units in the US, the UK, Italy and, of course, from China."

Thank you, Mr. Wong, for these news on recent Cannon Far East’s developments in China! These successes that we have had reinforce our local presence in this growing market, and will see us strongly present into the near future and beyond. (www.cannonforeast.com)
A great satisfaction from JCI Malaysia: an old seat foaming plant - refurbished and modernised by Cannon Far East and partners - improved dramatically their productivity, dropped scrap rate significantly and won them a raise in rating from their major clients.

A very old car seat foaming line made in Malaysia was not providing the needed output and quality requested by Johnson Controls International (JCI) Malaysia’s plant. Cannon Far East was called for a suggestion, and the case was evaluated with the Italian manufacturing centres specialised in PU dosing and moulding. The proposal which derived included some modifications to be done by the customer on the mould-carrying side to handle faster cycle times and a new foam dosing section to be supplied by Cannon. The proposed solution was accepted by JCI, and implemented at the end of 2007.

The foaming plant consisted of component tanks for three polyols and one Isoyanurate, all relevant high and low pressure pumps, extra heat exchangers, one “A-60 Servo” and one “A-100 Servo” machines, one Ax24 mixing head with ReCo System for the control of pouring pressures, the whole control system with programming table, a new KUKA robot for the head.

Since the installation the new system was running well and JCI was fully satisfied with the machines performance. Till now – January 2009 – the AX 24 head has achieved more than one million shots providing full customer satisfaction about the foam quality from their special formulation.

This success has helped JCI to improve the productivity by 33%, reduced defect cases dramatically, and obtain from their major customer on the mould-carrying side to handle faster cycle times and a new foam dosing section to be supplied by Cannon. The proposed solution was accepted by JCI, and implemented at the end of 2007.

The advantages carried by this head were evident: four components fed radially to the mixing chamber and two fed axially through the small head’s cleaning piston allow for an overall more compact design of the head. If two out of six components are fed axially then that piston can be smaller than if it must host six recirculation grooves, and it holds much better the risk of possible cross-over of low-viscosity fluids. If the piston is smaller, it can move faster, allowing for rapid sequences of shots for complex multi-hardness pouring patterns. In other words it’s faster, it’s more reliable, it’s simpler, it’s more precise, lighter and smaller than other competing heads.

That’s what major companies understood.

The combined efforts of Cannon’s Technical Service Singaporean and Malaysian engineers have contributed a lot to put the machines quickly in good working condition and has given further confidence to the customer.

Another satisfied customer in highly-competitive Automotive field: the building block of Cannon success!

The story is well-known, but it’s worth being repeated: the secret is in the head! A Good Polyurethane foaming plant starts from the head, as many other things.

We get the business if the head is right, otherwise someone else will eventually get it. Many leading automotive seat’s producers say that the Cannon AX is THE right head!

Launched ten years ago, the Cannon AX multi-component mixing head immediately gained the attention of the major foamers worldwide: the ability to handle six components – all with a recirculation circuit till the mixing chamber – appealed the manufacturers of multi-hardness seats, all confronted with the problem of handling a wide range of formulation variables with frequent changes of recipe in real time.

The advantages carried by this head were evident: four components fed radially to the mixing chamber and two fed axially through the small head’s cleaning piston allow for an overall more compact design of the head. If two out of six components are fed axially then that piston can be smaller than if it must host six recirculation grooves, and it holds much better the risk of possible cross-over of low-viscosity fluids. If the piston is smaller, it can move faster, allowing for rapid sequences of shots for complex multi-hardness pouring patterns. In other words it’s faster, it’s more reliable, it’s simpler, it’s more precise, lighter and smaller than other competing heads.

That’s what major companies understood.

The composition of these plants has been fine tuned in the years, and today Cannon supplies a customised version of metering unit, checked for multi-component formulations up to five different chemicals can be handled simultaneously, with special cases where two heads are mounted side-by-side on the same robot arm, to handle the most complex combinations of models and desired foam speeds.

The computerised controls are defined according to the country of installation of these plants, in order to better fit with the factory electronic programming habitats and their spare cards inventory.

But the key point that played a decisive role in selecting Cannon as their foaming partner for seats – and for their steering wheels, by the way! – has been the availability within the Cannon Group of dedicated staff in charge of their specific business.

A local interface, speaking their language and expert in their specific business, was appointed as sole interface for every negotiation and deal, and dedicated project managers were appointed in Cannon Afros for the metering and mixing technology and in Cannon Tecnofor for the mould carrying systems and the complex project management related with the timely delivery of these large plants. These specialists work as a team, and provide 24/24h assistance to their counterparts working on the same projects, to assure full satisfaction, trouble-free installation of the new plants and prompt technical service for the existing ones.

The heads are important... and not only the steel-made ones!
Cannon Solutions UK just completed their third year as Cannon Group’s manufacturing centre for special products: they have seen a further growth in activity and results, reflecting the need within the group for a centre that can respond to special enquiries and to their established market in UK and EIRE.

The weakness with the UK currency means that their products are now more competitive than before, and they can and will deliver quality products with an attractive price structure. We have reported on the K2007 edition of the Cannon News what they can supply in terms of special plants and technologies for PUR insulated Domestic Doors, which they are continuing to supply the market with last year they have installed interested plants in France and Ireland, with several pending enquiries waiting to be converted this year into orders.

SRIM still the solution for low volume quality components

From its facility at South Luffenham in the UK the Linecross Group manufacture and supply components to the international automotive, transport, leisure and packaging industries. The continued success of the Group is based upon their ability to provide total customer support from design concept through development and prototyping, to high quality production tooling and manufacture of high specification thermoplastic and thermoset components.

Cannon Solutions – UK the Cannon Group’s manufacturing facility for special products – recently installed two book opening mould carriers to produce automotive interior components in Polyurethane SRIM (Structural Reaction Injection Moulding).

The mould carriers were required to increase production and to improve flexibility in as the requirements of the Linecross mean that moulding tools are changed regularly to meet production demands.

Linecross has a strong reputation as a partner to many prestigious automotive marques in the low to medium volume OEM market. Components manufactured to SRIM are ideally suited to this type of market; relatively low tooling costs and competitive material prices offer the automotive designer flexibility in design concepts, allowing them the freedom to provide aesthetically pleasing contours within the automotive interior.

Many of the components manufactured will be covered in other materials and must also conform to stringent control of flexural strength, resistance to temperature etc. all of which SRIM polyurethane can provide.

Both mould carriers were designed and manufactured by Cannon Solutions UK Ltd in their facilities at Trafford Park, Manchester with the customer fully involved in the design to ensure the mould carriers would meet their exacting requirements.

Because of the number and size of tools involved the daylight of the mould carrier had to operate between a minimum of 500mm and a maximum of 1300mm requiring a long platen stroke. This in turn lead to the decision to place the mould carriers in a pit which allows better operator access to the mould and also better access for tool change.

The mould carriers are hydraulically operated with independent hydraulic packs and use PLC control with touch screen control integrated with a lightguard and physical barrier safety system.

Installation of the mould carriers and on site training in their use was carried out by Cannon Solutions Technical service team and commissioned to the customers satisfaction.

Cannon Solutions have a long standing relationship with the Linecross Group and will continue to supply after sales service for many years to come.
DiCycloPentaDiene (DCPD) - a very cost effective answer

DCPD is the most advanced solution for the manufacture of large parts, from low to high volumes, with a very large range of applications.

DCPD RIM Resins are liquid resins based on highly purified DiCycloPentaDiene (DCPD). Mixed under pressure, the chemical reaction of components A and B gives the thermoset polymer. Reaction Injection Moulding (RIM) of the low-viscosity resins is the preferred method of production of DCPD parts.

DCPD RIM polymers have high rigidity, excellent impact resistance, as well as good surface appearance and corrosion resistance for a wide range of applications.

The DCPD catalyst system makes it possible to control the starting point of the reaction. This opens up the processing window to the moulder by increasing the time available to fill the mould. This makes it possible to make very large plastic parts (up to 100 Kg and over) in a very short time. DiCycloPentaDiene, or DCPD, is a product obtained from the steam-cracking process. In its highly purified form, it can be polymerised by the so called "metathesis" chemical reaction which gives rise to a cross-linked 3-dimensional polymer structure. The DCPD A and B components are liquids and contain a catalyst and a co-catalyst respectively. These promote the chemical reaction only when the two components are mixed together in controlled conditions. We make use of this metathesis reaction in Reaction Injection Moulding (RIM) processing for the industrial production of DCPD Polymers. DCPD Resinss contain also additives to improve the processibility of the liquid resin, for example by lowering the freezing point down to 0°C. The choice of the additives and comonomers is carefully engineered to further enhance the properties of the DCPD polymers.

DCPD stands apart from all other liquid resin RIM systems because of the unique patented catalyst system. This catalyst system makes it possible to vary the gel-time (which marks the starting point of the polymerisation) in accordance with the requirements of the moulder and the part to be moulded. Not only has the moulder full flexibility in production, but new concepts in engineering plastics have been made possible by DCPD RIM resins.

**Properties**

Engineering plastics with a wide range of applications must have a wide range of properties. DCPD is no exception to this rule. DCPD polymers have an excellent combination of stiffness and impact strength, as well as having very low density. They generally do not require any de-moulding agent and any glass fibre reinforcement. The range of application temperatures is very wide: from -40°C to over 110°C. Resistance to acids and bases at all operating temperatures is extremely good. The high quality surface appearance gives high quality painted parts, with simple surface preparation. Painting is always required.

DCPD polymers have excellent electrical insulation properties.

**Applications**

For automotive and after market, sport and leisure and gardening equipment: DCPD meets the automotive challenge, providing cost-reduction on the assembly line by part consolidation. A homogeneous "look" and quality surface appearance (with the standard paint systems) is possible with good tools. DCPD parts are ready to paint and achieve a high-quality finish for the right image and sport look.

The use of plastics in the modern truck has meant progress in design, comfort and safety. For the future DCPD is the major breakthrough: lightweight parts can be produced industrially without sacrificing mechanical properties.

For Agricultural and Earth moving equipment applications, imagine a material that doesn’t rust or corrode, even in contact with fertilizers, which doesn’t break or split when it is bumped, banged and abused, that keeps it’s appearance longer than painted steel, even when it is left outside for years on end. This material can be made into tractor fenders, parts for the tractor cab or engine hood and for earth moving equipment.

**Anti-corrosion - Marine parts**

Parts for the chlorine/ caustic industry, such as the cell cover, made out of DCPD, are more than an inert barrier over the electrical hardware. Low thermal conductivity, high electrical insulation, complete chemical inertness to the reactants and products, DCPD is an integral part of the process.

**General Industry parts**

Excellent toughness is required to resist all kinds of treatment and for a long life. For those custom containers and pallets, where tooling cost is an important influence in the choice of the material, DCPD has the competitive edge.

**Main advantages**

DCPD has the possibility to make complex parts modules and can compete advantageously with traditional high volume materials and processes offering:

- Low part cost
- High perceived quality through the unique capability to produce monolithic structures
- Fine aesthetics
- Good part integrity and dimensional stability
- Weight savings
- Part design freedom in terms of variable thickness within the piece
- Part engineering freedom, by the possibility to use inserts in the mould
- Lower investments for machinery, tooling in comparison with other technologies (RRIM, SRIM, etc)

Cannon have developed dedicated metering machines and moulding systems to process DCPD:

- High-pressure metering units and mixing heads.

Conceived specifically for this application, these dosing machines and heads perfectly suit the peculiar chemical and physical characteristics of the DCPD process.

Cannon equipment for DCPD processing

Cannon have developed dedicated metering machines and moulding systems to process DCPD.

- High-pressure metering units and mixing heads.

Conceived specifically for this application, these dosing machines and heads perfectly suit the peculiar chemical and physical characteristics of the DCPD process.

A careful processor should not think that processing equipment for DCPD can easily be obtained by the adaptation...

All pictures courtesy of TELENE s.a.s. - www.telenes.com
Gasketing & Potting... the importance of freedom!

The range of applications and of new customers expands, for the Gasketing and Potting solutions proposed by Cannon. A complete range of equipment is made available, new specific applications can be approached, new clients join the reference lists.

Are you going to be the next satisfied Cannon customer in this dedicated field of polymer's technology?

More than fifteen significant orders in the segment of machines handling Gasketing and Potting applications have been added to the reference list of Cannon Afros last year! New exchanges with new end users, new opportunities of business for the Cannon network.

