Internationality, a major asset

Cannon employees and agents are spread over a vast portion of the Earth. Sixteen Manufacturing Centres, seventeen direct branches (our Locations) and more than eighty-five Agents are located in fifty-five countries, in offices, factories and laboratories that, all together, occupy more than 97,000 sqm of roofed surfaces. More than 1050 direct employees work for a Cannon Company and … we do not even know how many others are directly involved in our business at our Agent’s and Representative Office’s places. These recent figures mean something to us and to our clients (more than 25,000, at the last rough count). They mean that the major Cannon strength resides in its local presence. To be innovative, technically advanced, full of patents (and pretty much copied...) is definitely important. But being close – very close – to our customers means much more. It means that we can evolve in our corporate and local structures with an international, cross-fertilised culture. We do not export a mentality from where we were born, more than fifty years ago, we rather transfer several ways of thinking to all our sites. We do not learn our lessons from a single place, we collect experiences from a number of different, evolving (and sometimes stagnating or involving) markets.

Cannon was granted this year with a major contract for the supply of metering and mixing equipment for the production of reefer, the large thermally-insulated containers used to transport perishable goods under controlled temperatures. The World Bank, operating as major contractor for different Chinese reefer producers, passed a cumulative order for thirty high-pressure dosing machines of various sizes and sixty four self-cleaning mixing heads. The large lot of metering and mixing equipment will be delivered during 2014 to three manufacturing locations of CIMC Containers in China. This order reinforces the position of Cannon in this specialised segment of the industry, after the large turn-key contract won last year for the supply of a complete foaming plant for Maersk Containers Industry new factory in Chile.

CRESIM - unveiled in Italy to an international audience!

Three very busy Open Days at Cannon Afros demonstrated to an international audience the possibility to re-utilise recycled carbon fibres for the manufacture of CFRP (Carbon Fibre Reinforced Polymers) composites.

An intense programme of conferences, demonstrations and visits allowed the guests to appreciate the whole series of equipment and technologies available today at Cannon for the manufacture of reinforced parts.

Read more at page 2
Three very busy Open Days at Cannon Afros demonstrated to an international audience the possibility to re-use carbon fibres for the manufacture of CFRP (Carbon Fibre Reinforced Polymers) composites. An intense programme of conferences, demonstrations and visits allowed the guests to appreciate the whole series of equipment and technologies available today at Cannon for the manufacture of reinforced parts.

Two days in May – 27 and 28 – and one on June 26 have been devoted at Cannon Afros to the reception of more than 120 international guests and around 70 Group members, gathered in Italy to view the options offered by Cannon for the manufacture of CFRP (Carbon Fibre Reinforced Polymers) composites utilising recycled or virgin carbon fibres. A packed conference room hosted the presentations of qualified speakers that illustrated their latest experiences in several aspects of the composite processing technology.

An attractive conference session

In addition to five Cannon speakers – whose presentations included the Group’s highlights, an overview of the ‘light weight trend’ in various industries, the CRESIM project and its results – several external experts participated to the three open days.

Coming from the Politecnico di Milano university, from chemical raw material experts such as Huntsman and Momentive, from carbon fibre producers (Karborox and SGL/BMW Group), from composite manufacturing and testing firms, these guests shared with the audience the state of the art and new solutions coming from raw materials and methods for the manufacture of carbon-reinforced products. Francesco Abbà, Sales & Marketing Manager of Cannon Afros, and Maurizio Casinato opened the conference presenting the Cannon Group and its activities in the field of Plastics Processing Equipment, Electronic Controls, Energy and Water Treatment technologies. Max Taverna, Cannon News Editor, presented a practical example of application of the Light Weight implications for the Automotive industry.

Maurizio Corti, Cannon Afros Technical Director, and Alberto Zaratontello, Cannon Ergos General Manager, presented the CRESIM project, partially funded by the EU LIFE programme. The academic contribution to the days was brought by Andrea Berrasconi and Edoardo Sbannioni of the Politecnico di Milano University, who presented their activity in the field of designing, making and testing innovative composite structures made with carbon fibres and various types of resins. The latest developments concerning the epoxy chemical formulations were presented by Stephan Constantino of Huntsman and by Roman Hölermeyer of Momentive. (Read more on their talks in the next page.)

A satellite dish for defence applications is made with seven modular segments of CFRP moulded with 100% recycled carbon fibres.

The characteristics of the products moulded with the CRESIM technology have been presented by Alessandra Passaro of CETMA, the Bredinil-based private Research and Technology Organisation dealing with the study, development and characterisation of composite parts for numerous final industrial applications. Riccardo Sogis of LOSON, an Italian company specialised in the development and production of innovative composite components for civilian and defence applications, detailed the satellite dish project realised with the CRESIM technology in cooperation with Cannon Afros R&D staff. (Read more on this joint development in the next page.)

A live demonstration of the CRESIM technology

After the lunch a tour of both Cannon Afros and Cannon Ergos factories was organized, followed by a moulding demonstration, using 100% recycled carbon fibres, in the brand new CRESIM working island set up this year near the R&D laboratory. Here a 1,500 tons short-stroke Canopress – produced by the large Italian company Faco – is used for a moulding press at the highest pressure rate. The new press allows a control and a vertical stroke of 1,500 mm, capable of holding a 1,200x2,400 mm mould – has been made, able to hold the largest, deep-draw moulds for CFRP composites for various final applications. Two high-pressure metering units have been installed close to this large press, able to dispense Polyurethane or Epoxy formulations. Several types of resin injection are usable with this combination of equipment: a Liquid Lay Down (LLD) technology can be used (as in the case of the demonstrated parts) by laying down a ribbon of liquid formulation over the stacked layers of carbon fibres. In this case the dedicated mixing head is carried by a 6-axes commercial robot. If a direct injection in closed mould is preferred for technological reasons, the mixing head can be fixed on the mould. A spray method for the deposition of chemicals in open moulds can also be applied, still using a robot to carry the dedicated mixing head.

The LOSON satellite dish “leaf” - a modular element, one seventh of the complete parabolic antenna - has been produced with the LLD open-mould method, with a polymerisation time of about 3 minutes. The robotised cycle included the precise deposition of three layers of recycled carbon fibre over the lower mould half with a first robot, then - with a second robot – the application of a “ribbon” of liquid formulation over a V-shaped path covering the whole surface of the mould, followed by the introduction of the mould in the polymerisation press by means of a shutting cart. After three minutes of curing the part was demoulded using the first robot, displaced close to the press for this different handling programme, and laid over a cooling table.

A positive exchange of experiences

The properties of the moulded piece were discussed among the visitors, collecting a lot of hints for different applications and end users. The fact that both Polyurethane and Epoxy formulations can be used with the recycled carbon fibre stimulated a lot of cross-fertilisation between the users of only one of those resins, opening them new perspectives for a wider range of end products and applications.

The conclusions – drawn by numerous attendants commenting the event with the Cannon management, after these three days of intense confrontation between numerous, international experts of chemical, engineering, production and testing aspects of the CFRP field of activity – were that the event was worthwhile the time and the trip, it was more interesting than attending a classic seminar, and should be repeated when a similar innovative technology or solution will be developed by one of the Cannon Group companies.

Cannon welcomes any inquiry from those prospects interested in exploring the possibilities opened by the availability of a complete set of Cannon production tools for CFRP Composites!
Connecting people through recycled Carbon fibres

LeSon, an Italian manufacturer of innovative products made with Carbon fibres, found a great interest in the CRESIM technology developed by Cannon. Main reasons are a strong cost reduction, high precision and repeatability in mouldings, a perfect process control.

LeSon International was founded in Italy at the end of 2005 with the aim of creating innovative products with the use of Carbon fibres. Since then, the company has focused its competences and skills in aerospace and automotive structural design and production. So far LeSon has used typical autoclave process and is testing now new technologies for its top end markets customers. One of main targets defined by LeSon for their growth is a fast-growing Far East Asia defence market, that is currently bidding for thousands of military antennas for portable use. Price matters a lot, as well as a high precision in production: repeatability is a must, as well as simplicity in installation and portability on the field.

Among various options, LeSon decided to accept the challenge proposed by Cannon R&D department when an industrial partner was sought for a joint development of an application for their new technology aiming at the use of recycled Carbon fibres for top-quality CFRP composite. A modular antenna was designed, composed by seven equal "leaves" of a triangular shape with rounded sides. Reasons for this odd shape lie in the increased stiffness and

LOSON’s Riccardo Sotgia (centre) shows a moulded modular element for satellite dishes produced during the CRESIM Open Days at Cannon Afros

Epoxy composites: faster & better

The importance of a dedicated formulation, studied to exploit in the best way the characteristics of a new process technology, is a fundamental component for its success.

The concept was reiterated by the raw materials specialists that presented their experience at Cannon Afros CRESIM Open Days in May this year.

Huntsman Advanced Materials

Dr. Stephan Costantino of Huntsman Corp. Advanced Materials Division presented a comprehensive range of Liquid Composites processes in automotive applications. His overview included a performance comparison between formulations designed to allow mass production of parts by making use of fast processes. Comparing Standard Low Pressure RTM with High Pressure RTM an evident advantage in terms of productivity stands out immediately: a part production time ranging between 14 and 85 minutes (according to the complexity of the part) characterizes the Standard RTM process. Using today’s fast HP RTM solutions the cycle can be reduced to 4 to 8 minutes with the new XB 3SS5/Aradur 3475 formulation, still maintaining an injection time as long as 1 minute for the largest parts.

The productivity increase is greatly influencing the remanufacturability of OILS (Return On Investment) in presses and curing equipment. When dealing with a relatively simpler part design a further reduction of the cycle time can be attained by using the same formulation with a LL (Liquid Lay Down, also called Wet Compression Moulding) technology. In this case the cycle time can be reduced to appr. 2 minutes, with a curing time as short as appr. 60 seconds. As a conclusion, Dr. Costantino defined HP-RTM adapt for mass production of complex parts while Wet Compression Moulding more suitable for mass production of relatively simpler parts. In the latter case the reduced investment in equipment provides a lower part production cost. As a bonus tip for the audience, Dr. Costantino forecasted for the Wet Compression Moulding technique the possibility to reach, in the near future, a curing time of only 45 seconds.

Momentum Specialty Chemicals

The development of new formulations for high volume automotive production was presented by Dr. Roman Hillermeier of Momentum Specialty Chemicals. An impressive acceleration of the cure time characterised the past fifteen years, during which the average cycle time of an external automotive part decreased from 30 to 5 minutes. In the past three years this trend has improved further, allowing for a typical two minutes cure time - and counting!

A significant extension of the injection time characterises the latest low-viscosity formulations for Fast RTM: up to 100 seconds can be spent for the low-speed injection of these chemicals in very large moulds, with a demould time close to 5 minutes. Faster options are available, with a cure time of 2 minutes and an injection window of 50-55 seconds. As a conclusion, valid for both the HP injection or the LCM (Liquid Compression Moulding) methods, Dr. Hillermeier summarised the advantages of the new formulation based on EPX007™ Resin 05475 and EPIKURE™ Curing Agent 05500, developed for high volume manufacturing processes: its intrinsic thermolatency provides an extended impregnation time whilst maintaining the cure time in the 90-150 seconds range.

Cooperate – to succeed!

Both speakers, in their presentations, confirmed the importance of a tight cooperation between the supplier of chemicals and the equipment manufacturer, in order to be ready at the same time with proper, tested formulations and equipment when a new technology is made available. This will allow the end user to obtain the shortest possible time-to-market with his products without wasting precious time in the search of a suitable moulding solution for his new chemicals or of the right formulation for the latest cry of the technology.
Vacuum-Assisted Technology: now also for existing plants!

A new retrofitting kit allows the manufacture of discontinuous insulated panels making use of existing presses and foaming plants.

Energy-efficient elements of the Cold Chain (refrigerated warehouses, freezer rooms, commercial and domestic refrigerators, portable coolers etc.) have proven their effectiveness in reducing the use of energy required to keep our food fresh in its path from "field to table".

Insulated panels - A growing market Polyurethane-based insulated panels represent the insulation technology in most of the above mentioned applications. The demand for these products is growing on a worldwide basis, as is their average thickness. A complex mix of panel models, made with dedicated manufacturing methods, is available to fulfill any kind of requests from the market in terms of dimensions, thickness, application, fire-resistance rating, and choice of facing, colour, and surface aspect. Continuous foaming production is preferred for large volume, standardised types of panels. The discontinuous foaming method is preferred for smaller lots, for higher flexibility, for a mixed supply of sizes, shapes, models and colours. For both technologies a large number of foaming plants in operation today are facing the challenge of this increased demand, both in terms of overall quantity and new dimensions to be manufactured.

The replacement of Odour-depleting and Green-house affecting old blowing agents with a new generation of foam-expanding chemicals has caused a general increase in the panel thickness, required to meet the severe insulation specifications that are typical of the "cold chain" structure. Larger panels are demanded for a generation of jumbo refrigerated trucks that are allowed to circulate in numerous countries. The same trend is shown for the reefers, insulated 40’ containers used to transport fresh vegetables, meat and fish overseas.

The demand is growing and numerous manufacturers cannot cope with it simply because their existing plants are not able to produce panels with the technical specifications and productivity required by these new end uses. The obvious solution – to buy a new, higher performance foaming plant – cannot be taken in consideration by many producers that have not yet amortised their more recent investments in foaming machines and polymerisation presses or laminators.

V.A.I. – The vacuum innovation starts Cannon and Manni pioneered in the late 1990's the V.A.I. (Vacuum Assisted Insulation) process. With this innovative method a controlled level of negative pressure (vacuum) is maintained in the polymerisation cavity of a panel press for the entire time of the injection. High-quality insulated panels for walls-in cold rooms and cold industrial warehouses can be obtained with numerous advantages vs. the conventional injection system: dramatic improvement in productivity, up to 30% less time for demoulding.

• weight reduction, up to 3% less foam
• beneficial mechanical and aesthetics properties

In order to obtain the said advantages, a manufacturer ought to use Polyurethane formulations specifically developed for this vacuum-assisted foaming method, and properly designed polymerisation presses and metering-mixing equipment. The above described manufacturing situation – the availability of existing foaming plants, still in perfect running condition – stimulated the search for a new solution, in order to also provide to these producers all the advantages deriving from the V.A.I. process.

A retrofitting kit was studied, made and patented by Manni, the Mantova-based specialist in presses for Polyurethane panels. The complete set of equipment – needed to modify an existing discontinuous foaming plant and adapt it to the production of insulated panels using the Vacuum Assisted Injection – is now available.

The new Manni 2.0 Retrofitting Kit for existing presses

The system that allows the use of a vacuum process on existing conventional foaming plants, without applying substantial modifications to the press, consists of the following elements:

• Venturi vacuum pump - the advantage of this solution lies in the fact that it is based on a controlled feed of air and not, as in the past, in a controlled loss: the system is more controlled, energy efficient and economical to operate.

• Proportional valve that regulates the amount of compressed air supplied to the pump.

• The air extraction system is no longer integrated with the press platens: the interface with the cavity is made through the side frame. This method provides the highest flexibility when handling different panel formats.

• Control PLC with software for the control of the valves.

• Pressure transducer connected with PLC and valves.

• A new version of injection device, designed to overcome the problem of using several side profiles. The plug is simply inserted the injection head. When necessary, it is pulled from a lateral bar and plugged in another one. This allows the user to buy a limited number of these devices and use them throughout his mix of profiles.

• Software improvements now allow simultaneous management of two different vacuum levels in two polymerisation cavities, according to the different panel thicknesses that must be produced in the same cycle.