Sealing a new deal

The Gasketing technology makes use of low-output, very precise dispensing units whose mixing head is mounted on a light robot. This configuration – made the proper adjustments – is also suitable for the application of adhesives to various types of substrates. That is what a number of existing Cannon customer realised last year, when their problems of bi-component glue application were solved using an almost standard dosing equipment made by Cannon Afros. The projects are developed in cooperation with Robotbot – an Italian systems integrator specializing in assembling this type of plants. The Polish manufacturer of an external spoiler for the Fiat 500 model easily found the required solution for attaching the hollow aesthetic part with the underlying structural support, both injection moulded plastics of different polymeric nature. A bi-component adhesive was used with the Cannon b2G low-pressure, low-output dosing unit and a standard bi-component mixing head. The optimal mixing efficiency and the precise path designed by the robot for the adhesive allowed for an optimisation of the applied quantity.

Lock those doors…

A Thai customer of the automotive components – supplier of GM and other major car makers – recently started a production of car door panels that needed the application of a continuous profile of bi-component high-viscosity Polyurethane. The right solution was found with a Cannon gasketing plant complete with 6-axis ABB robot, shuttling table for the fast-cycling foaming operation, plasma treatment equipment for the surface preparation of the substrates, one EcoCleaner to recover the cleaning fluids, large parking lots of airport and mall, railway lots etc. Applying a silicone foam is not very different from applying a PU in-situ formulation: the only important point is to keep the two well far away one another! Silicone has a dramatic effect on the PU foam's cell structure, and a minimum contamination of silicone in a PU dosing line or misthead brings a lot of troubles. Cannon developed machines and heads good for both types of ingredients: those who work randomly with silicone and Polyurethanes can buy a machine equipped with a four-component mixing head, whose two lines are dedicated to the PU and two to the silicone chemicals. A short flush of the head at the end of a pouring cycle cleans the head from any residual of the un-reacted chemicals and allows for an immediate use with the other, incompatible, formulation. The manufacturers working permanently with a silicone foam, instead, can use a new, simpler machine designed to handle these formulations: an Italian factory near Varese makes use of this new machine since the autumn of 2008, expanding its facilities with Hydrogen. Mixing occurs in a static mixer, disposable after a quite long sequence of operations.

Expanded Silicone foams... a new approach!

When working with the equipment designed in the door. Formulations are usually of the Thixotropic type. The dictionary definition of thixotropic spells: “a property of certain gel-like liquids when subjected to vibratory forces like shaking, and then slowly again when left standing.” Therefore these formulations are pretty much liquid until they are laid down, then they set exactly when you put them and do not even collapse if they find no lateral support to hold them there. Handling these chemicals requires perfect control of temperatures, output and ratio – and a very good mixer. Output can be as low as less than a gram per second, so what is needed is a game of micro-chemistry - or call it micro-dispensing if you like.

These foaming plants were supplied to manufacturers based in China, Morocco, Serbia, Egypt and Italy, some of them repeated orders from satisfied Cannon clients who bought similar gasketing plants in the near past. Some of these plants work for more than one application, for customers which need to apply a continuous foamed seal on the above mentioned control panels and in the grooves of plastic light holders for industrial illumination systems. Or for customers that do not want to have two separate working islands when they also must apply an adhesive on the back of the glass plate which constitutes the see-through window of these control panel's doors. Since the equipment is designed with flexibility in mind, changing applications is feasible – and easy!

Pre-production of industrial series of products is a current practice at Afros, to help customers deliver their finished products while their production equipment is still under construction.

in large, hot lamps like those used in sport fields, large parking lots of airport and malls, railway lots etc. Applying a silicone foam is not very different from applying a PU in-situ formulation: the only important point is to keep the two well far away one another! Silicone has a dramatic effect on the PU foam's cell structure, and a minimum contamination of silicone in a PU dosing line or misthead brings a lot of troubles. Cannon developed machines and heads good for both types of ingredients: those who work randomly with silicone and Polyurethanes can buy a machine equipped with a four-component mixing head, whose two lines are dedicated to the PU and two to the silicone chemicals. A short flush of the head at the end of a pouring cycle cleans the head from any residual of the un-reacted chemicals and allows for an immediate use with the other, incompatible, formulation. The manufacturers working permanently with a silicone foam, instead, can use a new, simpler machine designed to handle these formulations: an Italian factory near Varese makes use of this new machine since the autumn of 2008, expanding its facilities with Hydrogen. Mixing occurs in a static mixer, disposable after a quite long sequence of operations.

Potting?

Are you thinking of a Potting application? Cannon have got the solution. But what is Potting, first of all? It's the technology used to encapsulate a component into a polymeric mass, to protect it from shocks, intrusion, damage and even vibrations. This process is usually called static mixer, disposable after a quite long sequence of operations.

moisture, chemical attack, wear, damage, competitor's curiosity... whatever kind of external attack to a delicate part. Be it a piece of electronic or electro-mechanical hardware, an electric junction, a sensor, a radio-frequency device.

Low-output dosing machines are available at Cannon to dispense a few grams – often a few drops - of special non-expanded resins that completely surround the delicate component while they leave the way for the connecting wires or for a mechanical connection.

Many of these machines are in operation in a district near Varese, Italy, where a relevant number of industries have specialized in micro-electronics and similar delicate types of manufacturing. Characterised by a simple layout, easy to transport and to connect to automatic dispensing systems - usually mounted on light robots and working on automated assembly lines - these machines meter the components using variable output pumps and mix them with light, disposable static mixers.

Variable output opens a world of choices

The variable-output pumps – which are a standard feature of these gasketing and potting machines – eliminate the problem of working at any fixed ratio, allowing for a wide flexibility in output and component's ratio. And to those asking “What is the importance of this detail?” it's worth reminding the free driving selection of the chemical's supplier... it is quite common to find machines that can work with one – and one only – type of formulation! This sounds not acceptable to Cannon, a Polyurethane equipment Company that since the beginning of their activity more than forty years ago, researched the absolute need for a market where the supply of machines had to be independent from that of the chemicals. Providing to a client a good service, deriving from the cooperation between machine and chemical experts is something, while selling locked packages of equipment working only with one formulation is something else – a totally different approach to the customer needs!

Also for Gasketing and Potting applications you buy the “coffee machine” from us, then you buy the “coffee” which suits best your current needs! This system, on the long term works much better, for you.

Let’s talk about it!

A well-equipped area with dosing machinery for Gasketing and Potting is available in Cannon. After R&D and laboratory is in Italy to these clients requiring to run trials with their chemicals.

Lock those doors…

A Thai customer of the automotive components – supplier of GM and other major car makers – recently started a production of car door panels that needed the application of a continuous profile of bi-component high-viscosity Polyurethane. The right solution was found with a Cannon gasketing plant complete with 6-axis ABB robot, shuttling table for the fast-cycling foaming operation, plasma treatment equipment for the surface preparation of the substrates, one EcoCleaner to recover the cleaning fluids, large parking lots of airport and malls, railway lots etc. Applying a silicone foam is not very different from applying a PU in-situ formulation: the only important point is to keep the two well far away one another! Silicone has a dramatic effect on the PU foam’s cell structure, and a minimum contamination of silicone in a PU dosing line or misthead brings a lot of troubles. Cannon developed machines and heads good for both types of ingredients: those who work randomly with silicone and Polyurethanes can buy a machine equipped with a four-component mixing head, whose two lines are dedicated to the PU and two to the silicone chemicals. A short flush of the head at the end of a pouring cycle cleans the head from any residual of the un-reacted chemicals and allows for an immediate use with the other, incompatible, formulation. The manufacturers working permanently with a silicone foam, instead, can use a new, simpler machine designed to handle these formulations: an Italian factory near Varese makes use of this new machine since the autumn of 2008, expanding its facilities with Hydrogen. Mixing occurs in a static mixer, disposable after a quite long sequence of operations.

Cannon developed machines and heads good for both types of ingredients: those who work randomly with silicone and Polyurethanes can buy a machine equipped with a four-component mixing head, whose two lines are dedicated to the PU and two to the silicone chemicals. A short flush of the head at the end of a pouring cycle cleans the head from any residual of the un-reacted chemicals and allows for an immediate use with the other, incompatible, formulation. The manufacturers working permanently with a silicone foam, instead, can use a new, simpler machine designed to handle these formulations: an Italian factory near Varese makes use of this new machine since the autumn of 2008, expanding its facilities with Hydrogen. Mixing occurs in a static mixer, disposable after a quite long sequence of operations.

Cannon developed machines and heads good for both types of ingredients: those who work randomly with silicone and Polyurethanes can buy a machine equipped with a four-component mixing head, whose two lines are dedicated to the PU and two to the silicone chemicals. A short flush of the head at the end of a pouring cycle cleans the head from any residual of the un-reacted chemicals and allows for an immediate use with the other, incompatible, formulation. The manufacturers working permanently with a silicone foam, instead, can use a new, simpler machine designed to handle these formulations: an Italian factory near Varese makes use of this new machine since the autumn of 2008, expanding its facilities with Hydrogen. Mixing occurs in a static mixer, disposable after a quite long sequence of operations.

Cannon developed machines and heads good for both types of ingredients: those who work randomly with silicone and Polyurethanes can buy a machine equipped with a four-component mixing head, whose two lines are dedicated to the PU and two to the silicone chemicals. A short flush of the head at the end of a pouring cycle cleans the head from any residual of the un-reacted chemicals and allows for an immediate use with the other, incompatible, formulation. The manufacturers working permanently with a silicone foam, instead, can use a new, simpler machine designed to handle these formulations: an Italian factory near Varese makes use of this new machine since the autumn of 2008, expanding its facilities with Hydrogen. Mixing occurs in a static mixer, disposable after a quite long sequence of operations.

Cannon developed machines and heads good for both types of ingredients: those who work randomly with silicone and Polyurethanes can buy a machine equipped with a four-component mixing head, whose two lines are dedicated to the PU and two to the silicone chemicals. A short flush of the head at the end of a pouring cycle cleans the head from any residual of the un-reacted chemicals and allows for an immediate use with the other, incompatible, formulation. The manufacturers working permanently with a silicone foam, instead, can use a new, simpler machine designed to handle these formulations: an Italian factory near Varese makes use of this new machine since the autumn of 2008, expanding its facilities with Hydrogen. Mixing occurs in a static mixer, disposable after a quite long sequence of operations.
Over the past twelve months the foam block market has been affected greatly by very high raw material costs, especially for TDI. However over the last three months of 2008 both the TDI and Polyol prices dropped dramatically to around 50% of the original price seen in August. This dramatic drop in price has affected many customers who had been buying raw materials in bulk at significantly higher prices.

In spite of the turmoil created by this situation Cannon Viking were able to meet favourable business conditions in the developing markets and took orders in Africa, the Middle East, South America and parts of Asia.

Siong Bee – Malaysia

This was an important order for the supply of a high output Maxfoam Omega 600 plant to replace a locally made Maxfoam machine which was destroyed by fire in 2007 and was concluded in part due to local assistance and support from Cannon Far East. For this project Cannon Viking faced local competition from both Chinese and Taiwanese machinery producers: higher quality, better accuracy and local service and support through Cannon Far East were the main reasons for obtaining this order from Siong Bee, an old Cannon client with Cannon Afros low pressure moulding machineries. This plant is now operating in their foaming factory in Malaysia.

Unifoam Group – Kano, Nigeria

Kano, located in northern Nigeria, is presently a rapidly growing area for simple foam mattresses for supply in northern Nigeria and in neighbouring markets in Chad, Niger and Mali. Unifoam Group is an existing client of Cannon Viking and this machine represents the sixth continuous foam plant supplied to this Group. The MF400 is the most popular foam plant in the Cannon Viking Maxfoam range, with more than 270 of these units in daily operation all over the developing world for manufacture of mattresses and sofas.

CLC – Venezuela

One of the largest mattress producers in South America, who is currently producing about 30,000 foam mattresses per month has recently finalised an order with Cannon Viking for a Maxfoam Omega 800 plant which will replace their second Viking machine. The plant is for the production of standard foams, high resilience foams and in the future visco-elastic foams and will be the first continuous foam plant to enter the Venezuelan market in more than 10 years. This project was concluded with vital support from the local Cannon agent, Chemoxtec who are also supplying spring quilting and mattress encapsulating machines to this customer.

Blockmatic single block machinery

The largest batch of Cannon Viking Blockmatic single block machines have recently been delivered, the first to Akmeltem located close to Istanbul in Turkey and the second to a major foam maker in Greece, located near to Thessaloniki. Both of these companies are existing Viking customers and have ordered the Blockmatic for the production of visco-elastic blocks and speciality foam blocks. There is an increasing interest in Blockmatic machinery from customers already using large continuous foam plants and the single block machines are to be specifically used for small orders, in particular for visco-elastic and speciality foams where demand is normally limited to less than ten foam blocks per customer.