The expansion of PUR foam in the panel cavity is helped by a controlled level of vacuum

Metering & mixing – New convenient alternatives are available

The metering and mixing equipment required for the use of V.A.I. process is generally the same used for classic discontinuous foaming. High pressure dosing machines with a medium-high output capacity and self-cleaning mixing heads are recommended. The injection operation can be manual or assisted by a manipulator. In the decision making process that leads to an investment in this new V.A.I. kit, it would be wise to consider the upgrading of the existing mixing hardware towards the next generation of mixing heads. Cannon recommends for these applications two different models:

• the JL (Jetless) that can provide a proven reduction in the consumption of PUR foam, with economic savings in chemicals calculated around 4-5% with a well calibrated system

• the FPL SB, now available with three diameters of the self-cleaning plunger: 18, 24 and 26 mm. The head features a longer injection nose, extended, in average, by 30% versus the prior version.

A new chemistry – Fundamental to obtain the best results

The peculiar advantages obtained with the V.A.I. process and described at the beginning of this article can be optimised with the right combination of suitable processing equipment and the right chemicals. Dow developed a family of new formulations – available under the PASCAL™ PRO brand – specifically conceived for the use of vacuum assisted injections of rigid foams. They are now available in 20 panels to be used with Cannon Manni’s new or retrofit panels.

The advantages obtained using the innovative Vacuum-Assisted Injection of Polyurethane foam in sandwich panels are now obtainable by the owners of existing equipment that do not intend to invest substantial amounts of money in a new foaming plant.
Functional safety in the Process Industry - Cannon Automa provides a risk reduction method with Safety Instrumented Systems

There are no activities at zero risk: this is because no devices have zero failure rate, no human being makes zero errors and no software design can foresee every operational possibility. Therefore, the concept of doing nothing and accepting a tolerable risk for any particular activity prevails. Cannon Automa is aimed to properly apply the management of functional safety, implement risk analysis, classify the Safety Integrity Level, define projects of Safety Instrumented Systems and limitations of the system architecture.

Process Safety is a design technique demanded to safety process regulated by two international standards: IEC 61510 “Functional safety of electrical / electronic / programmable electronic safety-related systems” and IEC 61511 “Functional safety – Safety Instrumented System for the process industry sector”. These norms apply for all applications where electrical, electronic or programmable electronic (E/E/PE) safety-related systems are used to perform safety functions in an application where system malfunctions have a decisive effect on the safety of personnel, the environment and equipment concerned. Safety Integrity Level (SIL 1 to SIL 4) defines the risk reduction to a tolerable level. Each level corresponds to a probability range for the failure of a safety function: the higher is the SIL of the system, the lower will be the probability that they will not perform the requested safety function.

Safety Instrumented System (SIS) is a combination of E/E/PE safety-related devices operating together to carry out one or more instrumented safety functions. Safety Instrumented System failures are designed and used to prevent or mitigate hazardous events, to protect people or the environment or to prevent damage to process equipment. Thanks to the determination and commitment to Safety. Cannon established, since several years, a working group named “ISAQC” that operates as a support to

A new InterWet head for higher productivity

Cannon recently designed and patented a new InterWet mixing head that provides a superior wetting to the chopped glass fibres, working at higher output values than in the past.

InterWet – some background...

Thin-walled moulded parts, reinforced with non-reactive fibres or filled with low-cost additives, can be produced with excellent chemical, physical and mechanical properties and characteristics. Cannon quickly adopted the cannon InterWet technology. It was originally designed for the production of structural parts reinforced with glass fibres (roving based) and especially for automobile very applications, as an alternative solution to the traditional production processes based on glass mat or cut glass fibre pre-blended with the polyol.

More recently, due to the success of this technology in the market and following extensive development work, its use has been profitably extended to very different industrial applications, combining the flexibility of the foaming process with the advantages of using a wider range of fillers.

The most recent developments

Cannon recently designed and patented for this process a new mixing device that provides an even superior wetting of the chopped glass fibres, working at higher output values than in the past.

A new glass changer: in this new version the glass is cut at the desired length in the past, just above the upper side of the head, but with a completely redesigned changer.

CannonAutoma Company provides a risk reduction method with Safety Instrumented Systems in terms of risk assessment, such as:
- evaluate the Safety Plan and establish the back-up for Machinery Safety through risk assessment and SIL calculation;
- ensure compliance with regulations such as the Machinery Directive,
- integrate safety in new or modified machinery through the early identification of risk.

A new General Manager for Automa

The Cannon Group’s Management welcomes Giorgio Bombarda as new General Manager of Automa.

Giorgio Bombarda, 51, is an Electronic Engineer graduated at the University of Bologna in Italy; after a few Italian experiences in the industrial automation field holding both technical and managing positions with increasing responsibility, he has lately held an executive role in an important German subsidiary of an Italian firm, that under his leadership has increased its local manufacturing, market shares, and business results.

InterWet Advantages

In comparison with other technologies available on the market, the Cannon InterWet co-injection of Polyurethane and solid fillers, presents several advantages during the foaming process, such as:
- Significant cost savings in terms of reduced manpower, reduction of raw material costs by utilizing low cost additives and fillers. Compared with glass mat and pre-cut glass fibres, glass fibre reusing is much less expensive;
- Reduction of dusts due to a fully automated foaming process. Furthermore, the mixing system is based on just a few standard parts, which are cheaper than specially developed ones and are more meant to production;
- Significant reduction of cycle time when compared to classic moulding methods based on impregnation or injection in moulding insert;
- High reliability and repeatability of the process, as a result of the innovative co-injection concept and by a fully- automated process, controlled by special safety devices for monitoring every single production step (filler feeding, fibre glass cutting, co-injection and mixing phases), to maintain optimum foam homogeneity and quality;
- A compact head with reduced size and weight, for easier robotised use on book-opening moulds and for the quick lay down of fast-reacting blends on wide, open moulds;
- Significant improvement of the process’s physical, mechanical and qualitative characteristics, thanks to homogeneous and random mechanical performances imparted in the moulded piece.

An improved output capacity

The higher wetting capacity of the new InterWet head allows the use of very high percentages of Polyurethane in the formulation, ensuring that the entire surface will be fully coated with a proper layer of reacting chemicals. In industrial applications, a level of glass percentage equal to 50% is regularly attained at a total output around 600-700 g/sec. A higher total output can be reached at a proportionally higher percentage of glass: up to 1,000 g/sec of mixture can be dispensed in open mould without much turbulence with a load of chopped fibres around 350 g/sec.

InterWet Advantage

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The success achieved by InterWet has engaged Cannon in the industrialization of new applications for other sectors. Your ideas and inquiries are welcome!
Cannon wins another major order for refrigerated containers

Cannon was granted this year with a major contract for the supply of metering and mixing equipment for the production of reefer, the large thermally-insulated containers used to transport perishable goods under controlled temperatures. The World Bank, operating as major contractor for different Chinese reefer producers, passed a cumulative order for thirty high-pressure dosing machines of various sizes and sixty four self-cleaning mixing heads. The large lot of metering and mixing equipment will be delivered during 2014 to three manufacturing locations of CIMC Containers in China.

This order reinforces the position of Cannon in this specialised segment of the industry, after the large turn-key contract won last year for the supply of a complete foaming plant for Maersk Containers Industry new factory in Chile.

The reefer industry is currently being characterised by an intense competition at a worldwide level. The demand of different types of fresh food (meat, vegetables, meat and fish) delivered all year round from very remote locations is on the rise. Consumers are ready to pay premium prices for fresh goods originating from other continents, provided that they arrive on their desks in prime conditions. Therefore the producers of these perishable goods demand more and more specialised means of transport to keep them safely preserved over a long distance, for an overseas trip that can take several weeks: that’s what reefer are made for. Efficiently insulated with a thick layer of Polyurethane rigid foam, and provided with a built-in large refrigerating unit, these 40-feet long insulated containers ensure that high-quality products, vegetables, steel and fish – but also vaccines, pharmaceutical and healthcare products, not excluding some special chemicals – can reach their destination under strictly temperature-controlled conditions.

Reefers – a cool sector, in movement!

Few manufactures are able to supply insulated reefer at the pace demanded by the market, and most of them are located in China. A substantial technological change is now demanded to the foam industry to comply with the environment protection rules dictated by the Kyoto (Greenhouse gas reduction) and Montreal (Ozone layer protection) Protocols. The expanding agents that are influencing the emission of noxious gases must be replaced within a very short time with other foam-blowing chemicals or methods, not harmful for the environment. An intense program for the replacement of obsolete foaming plants is currently undergoing all over the world, with a special care for those emerging countries that are, at the same time, more keen towards these emissions and less able to reduce them for lack of funds and of an organised supervising authority.

The World Bank Group, a member of the United Nations Development Group, is an international financial institution that provides loans to developing countries for capital programmes. They cooperate and fund, among others projects, the replacement of obsolete Polyurethane foaming plants to comply with the above described objective. They are currently active also in China and have financed a major program for the modernisation of three major reefer manufacturing plants in the country.

A major contract in China for Cannon

Cannon – a leader in the supply of Polyurethane equipment, particularly active for more than twenty years in the field of insulated containers and trucks – has been granted in April 2014 with a major contract for the supply of the foam metering and mixing equipment for the three Chinese factories of CIMC Containers, one of the major manufacturers of reefer. The total order – whose value exceeds 7.5 Million US$ – was granted to Cannon Far East, the Cannon branch operating in China with units based in Shanghai, Beijing and Guangzhou. The supply includes thirty large and medium high-pressure dosing units (16 units able to dispense 350 kg per minute of rigid foam, 4 units by 100 kg/min, 8 units by 40 kg/min) plus a total of 64 self-cleaning mixing heads.

The job provides for the complete substitution of existing obsolete machines [all of them of German origin], and the change from HCFC 141b blowing agent to Cyclopentane. The full investment funded by the World Bank covers the complete foam dispensing and mixing equipment section, as well as all infrastructures and locally manufactured presses.

Marco Volpato, President of the Cannon Group, commented: “Coming immediately after the large contract that we won for the supply of the new reefer factory of Maersk Container Industry in Chile, that we are completing right now, this new important order from CIMC Containers in China confirms the reliability of Cannon as a global supplier of quality equipment for very difficult foaming applications. More than 25 key people within our organisation have been working hard to secure this job, from at least five different Units of our Group. We have now implemented special organisational measures to comply with a very tight delivery program and I’m confident that also this important order will be dispatched timely. To my opinion this is a great example of effective team work”.

Thirty high-pressure dosing units for rigid Polyurethane formulations, equipped with 64 mixing heads, will be supplied by Cannon Afros to CIMC Containers in China for the production of insulated reefer containers.

Bayer Micro Mixing Technology & Cannon Easy Penta Module: a new solution for premixing Hydrocarbon blowing agents

Bayer MaterialScience and Cannon jointly developed a new solution for mixing Hydrocarbon blowing agents to Polyurethane formulations. Targeted to the medium-small users of formulated Polyurethanes, the new solution will be jointly proposed by BMS and Cannon to the foamers of Thailand, Malaysia, Vietnam and Indonesia.

A new project executed by BMS (Bayer MaterialScience) and Cannon has generated a new solution to premix Cyclopentane with Polyols in PUR foam formulations. Named Micro Mixing, this technology has been developed initially by BMS PUR Bangpoo Thailand and it is based on a static mixer.

The aim of the initiative was to find a suitable premixing solution affordable by the consumers of less than 1,000 Tons/year of formulations.

The expensive setup required to premix their blowing agent was excluding numerous end users from the possibility to use Hydrocarbons. BMS PUR contacted the local Cannon Far East office and proposed to develop further this initiative, providing the required hardware solution.

Cannon accepted, designed a suitable equipment and built it, for an initial testing at BMS laboratories. After the positive acceptance of the new device, a collaboration agreement was signed between the two companies, aimed at the joint promotion of the new mixing system, initially in four countries characterised by a vast number of medium-small foamers: Thailand, Malaysia, Vietnam and Indonesia.

Easy Penta Module: simple and effective

The concept behind the new premix is simple, minimising the investment for the Hydrocarbon storage: just drums located outdoor, instead of underground tank, transfer pump, piping with all relevant safety.

The new mixing equipment, which is built as an integral part of the Easy Penta Module model, replaces an external premix unit (typically an EasyFroth™ machine) which is more complex and expensive than this version.

According to each individual case – considering the age and status of the existing equipment and its components circuit – a retrofitting kit or a new, fully integrated machine are recommended to the client.

The process is adapt for those users that can wait for the few minutes required by the mixing operation.

Cannon – a tradition of independence

The cooperation with BMS PUR confirms once more the philosophy of independence that characterises Cannon since the earliest days of the company. Never linked to a supplier of raw materials, Cannon has been able to cooperate with them all, even with those who have owned their equipment company, in order to benefit from their most skilled know how and their peculiar territorial strengths. This tradition continues now, in an age where no more raw material suppliers are linked with or own an equipment manufacturer!
Another Cannon preformer for advanced German cars

A large automatic preformer for CFRP parts has been supplied by Cannon Ergos to a major Tier One provider of composite elements for a large German car maker. The sophisticated machine features advanced technological solutions to guarantee short cycle times, elevated repetitivity and reduced energy consumption.

Cannon experience in providing customised preformers for glass- and carbon-reinforced parts dates back to the 1990’s. Several dedicated preformers have been supplied to major manufacturers of Composites, including OEMs like BMW and Lamborghini and Tier One suppliers of parts. Another plant adds now to Cannon reference list: a large Carbon fibre preformer has been delivered in June, 2014 to a major Tier One provider of Composites for an important supply job: a large structural element for the latest model of car made by a major German car maker.

The preformer features a clamping area of 2.5 by 2.3 meters, with an vertical stroke capacity of 3 meters. The Carbon fibre dispensing section can hold several layers of different reinforcing materials, to comply with the most stringent demand of strength required by an important component of the automobile’s structure. Fast hydraulic movements of the upper plates of the preformer characterise the Cannon preformers. A part-to-part cycle time of 80 seconds is obtained with this specific preformer, for a 2.0 x 2.0 meter finished preform.

Innovative energy control methods have been applied to reduce the energy consumption of the unit, especially for what concerns the fast movements of the press, the displacement of the churning lower half of the mould and the heating functions that are performed in hidden time on a Carbon fibre sandwich, just outside the press, while a preformed piece is held under compression in the mould.

Artes for Ethylene production in USA

Shale gas in the USA provides a significant surplus of feedstock to the petrochemical industry, and important investments are currently undergoing to expand the Ethylene-based chemicals and polymers supply capacity. State-of-the-art environmental technology will enable ExxonMobil’s chemical expansion at Baytown to operate within existing Texas permitted emission limits. ARTES Ingegeria will contribute with an innovative water treatment plant for the Ethylene cracker plant.

All the US-based Major chemical producers (including ExxonMobil, Chevron, Dow Chemical, Shell) are looking to take advantage of a surplus of natural gas that’s pushed gas prices near 10-year lows in the USA. With gas prices staying steadily below $3 per mmBTU (million of British thermal units), as a result of the massive production of shale gas, USA is running to become a net gas exporter and, in respect with their reserves, this situation is going to last on the next decades. Shale gas restores the profitability of the petrochemical industry in USA with prices competitive and sustainable feedstock.

ExxonMobil adds value to their natural gas

Exxon became the North America’s largest natural gas producer when it acquired XTO Energy Inc. in 2010. In addition to the profits generated from the sales of the product, Exxon has one key advantage: it can use its own gas for added-value chemicals and polymer products. A new ethylene cracker is under construction in the ExxonMobil Baytown Area, the largest petroleum and petrochemical complex in the USA.