The largest flexible foam producer in Greece will install this machine in their largest production site in Larissa.

BASF lab machine, Shanghai, China

Cannon Viking have recently completed the successful installation and commissioning of two laboratory foam block production machines at the lab of their R&D Technical Centre located in Shanghai, China. The two machines consist of a Cannon Viking Blockmatic 150 kilo shot single block foam machine for batch block foam system trials and development and a custom made C-Max continuous foam block production plant. Both machines are supplied with multiple metering streams to enable trials using a wide range of chemical raw materials and foam types including flexible foams and semi rigid foams. The C-Max continuous foam block plant also includes the capability to produce foam blocks under various production technologies including Maxfoam trough production as well as Conventional-Liquid Laidown technologies to replicate foam block production equipment being used by foam makers throughout the Asia Pacific Region.

Both the Blockmatic and C-Max plant include Cannon Viking OMEGA computer control and monitoring system for full production, trial and formulation data. Cannon Viking are the world leaders in Laboratory foam block production equipment having supplied more than forty tailor made machines to the majority of Polyurethane chemical raw material manufacturers.

Vitafoam – S. A. – Varimax Ormeggia 600 Plant

The largest continuous foam block production plant on the African continent consists of twenty two separate metering streams enabling the capability of the production of standard, fire retardent, high resilience and visco elastic foam for use in mattresses, sofas and automotive application for supply to end clients in South Africa as well as export throughout the African continent. This state of the art plant includes mass flowmeters on every metering stream fully integrated with OMEGA’s computer control and monitoring system. The machine replaces the customer’s old Cannon Viking conventional foam plant and this order was concluded against severe competition from the most qualified supplier. Local assistance and support provided on this project through Cannon Agent Mike Wainer and his team at Reac Chemicals, Johannesburg greatly helped in achieving this very significant reference.

Quartzforms – Italy – Rigid Slabstock Plant

In the summer of 2008 Cannon Viking installed and commissioned a large continuous plant for the production of rigid foam blocks. Cannon Viking have supplied a foam distribution system for continuous pouring, a 30 metre conveyor unit with conveyorised sidewalls and an integrated block cut off machine to enable this customer to produce continuous rigid foam blocks up to 3.5 metres wide with varied foam density between 80 and 400 kg/m³. The end product is used extensively for insulation, panels and buildings, boat and ship building and as a support for Quartzforms granite and marble tops used in furniture and kitchen applications.

Vitafoam South Africa’s state of the art Varimax under final test at Cannon Viking before shipment to Johannesberg.

The C-Max laboratory foam plant installed in Shanghai.

Precision additive chemical metering units with full closed loop control via the OMEGA control system and mass flowmeters.

Cannon Viking - good news from around the Globe

Cannon Viking have supplied a 150 kilo shot single block foam machine to enable the customer to produce continuous rigid foam blocks up to 3.5 metres wide with varied foam density between 80 and 400 kg/m³. The end product is used extensively for insulation, panels and buildings, boat and ship building and as a support for Quartzforms granite and marble tops used in furniture and kitchen applications.

The C-Max laboratory foam plant installed in Shanghai.

Cannon Viking have the widest territorial coverage in the PUR slabstock business. Thanks to the network of Cannon Locations and Agents, they provide capillary and prompt technological assistance and service to the World foam industry.

Call Cannon Viking for your block foam needs! (www.cannonviking.com)
The answer, my friend, is blowing in the wind!

The rising need for clean energy, obtained from renewable sources, propelled the power industry – in the past three years more than ever – towards wind generators. The business for the production, installation and management of wind turbines is booming, and proper solutions are required to optimise all phases of this technology. Various Cannon Companies are involved in this new business, with innovative and industry-proven solutions. Read more in this article: if you are looking for clean energy, as old good Bob Dylan – of course – used to sing, “...the answer, my friend, is blowing in the wind”!

There is little need to say that the wind generation of energy is a rising-field of activity: if you travel, in almost every country you see rows of tall pillars, placed in the most ventilated spots of the land, that silently and clearly convert the energy of wind into power.

An International effort pushes ahead the industry

“Already today, wind energy is working in over 70 countries around the world, saving hundreds of millions of tons of CO₂ emissions and delivering clean, reliable energy. However, for wind energy to meet its full potential we need ambitious and legally binding emissions reduction targets and expanded carbon market mechanisms to facilitate the broader dissemination of wind power. Wind is the leading electricity generation technology that can deliver major emissions reductions in the critical timeframe up to 2020” said Global Wind Energy Council’s (GWEC) Secretary General Steve Sawyer at the Climate Change Conference held in the Polish city of Poznan in December, 2008. In its recently published Wind Energy Outlook 2008, GWEC set out a scenario under which wind energy could provide 12% of global electricity needs and save 1.5 billion tonnes of CO₂ every year by 2020. This would add up to 10 billion tonnes of CO₂ mitigated by wind power within this time frame. Between COP14 and the COP15 climate change negotiations in December 2009 in Copenhagen, the Wind Power Works coalition will promote aggressive emissions reductions targets and a rapid deployment of wind energy around the world. This intense activity involves wind energy companies, environmentalists and citizen’s associations, NGO’s and governments, and practically reflects into a growing number of practical effects that have literally changed the face of the world deriving from excessive gaseous emissions (mainly by impregnating light mats of glass fiber with bi-component resins, mainly liquid Polyesters and Epoxies. These reacting formulations require metering and mixing devices to disperse tons of material into the enormous moulds where the blades are shaped. Precision, reliability and easy handling characterise the machines supplied by Cannon Afros. Several models are available, mainly used for the infusion of Epoxies in the glass mats, for moulding light inserts in Polyurethane foam (which are replacing the more expensive balsa wood ones) and for moulding special small blades in DCPD (DiCycloPentaDiene) resins without glass reinforcement.

Cannon is ahead with viable solutions

Cannon followed very close these talks, as they have been doing for the past decade: their commitment in clean technologies dates since they started eliminating the cleaning solvents in their Polyurethane processing mixing heads, replacing low pressure mixing technology with high pressure self-cleaning heads, back in the 1970’s. Since then, Cannon have been promoting a number of environment-friendly technologies and, in 1988, decided to invest in the Energy and Ecology field. The acquisition of the BONO Group of companies – an Italian leader in industrial boilers, special ovens, water and environmental treatment systems – propelled Cannon in a new, fascinating field of environment-related activities. Their cooperation with the major authorities ruling the industrial conversion programs dictated by the Montreal Protocol (to cure the “Ozone hole” problem) and by the Kyoto Protocol (to reduce the Earth’s “greenhouse effect” deriving from excessive gaseous emissions) generated a number of practical effects that have literally changed the manufacturing habits of entire sectors of the industry.

Today Cannon are able to propose several innovative solutions for the wind energy sector, touching sensitive areas such as the production of blades with Composite materials, the

Moulded insert in PUR foam are replacing expensive balsa wood in wind generators. This part is made by Trinity A/S, part of the SP-Group, in Denmark – with Cannon high-pressure mixing equipment.

Composite structures – Afros provide the Epoxy resin infusion systems, Polyurethane foam units and DCDP metering machines. The giant blades that catch the wind and propel the electric generators are built with a combination of technologies, mainly by impregnating light mats of glass fiber with bi-component resins, mainly liquid Polyesters and Epoxies. The rising need for clean energy, obtained from renewable sources, propelled the power industry – in the past three years more than ever – towards wind generators. The business for the production, installation and management of wind turbines is booming, and proper solutions are required to optimise all phases of this technology. Various Cannon Companies are involved in this new business, with innovative and industry-proven solutions. Read more in this article: if you are looking for clean energy, as old good Bob Dylan – of course – used to sing, “...the answer, my friend, is blowing in the wind”!

There is little need to say that the wind generation of energy is a rising-field of activity: if you travel, in almost every country you see rows of tall pillars, placed in the most ventilated spots of the land, that silently and clearly convert the energy of wind into power.

An International effort pushes ahead the industry

“Already today, wind energy is working in over 70 countries around the world, saving hundreds of millions of tons of CO₂ emissions and delivering clean, reliable energy. However, for wind energy to meet its full potential we need ambitious and legally binding emissions reduction targets and expanded carbon market mechanisms to facilitate the broader dissemination of wind power. Wind is the leading electricity generation technology that can deliver major emissions reductions in the critical timeframe up to 2020” said Global Wind Energy Council’s (GWEC) Secretary General Steve Sawyer at the Climate Change Conference held in the Polish city of Poznan in December, 2008. In its recently published Wind Energy Outlook 2008, GWEC set out a scenario under which wind energy could provide 12% of global electricity needs and save 1.5 billion tonnes of CO₂ every year by 2020. This would add up to 10 billion tonnes of CO₂ mitigated by wind power within this time frame. Between COP14 and the COP15 climate change negotiations in December 2009 in Copenhagen, the Wind Power Works coalition will promote aggressive emissions reductions targets and a rapid deployment of wind energy around the world. This intense activity involves wind energy companies, environmentalists and citizen’s associations, NGO’s and governments, and practically reflects into a growing number of practical effects that have literally changed the face of the world deriving from excessive gaseous emissions (mainly by impregnating light mats of glass fiber with bi-component resins, mainly liquid Polyesters and Epoxies. These reacting formulations require metering and mixing devices to disperse tons of material into the enormous moulds where the blades are shaped. Precision, reliability and easy handling characterise the machines supplied by Cannon Afros. Several models are available, mainly used for the infusion of Epoxies in the glass mats, for moulding light inserts in Polyurethane foam (which are replacing the more expensive balsa wood ones) and for moulding special small blades in DCPD (DiCycloPentaDiene) resins without glass reinforcement.

Cannon is ahead with viable solutions

Cannon followed very close these talks, as they have been doing for the past decade: their commitment in clean technologies dates since they started eliminating the cleaning solvents in their Polyurethane processing mixing heads, replacing low pressure mixing technology with high pressure self-cleaning heads, back in the 1970’s. Since then, Cannon have been promoting a number of environment-friendly technologies and, in 1988, decided to invest in the Energy and Ecology field. The acquisition of the BONO Group of companies – an Italian leader in industrial boilers, special ovens, water and environmental treatment systems – propelled Cannon in a new, fascinating field of environment-related activities. Their cooperation with the major authorities ruling the industrial conversion programs dictated by the Montreal Protocol (to cure the “Ozone hole” problem) and by the Kyoto Protocol (to reduce the Earth’s “greenhouse effect” deriving from excessive gaseous emissions) generated a number of practical effects that have literally changed the manufacturing habits of entire sectors of the industry.

Today Cannon are able to propose several innovative solutions for the wind energy sector, touching sensitive areas such as the production of blades with Composite materials, the
Numerous Cannon technologies can be employed in the construction of small and giant wind generators.

Light structural inserts are commonly positioned inside the larger blades, to reinforce their structure without affecting their weight. Balsa wood has been used for many years, an heritage from the aeronautic industry that used this precious natural material when lightweight and resistance were demanded. Polyurethane foams can be used as inserts, with several advantages versus balsa:

- if technically relevant they may be poured in place, copying perfectly the shape of the cavity where they are disposed
- they adhere to the inner part of the blade, reinforcing its structure better
- they are 100% useable, avoiding high scrap rate of wood
- they are cheaper than balsa
- they help solving an environmental issue, since balsa wood only comes from endangered rain forests and it is under heavy “attack” for its good mechanical properties.

Cannon Atlos high pressure metering units are successfully used since years – for instance in Denmark, by TINBY A/S, part of the SP-Group – for the production of these large, light inserts.

Cannon Solutions UK have been producing for many years dedicated mould carriers for the use of DiCycloPentaDiene resins in structural applications. The Finnish customer JUNKKARI OY, Vihuri, Finland, is using them successfully for the manufacture of 2 m long blades that are required by a niche of this market looking for small attentions of power, for instance for domestic or small business use.

Their four metre diameter domestic 2 kW turbine, mounted on a five metre high mast, generates annually between 5 and 12 MW of energy for household and business users. In windy shore locations it can produce up to 15 MW a year. The big advantages of DCDP are surface quality and structural properties.

The used resin – Telene – has a very good quality surface. It retains its shape well, lends itself well to moulding into integrated structural parts and withstands the test of time and difficult weather conditions better than other plastic materials. In addition, it is self supporting: the blade; no glass reinforcement is required, thus the part is simpler to make – and more economic.

Special DCPD dosing units are manufactured by Cannon Atlos, and they perfectly fit with the mould carriers manufactured by their English sister company.

Backed by a strong local service – assured by Noritec Cannon from Copenhagen, DK, since 1969 in all the Northern Europe and Baltic Countries – the manufacturer can rely on a single-responsibility source for its manufacturing needs.