Covering five square miles, this is already the largest site in the nation and has been in operation since 1920. Its refinery can process up to 584,000 barrels of crude oil per day. The Baytown ethane steam cracker will handle up to 1.5 million t/y Ethylene capacity, providing feedstock for two high performance polyethylene lines at its nearby Exxon Mobil plastics plant in Mont Belvieu, Texas, about 13 miles from the main site, rated with a capacity up to 650,000 t/y polyethylene. For the realisation of the Ethane Cracker ExxonMobil selected Linde Engineering, one of the world leading providers of Ethylene technology as well as a reputable Engineering & Contracting firm in the Gas Treatment & Petrochemical business.

Reducing environmental impact, a major target

“Reducing environmental impact has been an ongoing strategy at Baytown”, Steve Pryce, president of ExxonMobil Chemical Company, said in a speech at the 2013 IHS World Petrochemical Conference, “Over the past decade, the site has invested over $1.3 billion in environmental upgrades to improve air quality and achieve double-digit improvements in energy efficiency.”

Complying with this policy the large Ethylene cracker will be equipped with a state-of-the-art water treatment system. ARTES Ingegeria has been selected by Linde as the supplier of the whole demineralisation plant. Entirely based on membrane technologies, the plant will be arranged on three trains, each including:

- Ultrafiltration (UF) section,
- First pass Reverse Osmosis,
- Second pass Reverse Osmosis,
- Electrodeionisation.

The plant will have an overall capacity of 200 m³/h of treated water. A condensate polishing unit will complete the treatment on two Granular Activated Carbons filters able to treat 50 m³/h of water.

The job will be supplied within the first quarter of 2015. The supply will be delivered partially from the Italian plant of Oliveto Citra, near Salerno, and in part from a local US-based manufacturing source working upon ARTES plans and under their strict supervision during the engineering and installation phase.

This confirms the capacity of ARTES Ingegeria to provide a complex set of equipment, built in accordance with local regulations and norms, to be installed very far away from their home turf.
RotoCREA 2012, the smart thermoforming machine for large automotive parts

Cannon presents RotoCREA 2012, a smart thermoforming response to high-level automotive industry needs: a single station thermoforming machine producing car interior trims with vacuum forming or thermo-covering techniques, with turning table concept. A suitable solution when accurate manual operations, like skin demoulding or inserts loading, are requested in high productivity applications.

Feeding System
A material transport system feeds to the reel stand the machine with a new TPO sheet every cycle.
This is obtained by combining an uncoiling system, a gripper transport device and a cutting element.
The reel stand carries two or four reels of material. One is mounted in the feeding position and the other held as a back up. Reels are loaded using pneumatic forks.
A joining station is provided: a structure mounted over the uncoiling system helps manual junction between the end edge of a reel and the leading one of the other.
The material is fed from the selected reel using electrically driven nip rollers that allow the sheet to enter into the thermoforming machine. A chute is fitted between the feeding unit and the inlet of the machine to prevent the material from touching the floor.
The gripper transport system takes the leading edge of the material at the inlet of the machine and lays the sheet on the forming area. This gripper device is part of an electric motorised sliding system. The stroke is controlled by PLC. The sheet in the forming area is tensioned by closing of a fixed gripping device slightly before the end of the stroke of the moving gripper.
After tensioning and before forming, the sheet has to be separated from the rest of the material. After the clamp frame has descended onto the material, a transverse cutter cuts this sheet of material.

Heater And Process Control
Heating is operated by two banks of quartz lamps.
Both upper and lower heater elements are controlled individually, giving the possibility of a very precise heating regulation. PLC and operative panel optimize the heating process including a close-loop temperature control.
During the cycle, both the heaters move horizontally and vertically, the stroke being provided until the sheet is ready to be formed.
All the movements are controlled by electric motors. In case of emergency the lower heater draws back to the standby position.
Pyrometers on both the upper and the lower heating banks check the sheets temperatures.

Forming And Demoulding Devices
The aperture plate has dimensions dedicated to the mould.
The clamp frame is dedicated too and it is changeable with a fast locking system. Two electrical motors with independent rack and pinion systems raise the mould inside the machine to perform forming. This solution allows infinite control in position and speed and easy maintenance.
After forming the mould is raised on the mould table. This system has been studied to couple with the rotating closing door.
One of the main features of this machine is the double shuttling upper platens. This system is composed of a structure that can move laterally over the forming area, giving the possibility of performing in the same station forming and then cutting.

During the cycle, plug assist is held over the forming area and it is used to prevent the formation of wrinkles. After cooling, the shuttle moves laterally and the cutting unit can move down on the formed piece to do perimeter cutting. Electrical motors with a rack and pinion system control all the movements.

De-Moulding
The system is composed by a closing door that can rotate on itself around the vertical axis thanks to a motorised rotating joint. Two mould tables are linked on it but the mould inside the machine can move vertically too.

Advantages
- Fast cycle time, due to double mould: one in forming area, one in operator area. High productivity.
- Easy manual operations with mould accessibility on three sides. Ergonomics.
- Sealed mould box for best forming conditions.
- Production flexibility and high quality of the final formed parts.
- Forming and pre-cutting in the same station: reduced investment in hardware and in footprint.
- Automatic reel feeding with devices for portion: a time-saving solution that enhances productivity and reduces downtimes.

First industrial applications
The first unit of this series has been delivered to a major Italian Tier One supplier of interior automotive parts, for the production of the complete instrument panel of the new Jeep Renegade model.

The modular, parametric design of this thermoformer allows for the quick adaptation of its construction to a varied range of dimensions and end uses. Cannon Ergos welcomes enquiries from the manufacturers of advanced thermoformed parts, ensuring the highest attention to all the submitted projects and the widest flexibility in design and construction.
An important target was recently achieved by BONO Energia: after a long procedure the company obtained the qualification in the vendor list of Petrobras, the giant Brazilian operator in the Oil & Gas field.

With consolidated reserves totalling 16.4 Billion barrels of oil and natural gas and 85,000 employees Petrobras is the seventh biggest energy company in the World. Holding 25% of the world’s deep-water oil operations. Petrobras is part of a small group of companies that produce more than 2.5 million barrels of oil and natural gas equivalent (BOE) a day. Its oil production in Brazil is higher than Brazilian demand and domestic refineries’ processing capacity. As it develops its existing reserves, makes new discoveries in the pre-salt layer and builds new refineries, Petrobras will become a major exporter of oil and oil products in the coming years.

Only the Best Suppliers!
The qualification procedure to become a Petrobras supplier is very tough: only the best have a chance to compete for their contracts, and being approved by them is the only way to apply for the bids launched by numerous EPC’s working for the Brazilian giant around the World. BONO Energia has been working hard in the past two years in this complex qualification procedure, that has positively ended on April 2013 with the emission of the official certificate by Petrobras.

BONO Energia was admitted in the vendor list for three classes of heat generators: water tube boilers, fire tube boilers and heat recovery units. The use of steam is widely different in the refineries, supplied at any level of pressure and temperature. This fits perfectly with the range of products made by BONO, that also bears a long experience in diathermic oil heaters, used to supply very hot fluids at low pressure in specific applications of the petro chemical and polymers industries. BONO Energia welcomes now all the requests for bidding relevant to their approved series of thermal machines and boilers!

BONO Energia & ARTES Ingeneria @ Rio Oil & Gas

Petroleum geopolitics are driving the world politics, and Brazil is gaining a rising importance as supplier of oil & gas. The volatility of the world oil market concerns the experts and confirms that what’s more important now is the long-term outlook. They say the planet is running out of easily accessible resources, and it will soon become way harder and more expensive to get them. These and other important themes – discussed under the event’s guideline “Addressing the Challenges” – will be the topics of discussion at the Rio Oil & Gas Congress, held in Rio de Janeiro, Brazil, from 15 to 18 September 2014. BONO Energia and ARTES Ingeneria will present at this important event effective technologies and solutions that can contribute to optimise the use of these precious resources.

The 2012 edition attracted 1,300 exhibitors, 53,086 visitors and 4,406 delegates, with attendance from 27 different countries, which has helped to contribute to Rio de Janeiro’s reputation as being the Brazilian “Oil Capital”. BONO, a leader in the field of Energy and Water Treatment solutions, will be present with a number of innovative technologies for this sector, aimed at the optimisation of use of non-replaceable resources (oil, natural gas, water).

In particular, the following themes will be highlighted by the international team of experts of BONO Energia and ARTES Ingeneria on the stand:

- Thermal Energy Technologies by BONO Energia, that since 1958 design, manufacture and service industrial boilers and thermal fluid heaters for standard and special applications: direct fired steam boilers (fire tube and water tube type), waste heat recovery boilers, hot water boilers and hot oil heaters.
- Water Treatment Technologies by ARTES Ingeneria, a leading engineering and construction Company in the water and waste water treatment business, supplier of:
  - Produced Water & Injection Water treatment in the upstream sector, onshore and offshore
  - Desalination & raw water pre-treatment
  - Demineralization Systems producing high-purity water by means of membranes or ion-exchange technologies.
  - Condensate Polishing Units that purify the steam condensate and allow reuse.
  - Deaerators based on ZeroGas Deaerator® technology, thermo physical or vacuum type
  - EFFluent Water Treatment in the refining and petrochemical sector.
  - Sanitary Water Treatment and Drinking Water Makers, addressing the use in isolated compounds, offshore platforms & construction camps.
  - Cooling Water Filtration based on Hydrakarb® Filters for make-up and side stream filtration.

Visit the BONO stands (booths 128&135, Hall 3) at Rio Oil & Gas 2014, and discover a world of opportunities for a responsible energy management, "to Address the Challenges" of a growing world!

Flexible foam producers invest in high production output machines

The Global flexible foam industry is heavily investing in large Maxflow machines with faster production rate to benefit from economies of scale by producing large and square foam blocks in shorter time. Within the last year, Cannon Viking has built many large Maxflow Omega machines for many different markets notably Russia, Nigeria, Liban, Kuwait, India, Egypt among many others. Jonathan Rayner, General Sales Manager, Cannon Viking explains: "The key focus seems to be the economic benefits from producing large foam blocks and shorter production time. This in turn helps customers to save time on curing and foam conversion, thus having a faster turnaround of working capital. The foam quality and grade may differ from market to market, but the common aim for all customers is to have a better and faster process on their investment. When faced with a challenge to design a machine that takes care of customers' production requirements in different markets, Cannon Viking engineers picked up their ever versatile Maxflow Omega 800 machine as a solution. The recent developments in the Omega controls software have made the production even more easy and under tighter control with full report and feedback data provided to the customer. Early this year, Cannon Viking commissioned a high pressure Maxflow Omega Varimax 800 machine in West Europe for a customer with a vast experience in the mattress and sofa industry. This machine uses two 90D lines and is designed to produce Standard foam, Filled Foam, Coloured Foam, Visco Elastic Foam, High Resilience Foam, Fire Retardant Foam & Flame Lamination Foam. Cannon Viking is currently building four Maxflow Omega 800 machines for South America, Europe, Middle East and Africa at their Manchester facility. The machine for our client in South America is a wide frame Maxflow Omega Varimax 800 machine and is designed to produce Standard foam, Bio foam, Filled Foam, Coloured Foam, Visco Elastic foam, High Resilience Foam, Fire Retardant Foam & Flame Lamination Foam. The machine is designed to produce flexible foam using both TDI and MDI lines and uses the liquid laydown production module along with Planiblock Top paper system and full length conveyozied sideways for optimum block shape with minimum waste. The machine for our client in Europe is a Maxflow Omega 800 machine and this machine will produce Standard foam, Filled Foam, Coloured Foam, Visco Elastic foam, High Resilience Foam using both TDI and MDI chemical streams. This machine will also have Liquid Laydown Production Module, Planiblock Top Paper system and full length conveyozied sideways. The third machine under build is for the Middle East market and this Maxflow Omega 800 machine will be capable of producing Standard Foam, Filled Foam and Coloured Foam in this rapidly expanding region of the world. Another Maxflow Omega 800 machine is under construction for a major client in the African market and will be capable to produce Standard Foam, Filled Foam and Coloured Foam.

Cannon Viking introduces 'Easymax Elite' machine

Need a small continuous machine with High Pressure lines? Is there a plan to produce very high quality foam for high end furniture market? Cannon Viking now introduces new options on their Easymax Elite machine – high pressure lines for TDI and Water.

The Easymax Elite machine is ideal for small to medium sized foam producers who are planning to produce very high spec flexible foam with very low pinhole count and regular cell structure. The new Easymax Elite machine has high pressure TDI and Water lines and can have either Truinch or Liquid Laydown production module, depending on customers’ choice. This new machine has a maximum machine output of 240 liters/min and a production speed of 2-6 meters/min. The Easymax Elite machine uses a new patented high pressure Cannon Mixing Head to produce foam. The Easymax Elite machine has a very compact design – about 25 meters long including the cut-off machine- and may have all other options such as BS film, Top film, Silicone Air Mixer, Formulation change equipment etc. Talk to Cannon Viking for the new Easymax Elite machine!
Toray-EACC carbon composites: “Innovation by Chemistry”

Worldwide present and known, operating in a wide range of chemical activities, Toray Industries is the global leader of Carbon fibres. For the development of their automotive composites activities they have chosen Cannon Afros as supplier of the dosing and mixing equipment for their liquid formulations. We interview Kenjiro Ota, CEO of their EACC European branch, the producers of innovative composite parts for leading car makers.

Founded in Japan 1926 as Toyoe Rayon, today’s Toray Industries Inc. is a giant chemical corporation operating with more than 45,000 employees on a worldwide basis. Their product development includes a large number of fibres and textiles, plastics and chemicals, IT-related plastic products, devices for environment protection and engineering, pharmaceuticals and medical devices. Their 2013 turnover exceeded 1,800 Billion Yen (13.2 Billion Euro) and one of the most promising contributors to their profit is the Carbon fibre Composites Materials and Moulded Composites Division.

Carbon fibres for automotive composites

Toray have been working on enhancement of their business bases around the world to create a Carbon fibre market for automotive applications. In Japan and rest of Asia, the company has been designing CFRP products and developing manufacturing technologies and products primarily at the Advanced Composite Center (ACC) and Automotive Center (AMC), the core facilities of A&A(Automotive & Aircraft) Center that is its comprehensive technology development base targeting automotive and aircraft fields, located in Nagoya Plant. In Europe, which is quite advanced in the adoption of CFRP auto parts, Toray in 2011 established Euro Advanced Carbon Fiber Composites GmbH in Eslingen, Germany, jointly with Daimler AG to drive forward development of market and applications. The carbon fibre composite material business is at the heart of the endeavour and Toray seems very determined to expand the use of CFRP in the automobile field, which is expected to be a major application following the aircraft field.

Mr. Kenjiro Ota, CEO of EACC, paid recently a visit to Cannon Afros to discuss the details of a new investment in metering and mixing equipment, as well as to examine in detail the equipment and the opportunities available in the new Cannon R&D lab for Composites. We interviewed Mr. Ota to learn more about Toray’s market presence and expectations in the field of CFRP (Carbon fibre reinforced plastic)

Cannon News: Welcome again to Cannon, Mr. Ota. Before asking you about your present activities in the composites field, could you summarise the basic information about EACC?