Wind blades – Tecnos provide the assembly methods

Specialising in large turn-key plants for the automotive industry, Cannon Tecnos have developed in the past years the capability to approach difficult manufacturing projects, involving different materials and processing technologies. They have recently won a large contract for the automatic assembly line of the fuselage of a modern airplane and are now studying innovative construction methods for large composite parts. Confidentiality does not allow us to speak freely about this subject, but at Cannon Tecnos they are glad to discuss them with the interested partners! More news to come in the future editions of the Cannon News… stay tuned!

Rotors - T.C.S. presses are used for the electric heart of a wind generator

Cannon T.C.S. is the Group’s Division dealing with Aluminium Die-casting technology and with large Composite presses. Their efforts in the past ten years have concentrated in the design and manufacture of dedicated plants for the vertical injection of Aluminium in electric motors. The rotors produced with their equipment show high efficiency (due to perfect filling of cavities without air entrapments) and fast production rate, due to the special design of their automatic solutions.

Their cooperation with the world leading manufacturers of large electric motors has brought recently to the supply of huge presses for the large rotors used in high-power wind generators, those producing above 2 MW of current. Installed in the North Sea, in Poland and China, these huge electric generators – produced by Siemens and ABB – work in harsh off-shore environment where their installation and maintenance are a crucial factor – and cost. The reliability of these rotating turbines is therefore a major concern and demand for high-quality large electric rotors is increasing. T.C.S. welcomes inquiries for the special plants designed for the vertical injection of aluminium in the rotors which produce electricity from wind.

Well, then Bob Dylan was right, back in the 1960’s! We adjusted a little the lyrics; our version now reads “The energy, my friend, is blowing in the wind” shall we sing it together?

Siemens award Cannon T.C.S. “Strategic Supplier” for 2008

During an official ceremony held in Nuremberg, Germany, last February 3rd 2009, the management of Siemens Large Drives Division granted Cannon T.C.S. with the “Strategic Supplier” award for 2008.

The motivation says that “T.C.S. aluminium die-casting plants are innovative, technologically advanced and strategic” for Siemens. Only 15 suppliers – in a range of at least 500 major vendors – were awarded by Siemens Large Drives this year, and Cannon T.C.S. was the only equipment supplier of the honoured lot.

Cannon T.C.S. supplies Siemens since many years with the large vertical machines for Aluminium die-casting used in the Nuremberg plant to produce the large electric motors used in the heavy industrial applications, in trains and in the mining local generators energy sector. Two other Siemens factories, in India and China, also use only Cannon T.C.S. presses for their large motor’s production.

A new, very innovative equipment is under construction at the moment in Cannon T.C.S. factory near Milan, Italy and will be delivered to Siemens later this year.
**District Heating, a very hot subject!**

District Heating (DH) is the method used in several countries to heat urban areas’ households by means of a network of pipes which bring hot water from a central large heater to the individual buildings. In order to be efficient this network must lose the minimum possible amount of heat on its path, so that the thermal effort to maintain the optimum temperature would require the minimum possible consumption of fuel. The most environmentally-friendly systems use the so called CHP (Combined Heat and Power) or cogeneration system, able to produce at the same time heat and electricity for the city. The top of the top is represented by CHP systems where the fuel comes from the recovered urban waste and from biomass resources. A common practice in the coldest countries of Northern Europe, DH is gaining market share in other nations. Canon is a leader in the supply of technologies destined to this energy field; thermal plants for CHP, water treatment plants for the huge amounts of water commonly used as heat transfer media (steam is an alternative to water, too) and Polyurethane foam plants for the insulation of the large pipes that build the distribution network. Keep reading, if you are interested in this efficient, energy-conscious and planet-saving technology!

DH is one of the fastest growing sectors in the European energy industry. It has reached maturity in Denmark, where 60% of all households are supplied with district heating for space heating and preparation of warm water. It is the most popular method of heating in Finland: with a market share of 50% DH holds the leading position on the Finnish heating market, where it reaches almost half of the building stock. In the biggest cities, the proportion of DH is more than 90% - it heats altogether 2.5 million people, i.e. 47% of the entire population. In CHP plants the model of CHP was adapted from the wood processing industry, offering an efficient energy generation concept for conserving both energy and environment. DH has a market share of almost 50% in Sweden. All urban areas with over 10/000 inhabitants have a DH scheme. During the last 25 years the fuel for DH has changed from heavy fuel oil to a ray of sustainable energy such as biomas and energy from waste. Swedish DH also uses a large amount of surplus heat from industry. Taken together, this energy, otherwise wasted, has made an immense progress for the environment, especially for the climate. The decrease in carbon dioxide emissions, since 1990, due to the expansion of DH, corresponds to almost 40% of the total Swedish emissions. In the Czech Republic 57% of urban areas are covered: the development of DH started in 1920 and has been growing since. Today CHP produces 39% of heat and in the DH delivery the CHP heat shares 71%. Presently there are over 1,000 energy utilities active in public supply in Germany. Approximately 550 companies are district or local heat suppliers. DH has a market share of 37% in Austria. Nearly every such flat is heated by DH. In the Netherlands DH covers a relatively small part of total heat consumption. In 2003 about 3.6% of all residential land had a district heating connection. Warming countries - France, Spain, Italy - are still behind in this development. But they are quickly paying attention, since the examples are numerous and the results are evident: a central, clear, controlled station - where energy and heat are produced efficiently - is good for the economy, is good for the environment, is good for our lungs. Therefore the reasons why this concept is gaining attention in Europe and elsewhere, even in countries where heat is not the major concern: if the system works fine for heat, it must be a good idea for cold too. DH, district CHP, is the next area of expansion! Centralised coolings is a smart idea for households and public building’s ambient conditioning, food and drinks preserving, and of course applications it’s a well-known fact that producing cold is by far more energy-wasting than producing warmth. An efficient common system to produce and distribute cold would save huge amounts of energy, money, pollution and health care to entire nations. Keep warm - and cool - from two pipes off your wall!

**BONO ENERGIA experiences for District Heating applications**

During the past 30 years BONO ENERGIA have matured significant experience in the field of design and construction of boiler rooms for District Heating plants. They can supply today:
- CTH-type superheated water generators (up to 40 MW package configuration - 80 MW field erected)
- 4G-type fire tube steam / hot water generators (up to 15 MW package configuration)
- CT-type water tube steam/ hot water generators (up to 40 MW package configuration - 100 MW field erected)
- CTR-type heat recovery modular boilers/heaters from gas turbines or engines (up to 50 MW)
- Biomass fired boilers / heaters (up to 20 MW)
- Water treatment plants for primary waters and for sewage
- Heat pumps or cooling systems, through co-players
- The comprehensive know-how in DH application with multi sectorial experience makes BONO ENERGIA one of the European leaders for the supply of heat transfer equipment both with direct fired generators as well as with heat recovery units.

BONO’s CTH patented design for package heater - especially for the required working pressure of the boilers - is more suitable than smoke tube boilers, granting top level safeties, maintenance, performances, operation. The heaters are delivered completely assembled ex-works and fitted with all auxiliary equipment such as burner, transmitters, tubing for connection, instruments already mounted on the steamwork and ready to be connected as a package unit to the site utilities.

Due to their horizontal configuration no special cranes are needed on the top access for maintenance reasons is very easy due to the presence of inspection and access doors.

Main advantages offered by CTH design are conected to the package configuration - shop-assembled up to 40 MW - and to quick response time to load variation. Furthermore the possibility for shop prefabrication of many parts of the heaters in a modular concept provides for very short delivery times and short installation times for the field erected units, those up to 80 MW.

Simplicity of the water treatment, elimination of the thermo physical deaeration, rationalisation of the primary and secondary water distribution lines are also important aspects to be taken into consideration. The thermal efficiency up to 95-96 % and ultra-low emission levels (100 mg/m3 of NOx levels @ 3 % of Oxygen in the flue gases) are absolutely significant in the reduction of CO2 emissions, as required by Kyoto Protocol, enforced since February 2005 in the European Community. All BONO heaters are designed and manufactured in accordance with PED or ASME Code. Moreover they have been technically approved by the most important European certification authorities (TÜV, ADWYE, ASIT).

Among the most significant installations made by BONO ENERGIA in the DH sector the three major Italian airports (Milano Linate and Malpensa, Roma Fiumicino) are demonstrating the Group’s capability to provide advanced technological solutions in the District Heating field.

Large CTH-type steam generators from Cannon BONO Energia are used worldwide in numerous District Heating installations for residential buildings and airports.

**Two Italian cities warmed by BONO ENERGIA boilers**

ASM is one of the main Italian companies operating in the District Heating, electricity and gas distribution. Founded in 1908, it is today the most important firm in Brescia and Bergamo’s districts for the supply of public utility services (electricity distribution, gas, District Heating, integrated water cyclical and municipal solid waste integrated cycle). They have recently awarded BONO ENERGIA with contracts for the construction of two heating plants for the production of superheated water addressed to the respective District Heating networks of the two towns. First in Italy in the construction of a DH system, ASM made at the beginning of the 1979 a heating network for the city of Brescia. Since the end of the 1990’s the energy distributed in the city has been produced by the heat recovered from municipal solid wastes incineration, whose integration with the District Heating network values Brescia as a well known case for environmental sustainability and energy saving. ASM has recently started the construction of two new plants for Brescia and Bergamo. Conceived for the production of superheated water, they consists of two boilers per site, rating 40 MW each, with two large heat exchangers between the primary fluid circuit and the District Heating circuit. BONO ENERGIA, counting on several important references in the DH sector (ASE Milano, AEM Trento, Moottoriku City in France, EDF CNET in Vietnam, CERN of Geneve, plus the already mentioned airports of Milano and Roma), have offered their innovative and proven solution based on CTH boilers. Two "sum lay" plants have been supplied, including engineering service, construction, factory inspections, transportation, assembly and commissioning works; the engineering and commissioning engineers. High performance with respect to environmental emissions, low noise, high thermal capacity with a wide range of outputs and high maintenance - they are managed and monitored by highly sophisticated electronic systems, engineered and supplied by BONO ENERGIA specifically for District Heating applications - characterise these two new plants, which have significantly contributed to the extension of the DH networks of Brescia and Bergamo. Complete satisfaction was declared by ASM for the product performances and for the services offered by BONO ENERGIA.

Another winning example of technical ingenuity in a very challenging project. When the situation is really hot, you can count on BONO!

(www.bono.it)
Rigid Polyurethane foams are commonly used for the insulation of pipelines where hot or cold liquids are being conveyed through, because they minimise the exchange of heat within the pipe and surrounding environment. The main applications of rigid foam insulated pipes are chemical plant construction, District Heating and oil and gas pipelines. Various technologies are used to apply foams to the pipes, according to their sizes and applications. Cannon have developed suitable solutions for all the needs, providing high foam quality and efficient methods of distribution.

Rigid Polyurethane foams, used for the insulation and protection of pipes for more than 30 years, are now more extensively used than ever. Thanks to their outstanding performances and ease of application they are progressively replacing other insulating media. The most popular areas of use are:
- District Heating systems
- oil and gas pipelines
- heating services for power stations, chemical plants and refineries

Polyurethane foam's superior insulation properties prevent heat loss or maintain temperatures in cold environments to prevent freezing. The energy savings and cost improvements increase the cost efficiency of customers' fluid distribution lines. If we add their high mechanical strength, excellent adhesion, flexibility and good resistance to thermolability, required to perfectly fill the cavity around the pipe section, we understand why this reliable, efficient and long-lasting material quickly gained the favour of so many contractors and end users.

Polyurethane foams can be efficient over an extremely wide range of temperatures, from the extreme cold of cryogenic applications, where temperatures can be as low as -196°C, to an intense heat approaching 150°C. According to the needs, insulated pipes' dimensions stand in a range from 10 mm to 12 cm of small plumbing pipes, up to 2,000 mm diameters of the largest heating pipes. Insulation thickness vary accordingly, up to 200-250 mm for the most severe working conditions.

Pipe manufacturing techniques

In order to assure the best possible insulation to a vast array of pipes, different in diameter, length and type, various application techniques have been developed and applied, and both discontinuous and continuous manufacturing processes are applied.

Continuous manufacturing

In continuous production methods – adapt to large pipes produced in huge quantities – foam is applied to the inner pipe either by a moulding or a spray operation. Then an external protecting pipe is extruded or wound around a quasi-foamable pipe. Cannon supplied recently complete plants for both moulding and spray techniques.

A major Austrian manufacturer of small pipes (the inner tubes having a diameter of 10 to 12 cm) installed a continuous pouring system based on one high-pressure multi-component dosing unit able to produce in rapid sequence pipes insulated with foams of different densities and characterized by different reaction and rise profiles. Foam is applied on the moving pipes, over a flexible protecting film which is unrolled under the steel tube and is immediately "wrapped" around it when the foam starts rising. The pressure exerted by the rising foam is contained using a "wrapped" around it when the foam starts rising. The pressure exerted by the rising foam is contained using a pneumatic closed-loop controlled device acting in real time on the head's nozzles position. The computerised flow control monitors the performance of the pumps every few milliseconds, and immediately reacts to any deviation from the set values commanding a readjustment of the relevant nozzle on the mixing chamber. This guarantees that the mixing operation, occurring just before the spray nozzle, is performed at constant values of pressure, for a repeating and precise application of the foam.

In all cases, the winning factor to get the contracts was the availability of a spray head able to minimise the overspray rate: this term refers to the amount of foam which gets lost around the pipe during the application of the spray pattern. The absence of air while forming the spray pattern helps in optimising the projection over the target and in obtaining a very regular thickness of foam across the whole sprayed surface. Superior foam quality and reduced overspray – compared with their existing foaming equipment – were immediately noticed by all the clients, when foaming trials were executed in Cannon Afros R&D labs in Italy.

All these supplies are characterised by high-pressure metering machines, able to supply up to 40 kg per minute of rigid foam, dedicated – and recently developed – L-shaped spray heads, their supports and all the ancillary equipment required by an automatic foaming process: this includes the ReCo Air system, a pneumatic closed-loop controlled device acting in real time on the head's nozzles position. The computerised flow control monitors the performance of the pumps every few milliseconds, and immediately reacts to any deviation from the set values commanding a readjustment of the relevant nozzle on the mixing chamber. This guarantees that the mixing operation, occurring just before the spray nozzle, is performed at constant values of pressure, for a repeating and precise application of the foam.

In the past year several large spray machines for the continuous pouring application, for the continuous manufacturing of pipes for more than 30 years, are now more extensively used than ever. Thanks to their outstanding performances and ease of application they are progressively replacing other insulating media. The most popular areas of use are:
- District Heating systems
- oil and gas pipelines
- heating services for power stations, chemical plants and refineries

In continuous production methods – adapt to large pipes produced in huge quantities – foam is applied to the inner pipe either by a moulding or a spray operation. Then an external protecting pipe is extruded or wound around a quasi-foamable pipe. Cannon supplied recently complete plants for both moulding and spray techniques. The pressure exerted by the rising foam is contained using a pneumatic closed-loop controlled device acting in real time on the head's nozzles position. The computerised flow control monitors the performance of the pumps every few milliseconds, and immediately reacts to any deviation from the set values commanding a readjustment of the relevant nozzle on the mixing chamber. This guarantees that the mixing operation, occurring just before the spray nozzle, is performed at constant values of pressure, for a repeating and precise application of the foam.

In all cases, the winning factor to get the contracts was the availability of a spray head able to minimise the overspray rate: this term refers to the amount of foam which gets lost around the pipe during the application of the spray pattern. The absence of air while forming the spray pattern helps in optimising the projection over the target and in obtaining a very regular thickness of foam across the whole sprayed surface. Superior foam quality and reduced overspray – compared with their existing foaming equipment – were immediately noticed by all the clients, when foaming trials were executed in Cannon Afros R&D labs in Italy.

Thanks to the application methods, the continuous foaming technologies allow for consistent production and a regular saving in materials: filling densities can be optimised, and foam overpacking is not necessary. Applying an external casing over a stabilised foam also considerably reduces the thickness of the outer plastic layer, thus providing a further cost saving.

Spray foam machines with airless spray heads are successfully employed in Middle East, India and Emirates for the insulation of pipes for Oil and Gas applications.
Panel industry: good news from Germany

When experience meets innovation

Complex plants for the production of insulation sandwich panels have a long tradition at Cannon. Experience counts! But this does not exclude innovations. Far from it! Fully developed basics are providing sufficient space for innovative solutions. In collaboration with one of the most famous European manufacturer of doors, frames and gates, the Hörmann KG, Cannon developed a highly-efficient, automatically working and compact press line for the foaming and gluing of door panels in various dimensions and designs. Cannon and their partner Manni faced up to this challenge. (www.cannon-deutschland.com)

The job: door panels, pre-assembled in various thicknesses and various dimensions in length and width, have to be manufactured automatically. Two different technologies - gluing and foaming - should be applied alternatively although these processes require different parameters. Closing force, temperature, opening daylight and last but not least the cycle time had to be adapted to the particular technology.

Cannon with their location Cannon Deutschland GmbH at Hanau and the family-owned enterprise Manni at Mantova, Italy - specialised in the manufacturing of presses - catch on the long-time in-house experience in the production of dosing units and presses and combined these with innovative ideas. And in collaboration with the technological experiences of the customer this combination could be ideally realised.

A multi-layer automatic press guarantees high productivity to this foaming plant for insulated domestic doors.

From module to plant

Complex plants for the production of sandwich panels built in modular concept are in the long lasting top 10 of applications at Cannon. Whether high-pressure machines of series Cannon A-Compact or A-System will be used - single or in combination with Manni panel presses - depends on the requirements of the customer.

The modular design is approved since many years. Complex plants for the production of sandwich panels in combination with two panel presses type Manni 2+2, 6,500 mm x 1,600 mm, in modular concept for the company Koma located in the Netherlands. The manufacturer of cooling cells with its wide range of products produces panels consisting of foam core and metal cover sheets in different lengths, widths and thicknesses on the new Cannon plant.

A high pressure dosing unit Cannon A-Compact 100 FC equipped with two mixing heads is feeding the two presses with the relevant PU mix. Either Manni presses are using the well approved shuttle principle performing its reliability and multiplicity. In total eight press platens are providing the necessary capacity.

Not less than eight panels are distributed onto four press platens inside the press. All press tables are temperature controlled and can be used differently. During the polymerisation time the other four press tables are waiting outside to be unloaded, cleaned and prepared for the next cycle.

By a special "lock-in-system" it is possible to fix existing foaming cassettes onto the press tables and use them as well. A multitude of cassettes are stored inside a cassette stocking system and will be provided upon request. On demand they can also be preheated. In total there are nearly 60 cassettes in process or in stand-by. Pouring will be done into the closed mould. Using motorised mixing head manipulators the work load for the operators is minimized. The show stopper is a 180° swivel arm, which allows the feeding of single moulds for small cabinets.

The Cannon plant works in semi automatic operation and is controlled via PLC. Correspondent interfaces - touch screen panels - allow an optimum overview of the single process steps to the operators and access to the production parameters if to be changed.

Press plants for the semi automatic foaming of panels, configured out of Cannon and Manni modules by concurrent integration of specific foaming cassettes of the customer, offer a high flexibility. Due to the close collaboration the customer can use the Cannon developments targeted and effective to increase his productivity. Cannon has completely convinced Koma of the new press plant design.

In a position upside the automatically working mixing head manipulator makes sure the exact and monitored feeding of the programmed quantity of foam into the cavity. Size and position of the feeding hole are controlled visually. A frequency controlled high pressure dosing unit of the A-Compact FC series is responsible for the correct mixing ratio and a repeatable mixing quality.

The used mixing head type Cannon FPL 14 HP with its special geometry ensures not only a high mixing quality but also a low-maintenance, self cleaning process. To overcome integrated parts inside the door panel has been a particular challenge to the length of the mixing head nozzle.

This efficient working press line for the fully automatic foaming of pre-assembled door panels with highest flexibility to the process optimisation offers much space to the Hörmann KG to reach their targets.

Experience coupled with innovation releases synergies, which appeared to Cannon's customers.
Cannon’s Trio 7 high-pressure mixhead has exceeded 750,000 shots in continuous operation at Chrysler LLC’s Windsor, Canada assembly plant. The Trio 7 is one in a family of Cannon mixheads designed with three internal chemical passages enabling optimized mixing of high ratio, high viscosity polyurethane chemistries. Cannon’s Trio 7 is deployed directly within Chrysler’s automotive assembly line operations where dependable operation is a strict requirement.

Not only has the Trio 7 mixhead design proven robust in continuous high-volume manufacturing operation, but has also demonstrated superior mixing quality of the high-ratio acoustic Polyurethane foam used in automotive cavity filling. This formulation is based on a pre-polymer which features a mixing ratio well-off the conventional one: a precise 24:1 proportion between the two components must be guaranteed!

To increase the processing difficulty we must add that the formulation reacts and hardens almost immediately, and that these chemicals are extremely viscous and sticky, two very disturbing factors when considering the demanding work conditions of an automotive assembly line!

The Cannon Trio 7 mixhead has met Chrysler’s criteria for successful cavity filling and factory uptime.

Cannon USA automates memory foam pillow operation

The US market for memory foam bedding products is robust however increasingly competitive. Recently Cannon USA engaged with Sleep Innovations to design and install an automated production line for moulded memory foam pillows. For program success it was critical to develop a manufacturing solution that met desired volumes at the right cost and could be delivered rapidly.

Cannon USA met the challenge by delivering a turn-key solution comprised of mould carriers conveyed by turntables and carousels, robotic pouring, and high pressure metering systems. Some key elements of the equipment are:

- Mould carrier interchangeability between turn-tables and carousels
- Both hot water and IR mould heating capabilities
- Simplified connection and distribution of utilities
- Programmable line speeds
- Robotic application of mould release and PU pouring
- Automatic identification of mould carrier and type - programmable pouring parameters

According to Paolo Spinelli, President of Cannon USA, “The Cannon Trio 7 mixhead has exceeded initial expectations for mechanical wear and life properties”. Cannon USA and Chrysler’s Windsor assembly plant are continuing to monitor and refine Trio 7 mixhead operation with even more aggressive expectations of exceeding 1 million shots before rebuild.

According to Steve Setzer (Vice President Operations, Sleep Innovations) “Cannon USA met all performance requirements for our new molding operation and more importantly ensured a timely installation of equipment critical to meeting our window for market entry”.

Presently Cannon USA continues to provide the necessary after-market support to Sleep Innovations to ensure uninterrupted operation. For both parties the project is viewed as highly successful.

With Cannon the Customer Sleeps Well!

Cannon USA specialised in the supply of mould-carrying carousels and turntables for memory foams, today widely demanded for their visco-elastic properties.
SoliSpray for innovative automotive Dash Insulators

The automotive industry increasingly requires superior noise insulation solutions to provide vehicles which must be acoustically comfortable and - at the same time - of lightweight and with ample spaces in the passenger’s compartment.

This article describes two applications for SoliSpray, the new Cannon technology for spraying highly-filled PUR formulations, developed for the manufacture of the Dash Insulator, a large passenger view under the instrument panel.

Several solutions have been applied to meet contrasting needs: high noise-insulation efficiency and low volume. Sandwiches of heavily-filled polymeric facings and flexible foams, felt-based mats, several combinations of synthetic and natural materials. Lightweight, expanded textile-based must provide an economic solution with medium-good noise insulation, but they steal space inside the cockpit and are prone to moisture absorption.

RRIM-based injected parts provide good sound-proofing but are made out of expensive chemicals as well as expensive production tools and presses.

Thermoformed combinations of heavy layers and various facings are a more labour intensive to obtain. Almost all the current production require expensive moulding tools, either because they must contain rising PUR foams or because they must be heated to provide thermofoaming high pressure.

An alternative, simpler solution was demanded by this very cost-aware industry. The matter was rather new also for experienced Raw Material Suppliers. A number of them - all the main players in this field - were exploring the many services crossing between the engine compartment and the passenger compartment: placed under the dashboard, these components permit the passage of the many services crossing between the engine compartment and the cockpit each passage must be precisely scaled, so the finishing with water jet cutting and the weight tolerance are a must. Not necessarily a part of constant thickness and not necessarily finishing with water jet cutting and the weight tolerance are a must.

When Cannon PUR R&D team was faced with the request of an alternative method to manufacture Heavy Layers for Dash insulators, the filled-spray alternative was immediately taken into consideration.

High mixing efficiency combined with the absence of splash - in presence of high percentages of solid fillers - are also very important features for a spray solution.

A number of technical constraints were there to be overcome, but the potential advantages of a "spray approach" immediately appealed the researchers:

- The possibility to eliminate half of the tools: a spray foam only requires the lower half of a mould, not being this a moulding or spraying process.
- The elimination of heavy and expensive mould carriers: simple ways should be required to carry the lower mould halves on which the foam will be sprayed.
- The possibility to apply layers of insulating material only where it is really required: the mould areas where it is unnecessary can be simply skipped during the spraying operation. Where more material is needed, a second, even a third "pass" can be applied when the former is sufficiently dried.
- The possibility to position plastic and metal inserts in moulds, which could either be manually or using robots, they are fully encapsulated by the foam.