Kenjiro Ota: We are based in Eslingen am Neckar, near Stuttgart, since 2011. We are currently about 40 people, and our basic target is mass-production of CFRP parts for the automotive industry. We are interested in projects with an output series of at least 5,000 parts per year. Small series is not our aim. Competitiveness on the market comes from an affordable price, and this can be obtained only by developing new technology over a large number of equal pieces.

CN: What sort of products are you targeting, with this philosophy in mind?
KO: Automotive applications, of course, for the time being limiting our choice to the body parts. On a longer time range, say around 2020, we are thinking to structural parts too, but that’s too early for the current market situation. The basic idea driving the whole Carbon fibre development is “weight reduction”. Today the car makers are quite ready to replace metallic external body part with a CFRP one. They save some weight, and we are all happy. But when you suggest them to save much more weight by replacing a large, heavy structural steel beam with a much lighter composite part, there are still many things to do – for this important step. Their models must be redesigned suitable for composite, and this takes a longer time. We get ready, in the meantime, and grow our experience.

CN: How do you approach this young sector of the plastics market?
KO: Toray’s corporate slogan is “Innovation by chemistry”. We try to apply new concepts in our formulations, in our equipment, in our designing and production methods. We look forward, not backward! All what we handle comes from chemistry, starting from our well-known series of Carbon reinforcements. We do formulate our own chemical matrix, all sourced from European suppliers: today it is an Epoxy resin but we do not exclude in the future to examine other polymers, if the properties that they bring and their unit cost will make our products more performing and competitive.

CN: What is your capacity, today, in terms of output and part sizes?
KO: We are well equipped to face the demand for the largest Automotive part you can conceive today. Our current presses can hold 3x3 meter moulds, so the size does not concerns us; productivity, thanks to our own production procedures, is high. We can mould several hundred pieces every day, since we concentrated on High Pressure RTM technology for all our components. This is the most suitable technology, today, for the mass production of complex and large automotive parts – if you have the right equipment!

CN: Let’s talk of production equipment, then! What did you find in Cannon metering and mixing solutions?
KO: Our Japanese R&D laboratory uses Cannon ESTRIM technology for their development work. We apply there a whole range of technologies: prepreg, pultrusion, filament winding, press moulding, etc. Cannon performs very well for all what concerns metering, mixing and injecting liquid multi-component resins and we chose the same equipment for our German unit. We currently have a Cannon dosing unitable to dispense up to 5 kg per minute of three-component Epoxy formulation, with two dedicated mixing heads. We are currently discussing a much larger investment, for a future project that must start soon. We appreciate the performances and the service provided by Cannon, and we like the flexibility in designing a machine according to the needs of our own processing technology.

CN: Can you disclose any of your plans for the future?
KO: Toray would like to make a great investment in the development of Carbon fibres in the automotive field. It is the major market that suits our vision of mass production, where the search for weight reduction at an affordable cost is a true driving force. We do not want to forget the rest of the market, of course: we already have in Europe a major share of the Carbon used for the construction of the Airbus, and in the USA the same applies for Boeing, especially for the wide 787 model. We are looking with great interest to the business of natural gas pressure vessels, where Carbon fibres can do wonder in terms of lightness, mechanical resistance, aspect, corrosion resistance etc. etc.

We want to stay in line with our motto, in other words: Innovation by Chemistry! A large, three-dimensional CFRP support for the trunk lid of Mercedes SL series is currently produced by EACC in Germany with Cannon metering and mixing equipment

A Carbon preform ready to be injected with Epoxy resin. In the background, on the mezzanine, stands the Cannon metering and mixing equipment.
A Cannon infusion machine for the “Best of the Best Blades”

Voted “Blade of the Year 2012” by Windpower Monthly Magazine, the Blade Dynamics D49 blade production process utilises a Cannon DX15 machine for the infusion of the epoxy resin in its glass fibre outer shell.

Only a superior level of process control can guarantee repeatability of results, and the Cannon dosing unit was selected because of its reliability in operation.

Blade Dynamics is a British manufacturer of blades for the wind power industry, operating with facilities at the NASA Michoud Assembly Facility in Louisiana, and in the south of England. In 2013, the company was awarded a large contract by the Energy Technology Institute to develop and prototype the next generation of offshore wind turbine blades for larger, higher performance turbines.

The company designs, develops and builds blades using unique seamless modular technology. Key benefits are significant improvements in quality, performance and transportability.

Manufacturing and transporting short sections of a very large blade – and assembling them near the point of use – is by far more convenient and simple than carrying the whole giant in a piece. Above 50 m of length cost of transport rises dramatically.

Innovative solutions for the wind power industry

Their innovative concept in blades production derives from a simple concept: relatively smaller components are inherently more controllable in manufacture than larger components. The company designs and manufactures blades from smaller subcomponents than conventional blades because this allows greater process control as reduced variation between parts. The result is that blades can be both more reliable and lighter, which has big benefits for the cost of energy.

Smaller subcomponents can be more easily transported and add flexibility to the supply chain for blades.

This also means that blades can be easily transported in two sections which allows very long blades to be transported using conventional transportation systems. Core to the design of Blade Dynamics is an inner spar technology built from many multi-layer, carbon-fibre-reinforced epoxy sections. Precision moulds can produce repeatable, high-quality, single-spar, which fit into stiff box-type structures, carrying the main loads.

The outer shell elements are built predominantly in glass-fibre-reinforced epoxy composite, providing aerodynamic cladding and also contributing to the blade's structural integrity.

The D49 - The most advanced wind turbine blade available.

Unique technology enables the Dynamic 49 to be the only low weight, high performance blade that can be transported in two sections and combined locally. Dynamic 49 blades significantly lower the cost of logistics and enabling onshore wind farms to be equipped with larger, more profitable rotors. The blade sets new standards for wind power generation from 2MW machines. Weighing only 6,155kg, it is the lightest blade in its class, with unmatched manufacturing accuracy, lightness, quality and durability. The D49 increases rotor size, boosting annual energy production and improving the yield of the turbine without any mechanical adjustments to the turbine.

“This is the only low weight, high performance blade that can be transported in two sections and combined locally” says Pepe Carnevale, CEO of Blade Dynamics. “Lightweight offshore blades longer than 80m can enable next-generation offshore turbines with much larger rotors to deliver energy at a lower cost. The cost reduction potential comes both from increasing the effectiveness of the rotor and from the greatly increased size of turbine that can be installed on each foundation. We are presently working on high performance 6MW offshore blades and also on blades for much larger turbines.”

“The D49 blade showcases many of Blade Dynamics’ proprietary technologies” adds Theo Botha, head of sales. Most important, though, are a great deal of process and quality control. Only applying the strictest control on all the parameters of our manufacturing process we can obtain product consistency and guarantee an optimised structure. To apply this concept we simply need to use the best available components, let them be chemicals, equipment and workforce.”

In 2013, the company was awarded a large contract by the Energy Technology Institute to develop and prototype the next generation of offshore wind turbine blades for larger, higher performance turbines.

A Cannon solution for a complex problem

For the epoxy infusion process that leads to the manufacture of the outer glass-reinforced shell – whose thin walls provide a weight saving benefit of at least 23% compared to conventional blades – the US facility utilises a Cannon DX 35 dispensing unit. Designed and manufactured with quality and repeatability concepts, this compact, portable dispensing unit:

• Small dimensions, with a single frame equipped with pivoting wheels to easily move the machine close to the mould.

• A programmable electronic control, with dedicated infusion programs storable for each mould.

• Inverters to control the pumps’ motors speed to work within a wide range of mixing ratios.

• Closed-loop control of component’s output and ratio to guarantee a continuous control over the flow of liquid resins and an accurate mixing ratio.

• Recirculation circuit on both components line to reach the set parameters before starting the infusion, for an even quality of polymerised resin across the whole blade, fundamental to guarantee repeatable performances.

• A static mixer equipped with disposable mixing elements, attached to a dedicated mixing head block.