INITIAL DEVELOPMENTS

A development project was initiated, to explore the limits of the available metering and mixing equipment and define the parameters for the optimum solution.

A piston-dosing Cannon 111 lab machine was specially modified and dedicated to this project, as well as a large portion of the R&D lab with a robot handling the spray head, a fully-enclosed spray cabin with forced ventilation of exhausts gases and all the necessary safety equipment.

A team of specialists - from various departments of the Company - was fully dedicated to this task for several months. First things first, a proper formulation had to be found.

To start with, also using the previous experiences with moulded formulations, a level of 50% of Barite on the total applied foam only required the lower half of a mould, not being this a moulding or spraying process.

The peculiar reology properties of fast and heavily filled formulations - that flow at a very low percentage, viscosity and specific gravity - for this case, these parameters are very critical - derive from other branches of the industry, particularly from the hydraulic science. An optimised stream of material was obtained, whose speed can reach well above 100 meter per second limit that transforms this flux of filled liquid almost in a water-jet cutting tool.

The possibility to position plastic and metal inserts in moulds, which could either be manually or using robots, they are fully encapsulated by the foam.
A specific projection angle was selected as the optimum one to guarantee complete control of the spraying pattern, allowing for a correct number of "passes" on the mould and for a minimum overlapping of foam between two contiguous strokes. After thorough development, helped by the use of a laser simulator which optimised the computer-programming of the spray patterns, the best results were achieved with an overlapping width lower than 5% of the stroke's width. The same design allowed to define a spraying distance from the spray head of max. 80 cm, to cover the widest range of requirements dictated by the smallest and the largest moulds used for this process.

**Cleaning the head** after the spray operation involved a number of practical considerations, mostly linked to the repetitiveness of results required by an industrial automated operation. The high material reactivity required the development of a small washing device which cleans the discharge duct and the spray nozzle with few grams of an ester-based cleaning agent, an environmentally friendly solvent recoverable by distillation.

**INDUSTRIALISATION OF THE PROCESS**

One Cannon prototype was set up on the lab machine, a second series of trials was organised and run using moulds of potential customers of this technology, and the results very soon proved that the development work had been successful.

A positive German industrial experience

One of the leading German manufacturers of sound decoupling systems for automotive applications - a Cannon customer for more than 25 years - required a solution for a large part they had to supply to BMW. A heavily filled formulation, based on Polyurethane Isocyanate (35 pbw), Polyol with amine-based catalysis (100 pbw) and Barite, was selected to produce a large Dass Insulator containing, in the final blend, 70% of solid filler. Seen in the pre-blending drum, the Polyol side looked like thick mud. The simple idea of spraying that mud puzzled a lot the development team. This blend was transferred to the Polyol tank using a special pump, and once there it was recirculated for thorough development, helped by the use of a piston-dosing high pressure metering unit, the new spray head, plus all the required ancillaries. This plant is in production in Germany since June 2008.

A positive Italian industrial experience

Adler is an Italian car part manufacturer belonging to a family group which owns similar plants in Italy, Poland, France, Brazil, Turkey and India. They provide all their customers in Fiat's plants based in southern Italy, Adler produces - among other parts - the Dash Insulator of the Grande Punto model. The fast reacting formulation, fine tuned after several sessions of industrial trials, allowed for a very quick sequence of "passes" over the mould, optimizing the cycle time and providing high productivity to the line. This high reactivity allows for the application of a uniform thickness of material also on the vertical slopes of the moulds dropping of liquid is minimized after its application over the mould surface, guaranteeing homogeneous layers of skin on each cross section of the insulating part.

A perfect skin, whose weight is around 6 kg (1.8 kg/sqm for each layer of one millimetre of thickness), guarantees a nice aspect for the external side of the piece and high adhesion for the flexible PU formulation which is poured over it a few seconds after the skin has dried. Says Lino Mondello, Adler’s Chief of the Engineering and Innovation Department: "It was not an easy learning, it was not as fast as we hoped, but now it is there and it works very fine. We supply extremely good parts made efficiently and this is what our customers - and we too - like most! This is what counts, today.»

**THE ADDDED VALUE**

What did Cannon achieve from this new SoliSpray development project? Quite a lot:

- **An industrial process**, currently in operation in Germany with 70% of Barite and in Italy with 50 to 65% of Calcium Carbonate.
- **An important saving in tooling**, if the process is applied without a subsequent back-foaming operation - because it can even avoid the use of mould carriers and cuts to less than half the investment in moulds. The larger the part, the more convenient the process results.
- **A high-quality finished part** characterised by uniform thickness and constant distribution of solids within the polymer, and by a very high differential between thick and thin parts, not obtainable with a moulding process.
- **A system usable for both a mass production of standard cars and for small series of large parts for trucks, buses and special vehicles.** All with the same equipment.

The development continues, and interesting developments are in the "boiler room" at the moment. Have a complex spray project in mind? Talk to Cannon: They Know How!

(cannon.com)
Adjustable plates and evolution of Cannon thermoforming machines

If you ever dreamed of having a thermoforming machine so...

• **Adjustable**: no extra tooling, just the mould...
• **Quick in tool change**: just slide the tool in and lock it in place!
• **Fast**: to produce all of that stuff by tomorrow!
• **With memory**: so it could remember all the settings of the last time you put in production that tool and the parts where so nice and thick from such a thin sheet...
• **Stable and precise**: that could repeat itself at every cycle, night and day, in summer and winter time...
• **Flexible**: vacuum or pressure forming, single sheet or double sheet, whichever thickness of whatever material!
• **Eco-friendly**: that makes use of the energy in a clever way!
• **Safe**: designed and built with all safety criteria in mind!
...then keep reading this article.

The new Luce - Italian for "light, brightness" - range of thermoforming machines by Cannon has been launched successfully on the market. It’s not a revolution, but an evolution that starts deep inside from the roots. And your dream might become true!

Adjustable plates
The main characteristics at the basis of this success are related to the flexibility and efficiency in tool change, as is so important for the customers. Cannon have developed a new patented system already in production by different customers around the world. Forget about the hassles of the dedicated reduction plates and finding the room to store them. Also no need of extra money invested in new tooling whenever you have a new tool for production.

This flexible system of plates slides to the desired mould size from 100% of the machine maximum size to a minimum of almost 50%. No loose pieces to dedicate the aperture to the mould size, simply reload the receipt of the part in the operator panel and the plates slide automatically.

With the Cannon system, also, do not make without all the features you need:
• **Stepless**, this system can be adjusted continuously along its whole range without having to add any part or frame. The top level of the plates is made in a way that the plastic sheet lays flat on the gasket that seals the vacuum chamber. The bottom level of the plates as well allows the mould to completely seal this chamber. This makes the system tight for balloon blowing and for vacuum forming.
• **Use the loading system that suites to your needs**: carriage loader or chain transport system. Spike chains can transport and allow two sides pre-heating or even heating out of the forming station, in a dedicated heating station. This feature is absolutely unique on the market, original and patented. No other builder of thermoforming machines is able to fit at the same time chain transport and adjustable plates!
• **Temperature control of the plates**: To avoid the machine getting too hot and to loose control of the perimetral edge of the parts and their flatness we can incorporate into the adjustable plates channels to let water flow or, when the case, oil to temperature-control the perimeter close to the boundary of the plastic part.
• **Possible automatic adjustment of the plates**: The operator can memorise in the operating panel the position of the plates and recall them during tool change...
• **Quick in tool change**: Cannon can offer the following features to those who are producing in small batches and need to change over the mould rapidly:
  • **All of above for adjustability**: Adjustment makes things quicker also because the machine can do it in hidden time (e.g. while the operator changes the pallet in the sheet loader).
  • **Fast tool change system**: automatic door opening, automatic loading of the mould, automatic connection of the mould to services (water or air).
  • **Two common mould plates**: one plate, many moulds. One plate in the machine with the mould in operation, another one to mount the mould off-line.
  • **Loader**: the plates slides out of the loader to position easily the pallet of the sheets.
  • **Double trolley**: for ergonomic mould-in mould-out, with mould pre-heating.
• **Quick heaters** for a fast change of the heating zoning (halogen, Speedium or quartz heaters).

Fast
Every movement in every second has been optimised. Tell us if speed is critical: we made moulds moving up to 1,000 mm/s! Fast cycles are actually more affected by heating and cooling.

Adjustable plates for faster adaptation of moulds – a unique feature of the new Cannon Forma Luce thermoformer.

Adjustable plates
The main characteristics at the basis of this success are related to the flexibility and efficiency in tool change, as is so important for the customers. Cannon have developed a new patented system already in production by different customers around the world. Forget about the hassles of the dedicated reduction plates and finding the room to store them. Also no need of extra money invested in new tooling whenever you have a new tool for production.

This flexible system of plates slides to the desired mould size from 100% of the machine maximum size to a minimum of almost 50%. No loose pieces to dedicate the aperture to the mould size, simply reload the receipt of the part in the operator panel and the plates slide automatically.

With the Cannon system, also, do not make without all the features you need:
• **Stepless**, this system can be adjusted continuously along its whole range without having to add any part or frame. The top level of the plates is made in a way that the plastic sheet lays flat on the gasket that seals the vacuum chamber. The bottom level of the plates as well allows the mould to completely seal this chamber. This makes the system tight for balloon blowing and for vacuum forming.
• **Use the loading system that suites to your needs**: carriage loader or chain transport system. Spike chains can transport and allow two sides pre-heating or even heating out of the forming station, in a dedicated heating station. This feature is absolutely unique on the market, original and patented. No other builder of thermoforming machines is able to fit at the same time chain transport and adjustable plates!
• **Temperature control of the plates**: To avoid the machine getting too hot and to loose control of the perimetral edge of the parts and their flatness we can incorporate into the adjustable plates channels to let water flow or, when the case, oil to temperature-control the perimeter close to the boundary of the plastic part.
• **Possible automatic adjustment of the plates**: The operator can memorise in the operating panel the position of the plates and recall them during tool change...
• **Quick in tool change**: Cannon can offer the following features to those who are producing in small batches and need to change over the mould rapidly:
  • **All of above for adjustability**: Adjustment makes things quicker also because the machine can do it in hidden time (e.g. while the operator changes the pallet in the sheet loader).
  • **Fast tool change system**: automatic door opening, automatic loading of the mould, automatic connection of the mould to services (water or air).
  • **Two common mould plates**: one plate, many moulds. One plate in the machine with the mould in operation, another one to mount the mould off-line.
  • **Loader**: the plates slides out of the loader to position easily the pallet of the sheets.
  • **Double trolley**: for ergonomic mould-in mould-out, with mould pre-heating.
• **Quick heaters** for a fast change of the heating zoning (halogen, Speedium or quartz heaters).

Fast
Every movement in every second has been optimised. Tell us if speed is critical: we made moulds moving up to 1,000 mm/s! Fast cycles are actually more affected by heating and cooling.

If you ever dreamed of having a thermoforming machine so...

• **Adjustable**: no extra tooling, just the mould...
• **Quick in tool change**: just slide the tool in and lock it in place!
• **Fast**: to produce all of that stuff by tomorrow!
• **With memory**: so it could remember all the settings of the last time you put in production that tool and the parts where so nice and thick from such a thin sheet...
• **Stable and precise**: that could repeat itself at every cycle, night and day, in summer and winter time...
• **Flexible**: vacuum or pressure forming, single sheet or double sheet, whichever thickness of whatever material!
• **Eco-friendly**: that makes use of the energy in a clever way!
• **Safe**: designed and built with all safety criteria in mind!
...then keep reading this article.

The new Luce - Italian for "light, brightness" - range of thermoforming machines by Cannon has been launched successfully on the market. It’s not a revolution, but an evolution that starts deep inside from the roots. And your dream might become true!

Adjustable plates
The main characteristics at the basis of this success are related to the flexibility and efficiency in tool change, as is so important for the customers. Cannon have developed a new patented system already in production by different customers around the world. Forget about the hassles of the dedicated reduction plates and finding the room to store them. Also no need of extra money invested in new tooling whenever you have a new tool for production.

This flexible system of plates slides to the desired mould size from 100% of the machine maximum size to a minimum of almost 50%. No loose pieces to dedicate the aperture to the mould size, simply reload the receipt of the part in the operator panel and the plates slide automatically.

With the Cannon system, also, do not make without all the features you need:
• **Stepless**, this system can be adjusted continuously along its whole range without having to add any part or frame. The top level of the plates is made in a way that the plastic sheet lays flat on the gasket that seals the vacuum chamber. The bottom level of the plates as well allows the mould to completely seal this chamber. This makes the system tight for balloon blowing and for vacuum forming.
• **Use the loading system that suites to your needs**: carriage loader or chain transport system. Spike chains can transport and allow two sides pre-heating or even heating out of the forming station, in a dedicated heating station. This feature is absolutely unique on the market, original and patented. No other builder of thermoforming machines is able to fit at the same time chain transport and adjustable plates!
• **Temperature control of the plates**: To avoid the machine getting too hot and to loose control of the perimetral edge of the parts and their flatness we can incorporate into the adjustable plates channels to let water flow or, when the case, oil to temperature-control the perimeter close to the boundary of the plastic part.
• **Possible automatic adjustment of the plates**: The operator can memorise in the operating panel the position of the plates and recall them during tool change...
• **Quick in tool change**: Cannon can offer the following features to those who are producing in small batches and need to change over the mould rapidly:
  • **All of above for adjustability**: Adjustment makes things quicker also because the machine can do it in hidden time (e.g. while the operator changes the pallet in the sheet loader).
  • **Fast tool change system**: automatic door opening, automatic loading of the mould, automatic connection of the mould to services (water or air).
  • **Two common mould plates**: one plate, many moulds. One plate in the machine with the mould in operation, another one to mount the mould off-line.
  • **Loader**: the plates slides out of the loader to position easily the pallet of the sheets.
  • **Double trolley**: for ergonomic mould-in mould-out, with mould pre-heating.
• **Quick heaters** for a fast change of the heating zoning (halogen, Speedium or quartz heaters).

Fast
Every movement in every second has been optimised. Tell us if speed is critical: we made moulds moving up to 1,000 mm/s! Fast cycles are actually more affected by heating and cooling.

If you ever dreamed of having a thermoforming machine so...

• **Adjustable**: no extra tooling, just the mould...
• **Quick in tool change**: just slide the tool in and lock it in place!
• **Fast**: to produce all of that stuff by tomorrow!
• **With memory**: so it could remember all the settings of the last time you put in production that tool and the parts where so nice and thick from such a thin sheet...
• **Stable and precise**: that could repeat itself at every cycle, night and day, in summer and winter time...
• **Flexible**: vacuum or pressure forming, single sheet or double sheet, whichever thickness of whatever material!
• **Eco-friendly**: that makes use of the energy in a clever way!
• **Safe**: designed and built with all safety criteria in mind!
...then keep reading this article.

The new Luce - Italian for "light, brightness" - range of thermoforming machines by Cannon has been launched successfully on the market. It’s not a revolution, but an evolution that starts deep inside from the roots. And your dream might become true!

Adjustable plates
The main characteristics at the basis of this success are related to the flexibility and efficiency in tool change, as is so important for the customers. Cannon have developed a new patented system already in production by different customers around the world. Forget about the hassles of the dedicated reduction plates and finding the room to store them. Also no need of extra money invested in new tooling whenever you have a new tool for production.

This flexible system of plates slides to the desired mould size from 100% of the machine maximum size to a minimum of almost 50%. No loose pieces to dedicate the aperture to the mould size, simply reload the receipt of the part in the operator panel and the plates slide automatically.
Flexible
Your parts may require several technologies of thermoforming (i.e. vacuum or pressure forming, twin sheet) but none of them justifies completely an investment as the numbers are too low? Cannon can propose the machine that can within minutes convert from single sheet to double sheet or to pressure forming.

Eco-friendly
With Cannon solutions you can save energy and material, thanks to:
• Reduced clamping area (less scrap)
• Halogen heaters for better efficiency: save up to 25%
• Halogen heaters are completely off in rest position (96% of the cycle time)
• Reflective panels and parabolas to dissipate the minimum of energy
• Servo motors for maximum efficiency

Do not make steps: take the Cannon Luce elevator! Come and see it in production at our customers’ place. (www.cannonforma.com)

What can I do with Twin Sheet thermoforming?

Shoe soles!

An American athletic sportswear manufacturer makes some million shoes per year, half of it have an light sole, i.e. with a labyrinth cavity inside the sole filled with air to better absorb the impact of a foot slamming against the floor, while to keep its spring longer. What’s more, being lighter than a solid material, it increases the shoes performance, particularly crucial to runners worried about heavy shoes slowing them down.

This air cushioning innovation has become the most important competitive edge issue and all shoe manufacturers are fighting to find their own ideal solution on this specific subject.

Because of customer’s know-how and developments, the shoe soles have an high degree of technological and intellectual property contents.

Shoe soles were mainly produced in the past using the injection moulding technology, by injecting gas inside the sole material; alternatively by extrusion blow moulding.

A few years ago the American company changed its product design by switching to the so-called “twin-sheet thermoforming” technique. With this technology, two sheets of thermoplastic material are processed at the same time, formed and joined together to produce a hollow part.

To see cushion their shoe soles originally they used the “SFV”, a super-potent greenhouse gas belonging to the same CFC family, dangerous for the environment, but which was ideal because of its large tightly bound molecules rarely leaking after being injected into the plastic pocket attached to the heel. The reason why they switched to thermoforming technology was to replace this large molecule gas with the safer air, that is not harmful, but its smaller molecules break apart more easily and leak. Should gas leak out of the shoe sole, the shoe would lose its performance. They have to use many technological thermoplastic based plastic layers sealed one to the other to get these results.

With the injection moulding process you can do it, neither with blow moulding. Instead the plastic layers, extruded in the right package of different plastic material, can be later sealed together with a twin-sheet thermoforming process to form the final shape.

How did Cannon Forma win the order?

The idea became reality with Forma’s expertise. After making the plants to produce every day fuel tanks to equip 2.600 Volkswagen Passats, Cannon is certainly reputed as the specialist in twin sheet.

Cannon Forma Luce 3015, all-electric thermoforming machine with halogen heaters, for high-flexibility industrial thermoforming applications, handling sheets up to 3x1.5 m

• Heating: the best option today on the market is the Speedium heating element. It gives its most on black, orange peel surfaces of polyolefins, but generally its outperforming ceramic and even quartz elements.

At Cannon we have characterised the elements against several material types and can suggest the best option.

• Cooling: chilled air can be added to standard or increased power of fans at variable speed, spray mist and local cooling

Memory
If the machine remembers its settings (and you know how many parameters there are in thermoforming and how fine must be the setting to get the right quality) then tool change can be really quick: being able to recall the proper setting is the only way to get a low part-to-part time. Using proportional valves the operator can set the values and recall them at the next tool use. With servo movement one can store also speeds (useful especially during mould extraction) and strokes.

Of course all the setting of the heating system can be saved as before with the Siemens heating controller.

Stable and precise
Proper machine design and construction can obtain good results by protecting the mechanical parts from overheating during long shifts, but this is important also for stability of the machine behaviour part after part.

Our machine have heating reflectors to disipate heat and mould box venting. Heat is reflected to the sheet while heating while the heaters do not work, heat is reflected back to the heaters, with the double result of saving more energy and warming up less the machine.

From this point of view, it’s worth to mention that halogen lamps can be switched on and off in seconds: this means that in idle time they are completely off and avoid any heat build up. Ask us about this specific behaviour and we’ll be able to show you results and comparisons. Stability is also achieved when the performance of the heating system are completely under control.

Cannon can offer a “live” close loop control, based on the real temperature of the plastic sheet while heating.

This is something completely new: no more “closed loop” on the next sheet with a thermo graphic scanner (that’s not a real temperature of the plastic sheet while heating).

This is something completely new: no more “closed loop” on the next sheet with a thermo graphic scanner (that’s not a real temperature of the plastic sheet while heating).

The Cannon “live” close loop control can let the plastic sheet follow a preset curve of heating adapting the power of each heating element independently to the real temperature of the plastic sheets in every instant during the heating cycle.

In this way the operator is able to record the master curve of heating, of the best sample and the heating control will try to reproduce it on the next parts.

Talking about stability and precision, the servo motor solution are the best solutions to guarantee positions and speeds always repeatable.

Quick set-up of new tools.
Cannon software includes a number of friendly short cuts to make a new good part program in very short time. Try it!
Power from the spirit

Well, this is not exactly a spiritual subject. Not even a fully correct title, in strict terms: the spirit is all recovered, in fact, and the power comes from what’s left after the spirit has left the body… Oh boy, too many drinks? What are we talking about?

We are talking about a very interesting story: how to get Tartaric Acid and its salts, pure Alcohol, electric power and steam by getting rid of a mountain of residues and by-products of the wine industry.

The nice story is told every day by Villapana SpA - a Company of the Giovanni Randi SpA Group - leading Italian manufacturers of Tartaric Acid and Ethyl Alcohol based in Faenza, Italy.

If you do manufacture “natural” foodstuff – wine, bread, pastries, baked products - you need to use only “natural” additives, otherwise you commit a fraud. The Randi Group supplies these “natural” products, 100% coming from grapes or wine residues, since 1969. Their factories in Italy, Australia, Argentina, California and Spain buy spent grape husks (the “marcs”) and residuals of the wine fermentation (the “lees”), which are rich in natural Calcium Tartrate and raw tartar.

After a complex series of chemical and physical treatments of these marcs and lees a number of pure chemicals (Tartaric Acid, Metatartaric Acid, cream of tartar, Rochelle Salt, Potassium Tartrate, pure Ethyl Alcohol) are obtained, to be sold to the food, beverage, pharmaceutical, mechanical and electronic industries.

These operations leave a mountain of residuals: only the Villapana plant generates more than 36,000 tons per year of wet husks, a bulky by-product quite difficult to ignore!

What to do with that stuff?

The Randi family – four brothers and sisters managing and developing the Group since their father’s death in 1993 – contacted Bono Sistemi – the Cannon Group Company dealing with environmental and energy-recovery solutions – to get a proper proposal.

Bono Sistemi evaluated the chemical-physical properties of the raw materials and the needs of the Villapana plant, conceived an appropriate recovery solution and submitted their thoughts for a preliminary evaluation.

The proposed solution was accepted, after a constructive discussion and the relevant modifications to the project, and the contract was signed. The plant was built in less than 14 months, and is now in full operations in Faenza, the Italian town well known not only for their ceramic tiles and vases (the “Faiences”) but also because it’s Italy’s most important district for the distillation of fruits and agricultural residuals.

What’s the matter, then?

The matter of the fact is that the wet residuals of the extraction of Tartaric salts and alcohol are fed at a rate of 5 tons/hour to a customised biomass-fired steam generator. Here they fall on a large moving grate where – using very hot combustion air – they are fully burnt to ashes. Only in the start-up phase of each cycle the burner uses locally-produced natural bio-gas, deriving from fermentation processes run in another part of the plant, to warm up the combustion chamber: when the optimum temperature has been reached the combustion continues spontaneously using the grape’s residuals as the only fuel.

The combustion generates hot fumes, which are sent through a large heat recovery boiler: here, flowing through a forest of steel pipes where pure water is recirculated, they release their heat which vaporises the water and produces steam. Lots of steam, that is sent at high pressure to a large turbine, where it produces 1.3 MW of power.

Not bad, right?

Then the same saturated steam, which still has a lot of energy to give away, is sent through a well-insulated pipeline to the nearby alcohol distillery, where it is used to extract natural Ethyl Alcohol from a bland hydro-alcoholic solution coming from the marc’s washing line.

The deriving alcohol, 96.5 % proof, is the basic component of liqueurs, spirit preserves, disinfectants etc.

In figures: 36,000 tons a year of residues generate 1.3 electric MW of power (used in the plant and sold to the national power grid) and 12 thermal MW under the form of saturated steam (used in the distillery).

This means an average 70.5% of global efficiency, out of wet grape’s marcs and wine’s lees.

Then the same saturated steam, which still has a lot of energy to give away, is sent through a well-insulated pipeline to the nearby alcohol distillery, where it is used to extract natural Ethyl Alcohol from a bland hydro-alcoholic solution coming from the marc’s washing line.

The deriving alcohol, 96.5 % proof, is the basic component of liqueurs, spirit preserves, disinfectants etc.

In figures: 36,000 tons a year of residues generate 1.3 electric MW of power (used in the plant and sold to the national power grid) and 12 thermal MW under the form of saturated steam (used in the distillery).

This means an average 70.5% of global efficiency, out of wet grape’s marcs and wine’s lees.
A massive furnace, nesting a burning grate exclusively designed by Bono Sistemi for this natural fuel, is covered and hidden by the ancillary equipment required to let the plant go: the heat recovery boiler, a sophisticated de-aerator for the boiler’s feed water, a large pre-heater for the combustion air, a very large treatment system to capture and separate all the solid particles contained in the combustion flue gases.