• Dedicated flushing program to flush the mixing head with the resin between two subsequent shots.

• Stainless steel circuit for the hardener.

• Wireless remote control, based on radiofrequency, to control the main operating functions when surveying the long moulds very far away from the dosing machine.

• Modern for Remote Service which allows one of the three Cannon Service Centres in the world to connect to the machine installed at the customer’s site and perform every type of control and adjustment.

• An efficient data collection system to collect, shot by shot, the main working parameters and alarms of the machine, and store production data in a flash memory card.

The future of offshore wind energy.

For wind, the offshore environment is the most challenging. Reliability, performance and longevity are essential for offshore wind to make economic sense.

Blade Dynamics has specifically developed technology for use offshore: the largest and highest performance blades ever constructed are currently under development at the company.

Cannon proudly stands side-by-side with Blade Dynamics to support their ambitious projects with quality equipment and local service.
A three-fold growth for Artes' factory

A new manufacturing site will be available this year for ARTES Ingegneria near their existing one, in Oliveto Citra, near Salerno, Italy. The surface destined to the assembly of heavy carpentry structures will be three times more than today, to face the rapid rise in business that the Water Treatments Division of Cannon is facing in these last years.

ARTES Ingegneria has been manufacturing since 1968 water treatment plants in Oliveto Citra, 60 km from their Salerno offices, in Southern Italy.

A new, larger factory for ARTES Ingegneria!

The Cannon “movida” in Brazil

Cannon do Brasil looks forward with young forces, ready to continue the good work done in these years. Marcio Nascimento, 34 years, is in charge of sales in the Brazilian branch of Cannon.

Born in Maua, State of Sao Paulo, Brazil, in 1980, Marcio Nascimento holds a university degree in Chemical Engineering obtained in 2003. He continued for some years his experience of student-worker by following an MBA in Business Management, that he concluded positively in 2009. His professional background has been interesting and varied: his first employment with Alco Nobel was followed by a long technical and commercial experience with BASF dealing with automotive painting solutions that put him in contact with the major local car makers and with Polyurethane coatings. After that, a six-years job as responsible for the lost-sand moulds for a major foundry allowed him to stay in touch with other types of Polyurethane resins, used as binder for the disposable dies used for casting large steel mouldings.

A challenging job at Cannon

With that varied experience behind him and the attitude to face challenging projects, Marcio joined Cannon do Brasil in 2011. Since then he follows the commercial aspect of the Brazilian location of Cannon. Married, with two children, he says that he loves the challenge of... week-end cooking, for the joy of his relatives and friends! A not-so-relaxing way to cool off the stress of following a mixed client portfolio, based almost everywhere in his wide country. Polyurethane equipment still represents the widest portion of Cannon do Brasil activity, concentrated in the distribution and service of Cannon metering and mixing equipment, foaming plants and industrial thermoforers. But, as every Cannon local unit is experiencing in the last few years, arrows are being added to their quiver: Energy and Water Treatment solutions are becoming a more and more common subject among the sales forces used to deal with Plastics Technologies.

Cannon do Brasil – a modern Cannon location

A modern Cannon location must be multi-tasking, open to deal with the needs of a wider range of customers and of applications. Energy- and water-related problems present a significantly wider field of action than Plastics processing, with a much higher business potential. Cannon men and women around the world are getting used to this cultural change, and are acting fast to be ready also for these two different markets. With these new opportunities ahead and a consolidated number of “traditional” Polyurethane-related customers – that include Electrolysis, Panasonic, Whirlpool, Mabe, Esmalter, Metalífras, Frico, Fischer, Random, Caio Induscas; Copo, Fehrler, Plascar, Saint Gobain – Cannon do Brasil looks positively at the future, in spite of the heavy custom duties imposed by the government on all imported machinery. Duty is still very high in this country – a machine worth 100,000 Euro FOB Italian port will cost 160,000 once unloaded in Brazil (with all duties settled cash upfront), just to protect the local industry – and the greatest efforts are spent to convince the clients that these technological goods imported from Europe still represent a quantum leap if compared with what the market offers locally.

Maintaining the leadership

The Brazilian challenges begin: the country periodically encounters its high’s and low’s in economy, and the high percentage of young population makes it a nation full of hopes and ambitions. The historical leadership of Cannon in Polyurethane will be reaffirmed in other sectors as well, using the right tools and arguments: best wishes, Marcio, you can make it!

Marcio Nascimento - Cannon do Brasil

Em-powering Cannon France

Created almost forty years ago, Cannon France – 100% direct branch of the Cannon Group – has dedicated until now all its resources and efforts to the distribution of the Group’s plastics processing technologies: Polyurethanes, Thermoforers, Composites. Now the French unit is also dedicated to industrial boilers. Régis Durand is in charge of Sales.

Born in Lyon 42 years ago, married with three children, Régis Durand holds a Degree in Automation Technologies. He spent all his career in the field of Energy, working at the beginning in a French boiler’s company, continuing in an Energy service company and later for a manufacturer of burners. An expert in all the aspects concerning the heat generation technology, Régis joined Cannon France in March 2014 to become Sales Manager for France, Belgium and the Maghreb.

His activity will be focused on the sale of the standard products – steam or water fire-tube boilers, and hot oil heaters – manufactured by the Industrial Division of BONO Energia.

Régis has taken over the current portfolio of French customers since the activity of BONO Energia dates back to the 1970’s. Prestigious names appear in the reference list - among them EDF, Tereos, ABB, Aventis Pasteur, Arkema... - and the task is now to extend it with the names of other clients.

First in the list of his priorities is to communicate on the quality, reliability and sturdiness of BONO Energia products to the French market such as the Energy Service companies, the Chemical and Pharmaceutical sector, and the Food industry.

For any need concerning industrial boilers in France you can rely on BONO Energia and on his French Sales Manager: Régis Durand, (rduran@cannon.fr). Mobile: +33 6 10 02 61 70, Fax: +33 1 60 19 22 94.

Shelley, a good workplace

Robert Lornie, left, celebrated 25 years of dedicated service with Cannon Shelley. Arrived as a young man, Rob spent many years in technical service and is now an excellent technical salesman for Ergos thermoforers and for the equipment of Belotti, a long-time partner of Cannon for contour cutting machines. He was presented with a small token of appreciation by Peter Clarke, right, who himself will retire in September after 45 years of service. Peter started with Shelley at the age of 22 and has performed almost every job in the company in his 45 years of service. Although he will retire from his full-time role of General Manager at the end of September, he will be seen around quite frequently in the following months.

Employees must really like it at Shelley!

Meet Us @...

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<td>3-5 September 2014</td>
<td>China Composites</td>
<td>Shanghai - China</td>
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<tr>
<td>13-13 November 2014</td>
<td>FEIPLAR-FEIPUR</td>
<td>Sao Paulo - Brazil</td>
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<td>3-5 September 2014</td>
<td>UTECH Asia/Pacific</td>
<td>Shanghai - China</td>
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<tr>
<td>22-24 September 2014</td>
<td>POLYURETHANES Technical Conference</td>
<td>Dallas - Texas, USA</td>
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<td>10-13 November 2014</td>
<td>ADIPEC (Oil &amp; Gas)</td>
<td>Abu Dhabi - UAE</td>
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<tr>
<td>18-22 August 2014</td>
<td>INTERPLAST</td>
<td>Joinville - Brazil</td>
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<td>9-11 September 2014</td>
<td>SPE Automotive Composites</td>
<td>Novi, Michigan - USA</td>
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<tr>
<td>14-18 October 2014</td>
<td>FAKUMA (Plastics)</td>
<td>Friedrichshafen - Germany</td>
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<td>28-29 October 2014</td>
<td>SAVE (Automation)</td>
<td>Verona - Italy</td>
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<tr>
<td>15-18 September 2014</td>
<td>RIO OIL &amp; GAS</td>
<td>Rio de Janeiro - Brazil</td>
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