During a plant’s presentation given to the Cannon Group’s top management last December by Enrico Randi, Managing Director of Villapana SpA, one of the most significant statements was “We have been absolutely amazed by the quality of the human relationship that has been created with the personnel of Bono Sistemi during all phases of this deal, stemming from the preliminary evaluation of a radial solution till the start up of a running plant. We are delighted not only with the equipment that has been delivered, but with the people we are dealing with.”

Need more satisfaction? We don’t. The statement speaks for itself.

Thank you, the “Randi family”, it was a pleasure helping you to achieve this environmentally-friendly example of clean energy production from a widely available renewable source. We hope we can repeat the same exercise in the other plants you have around the world!

Don’t you know what to do with your agricultural or wood residues? Talk to Bono Sistemi, they can share with you a few smart ideas.

The Heineken Group, founded in Amsterdam in 1863, is today one of the world largest breweries and definitely the 1st one in Europe. With more than 115 plants all over the world, Heineken sells more than 170 different beer brands, both on an international and local basis. Several Heineken production plants located in Italy – where their distributed brands are Heineken, Birra Moretti, Dreher, Ichnusa and Budweiser – are equipped with BONO ENERGIA boilers: in Pollein, Aosta, since the beginning of the 1990s two fire-tube steam generating boilers are STEAM MATIC SG Series (with a total capacity of 30 t/h) have been working, while in Comun Nuovo, Bergamo, in the plant originally running the “Von Wunstert brand, four fire tube boilers are installed for total thermal capacity of 24 million kcal/h.

The improvement of the pasteurisation process and the increased production in Comun Nuovo’s plant required the installation of two new generators, able to satisfy both the steam and superheated water requirements, bringing innovative process features as key elements of the enhanced technology.

Heineken has confirmed the choice of BONO boilers, with a couple fire tube boilers STEAM MATIC SG Series, whose features of high efficiency and reliability had been appreciated in Comun Nuovo’s plant since the early 1970s. The STEAM MATIC boiler supplied by BONO can produce simultaneously steam and superheated water by means of a heat exchanger, for a total capacity of 11,000,000 kcal/h; natural gas or fuel oil firing is realized according to the current emission regulations, thanks to the original and innovative combustion system CIC-LO-NOX.

The first fire tube boiler, with an innovative water-wall type screening and featuring a built-in air pre-heater, ensures an overall efficiency over 94% at any burner load.

The second STEAM MATIC fire tube boiler also features an innovative water wall screening and it’s used for the production of superheated water, providing a thermal output of 9,000,000 Kcal/h. It has completed the renovation and the expansion phase of Comun Nuovo’s plant.

Both boilers are equipped with the latest version of the integrated electronic control system SPARK, consisting of three modules:

- OPTI integrated electronic system controlling all the regulations of the boiler (pressure or temperature loop, water level, combustion, alarms, remote control).
- AMEC integrated electronic system for the monitoring, recording and regulation of the flue gases complete with optimisation of the combustion parameters related to the oxygen content.
- SAFE electronic system for the monitoring and control of the boiler working conditions, allowing the boiler to be left unattended up to 24 hours according to the PED European directive 97/23/CE.

Heineken has appreciated the consistency, reliability, and the innovation of BONO’s boilers, confirming that BONO ENERGIA is able to match the typical requirements of an industrial production with the most advanced control and integration technologies.

Another success emphasizing BONO’s presence in the food & drink processing industry and notably in the beer sector, thanks to its reliable, innovative and environmentally-compliant products.

BONO ENERGIA has found the right brew!
Cannon JL, an industrial success!

The first year of industrial use for the new Cannon JL confirmed – and sometimes even exceeded – the promised expectations. Manufacturers of domestic refrigerators, insulation panels, refrigerated displays and cold stores obtained significant advantages in terms of reduced consumption of chemicals, better foam quality, more regular distribution of densities within their products. The innovation continues now in the direction of a wider range of blowing agents and applications.

The Cannon JL is a new family of high pressure L-shaped mix heads. The acronym JL means “Jet Less”: the mixing of the two reactive liquids is not obtained by their impingement through the action of two injectors but by the high turbulence formed and maintained in a relatively narrow mixing chamber. The liquid components are metered in a common chamber and then flow to the mixing chamber through variable restrictions where they acquire the necessary energy. At the end of the mixing chamber an L-shaped geometry deviates the flow into a much larger delivery chamber, slows down its turbulence and permits the delivery of the mixed blend with a very laminar flow.

How does it work?
The mixing of at least two fluids is normally performed through turbulence, which can be created with static mixers, dynamic mixers, high speed of the streams and jets, impingement of jets and streams. All of them try a different way to maintain a high level of energy dissipation throughout shear into the fluid. Cannon latest innovation in this field consists in generating high turbulence by decreasing the size of the mixing chamber enough to generate a flow speed of ten to meters per second and by using the front shape of the cylindrical piston which seals the mixing chamber to create high shock restrictions. This innovation produced the Jet Less head, a mixing head whose L-shape geometry permits as usual to reduce the turbulence of the flow exiting from the mixing chamber and to pour it in laminar form.

Long nose… but reliable!
The JL features a long and wide discharge duct, whose main purposes are to damp the high speed and turbulence of the stream, to perform a final mixing and to smooth down the whirling of the stream. Leaving the head the stream becomes laminar and can flow out into the mould with the ideal behaviour. Its length enables to reach very deep injection points. The up and down movement of the self-cleaning rod opening and closing the discharge duct removes and pushes out the foam residuals still in the pouring chamber, stripping out the reacted film from the walls. In the mean time the rod is acting like a pump for flushing and re-circulating a small quantity of lubricant oil, contained in a small spacer chamber built behind it. The relatively small sliding surface of the rod prevents the sticking of the surfaces and permits the use of a slim cylinder so the size and weight of the mix head are reduced, to be ergonomically handled also for manual operations.

The first Cannon JL head available on the market is the model JL 24/6, featuring a 200 mm long discharge duct, with an internal diameter of 24 mm and a mixing chamber diameter of 6 mm. This head – whose total output ranges from 300 to 2000 cc/sec - initially works with two components but more streams can be easily added. The wide range of output handled by this head, where no jets need to be adjusted when one significantly changes the output, imply that one size easily fits most of the conventional needs expressed by different industries and applications – therefore, within reasonable limits, there is no need for different heads to allow for the production of different parts.
The most interesting operating feature is its working pressure: from 70 to 210 bar, allowing for a simplification of the dosing unit (pump type, filters, hoses, etc.).

Advantages
The new Cannon JL head delivers several advantages:
• a mixing method much more efficient than the traditional impingement: the higher efficiency has been computer-studied and simulated, and confirmed by field tests
• the mixing pressure can be reduced to 70-80 bar depending from the chemicals. This allows for the simplification of the whole metering circuit (pump, filters, hoses etc)
• a very long range of flow rates can be handled by the same mixing chamber: the maximum output can be five times higher than the minimum
• it does not demands skilled operators to set the head’s injection conditions: an easy setting of the central needle suits a variety of flow rates: pre-positioning of different values can be done manually or in automatic mode
• a very long discharge duct (patented) can enter pouring holes very difficult to access, and guarantees a laminar flow even at high flow rates perfectly suitable for discontinuous insulation panel and for pipe-in-pipe insulation.
• the use of the thin and long cleaning rod is mostly appreciated when using very sticky formulations
• the internal geometry allows for a better handling of foams expanded with high-frothing blowing agents such as low-boiling Hydrocarbons, certain HCFCs and natural liquid CO2

New models are now being prepared for future applications, in addition to those mentioned before: if you like the advantages, contact the nearest Cannon office. A JL mixhead can bring you significant advantages and savings!

The distribution of foam in a refrigerator is improved since the liquid can be deposited at a longer distance from the injection hole and starts rising from a central position of the cabinet.

The mixing efficiency is obtained by speed and turbulence, not by pressure.

Industry success stories
These heads have been industrially tested with rigid and flexible foams for more than one year and with frequent shots (up to 60,000 in one month), with full satisfaction. Several European manufacturers of installing panels, domestic refrigerators, cold stores and refrigerated displays are currently using it with full satisfaction.

An Eastern-European major supplier of domestic refrigerators has already ordered a second head, after having successfully tested a first one for one year and hundreds of thousand of shots - to be used for the production of large models characterized by a long filling path and difficult internal design. Using Cyclopentane and Isobutane-blown foams, this firm has measured a standard reduction of 2 percentage points of specific density maintaining all the previous physical and mechanical properties. At a very high annual consumption rate of chemicals, and considering their high unit cost, even a marginal saving like this helped this customer to pay back the investment in this new head in a very short time.

An Italian producer of cold stores and walk-in coolers that works with HFC 134a reported a much better planarity in its panels, due to superior distribution of densities thanks to a better foam quality. A reason for this can be the head’s capacity to “shoot” the liquid at a higher distance than that usually obtained with a standard L-shaped head. This allows for a more uniform geometrical distribution of the formulation within the cavity, without the need for overpacking the foam just to be sure that the whole panel will be filled.

Another Italian producer of refrigerated displays started using it early in 2001 and has made until now nearly 70,000 injections: he reported significant improvements in filling complex panels, reducing slightly the injected weight and getting a finer cell structure, with improved insulation factor.

The mixing of at least two fluids is normally performed through turbulence, which can be created with static mixers, dynamic mixers, high speed of the streams and jets, impingement of jets and streams. All of them try a different way to maintain a high level of energy dissipation throughout shear into the fluid. Cannon latest innovation in this field consists in generating high turbulence by decreasing the size of the mixing chamber enough to generate a flow speed of ten meters per second and by using the front shape of the cylindrical piston which seals the mixing chamber to create high shock restrictions. This innovation produced the Jet Less head, a mixing head whose L-shape geometry permits as usual to reduce the turbulence of the flow exiting from the mixing chamber and to pour it in laminar form.

Long nose… but reliable!
The JL features a long and wide discharge duct, whose main purposes are to damp the high speed and turbulence of the stream, to perform a final mixing and to smooth down the whirling of the stream. Leaving the head the stream becomes laminar and can flow out into the mould with the ideal behaviour. Its length enables to reach very deep injection points. The up and down movement of the self-cleaning rod opening and closing the discharge duct removes and pushes out the foam residuals still in the pouring chamber, stripping out the reacted film from the walls. In the mean time the rod is acting like a pump for flushing and re-circulating a small quantity of lubricant oil, contained in a small spacer chamber built behind it. The relatively small sliding surface of the rod prevents the sticking of the surfaces and permits the use of a slim cylinder so the size and weight of the mix head are reduced, to be ergonomically handled also for manual operations.

The first Cannon JL head available on the market is the model JL 24/6, featuring a 200 mm long discharge duct, with an internal diameter of 24 mm and a mixing chamber diameter of 6 mm. This head – whose total output ranges from 300 to 2000 cc/sec - initially works with two components but more streams can be easily added. The wide range of output handled by this head, where no jets need to be adjusted when one significantly changes the output, imply that one size easily fits most of the conventional needs expressed by different industries and applications – therefore, within reasonable limits, there is no need for different heads to allow for the production of different parts.
The most interesting operating feature is its working pressure: from 70 to 210 bar, allowing for a simplification of the dosing unit (pump type, filters, hoses, etc.).

Advantages
The new Cannon JL head delivers several advantages:
• a mixing method much more efficient than the traditional impingement: the higher efficiency has been computer-studied and simulated, and confirmed by field tests
• the mixing pressure can be reduced to 70-80 bar depending from the chemicals. This allows for the simplification of the whole metering circuit (pump, filters, hoses etc)
• a very wide range of flow rates can be handled by the same mixing chamber: the maximum output can be five times higher than the minimum
• it does not demands skilled operators to set the head’s injection conditions: an easy setting of the central needle suits a variety of flow rates: pre-positioning of different values can be done manually or in automatic mode
• a very long discharge duct (patented) can enter pouring holes very difficult to access, and guarantees a laminar flow even at high flow rates perfectly suitable for discontinuous insulation panel and for pipe-in-pipe insulation.
• the use of the thin and long cleaning rod is mostly appreciated when using very sticky formulations
• the internal geometry allows for a better handling of foams expanded with high-frothing blowing agents such as low-boiling Hydrocarbons, certain HCFCs and natural liquid CO2

New models are now being prepared for future applications, in addition to those mentioned before: if you like the advantages, contact the nearest Cannon office. A JL mixhead can bring you significant advantages and savings!

The distribution of foam in a refrigerator is improved since the liquid can be deposited at a longer distance from the injection hole and starts rising from a central position of the cabinet.