



EXTRUSION LINES & EQUIPMENT

Ultralight profiles

The international showcase of Plast 2012 provides **Friul Filiere (13 - C21/D18)** the occasion for a live presentation of its world-patented FFC (Foam Fiber Composite) technology through the display of the new Omega Evolution extrusion line. During the demonstrations, the new FFC ultralight composite is extruded as a skirting profile, which is the best compromise between the need to show the full characteristics and potentials of this new material and the constraints imposed by an exhibition setting.

The line exhibited at the fair is equipped with an Omega single-screw extruder, which processes a dryblend consisting of a mixture of thermoplastic materials, natural fibres and various additives which is fed into the hopper and extruded directly, cutting out the pelletizing stage.

The true innovative potential of FFC is the ability to recycle not only the natural fibre waste (jute, hemp, sugar cane, rice husk etc.) but also, and most importantly, thermoset scrap, which is classified as a special waste (rubber, urea, melamine, phenolic, MDF, coatings etc.). During the demonstration the skirting profile, designed in-house, is extruded using a dryblend containing recycled coating scrap to show the high physical, mechanical and aesthetic quality of the extrudate.

In recent months, there has been special interest on the market in the new FFC decking profile, especially after Friul Filiere delivered a major order to a South American customer, including various complete lines for extruding this kind of decking profile. Currently, WPC (Wood-Plastic Composite) decking profiles are widely used and their benefits and drawbacks are well known. This could be the reason why customers are so enthusiastic about the innovative FFC decking profile with its improved physical and mechanical performance characteristics.

Visitors to the stand find decking profile samples to illustrating the different sorts of finishes that can be applied in-line: mono-material, coextruded in FFC or PVC, embossed, printed, brushed etc. There are also many other samples of different types of profiles already made of FFC: door frames, window profiles, wall panels, fences and more. Naturally, traditional



MACCHI

products are also on display manufactured using the company's most successful turnkey projects: edge band profiles, EPS picture frames, special coextruded gaskets for the automotive industry etc.

www.friulfiliere.it

Evolution of stretch film

To meet the demands of constant growth and development in the market for stretch film, **Macchi (15 - B33/C32)** has designed and developed a cast line able to produce coreless reels. This solution allows considerable savings, including those resulting from the inline production of pre-stretched film. Elimination of the cardboard core reduces the per-kilogram cost of film by 5%, while the possibility of producing pre-stretched film in-line enables higher production speed (over 10,000 m/min) of thinner film with enhanced mechanical properties, without the additional costs of secondary machining processes.

These results were obtained thanks to technology involving the use of a specific winder (for which Macchi holds exclusive European rights), developed in collaboration with NoEI, that enables the creation of coreless reels for manual or automatic use. Film in thickness from 7 to 23 microns can thus be produced to provide practical responses to a wide range of issues, from a need for lightweight film for pallets to reduced costs for transport, storage, and cardboard disposal.

Macchi cast technology enables production of all these films without changing system configuration. Moreover it is possible to reduce film thickness without affecting machine productivity: the film exits the chill roll with a thickness of 23 microns and is then further reduced to 12 microns by increasing the line speed without fully pre-stretching the film.

The new line was presented at a recent open house in a demo version based on 5 extruders (65-100-100-100-65 mm)

and a 2600-mm extrusion head. It permits the production of film in thickness from 12 to 50 microns at a speed of 600 m/min with an output of 1,000 kg/h (23-micron film). The cooling unit is composed of a main chill roll (diameter 1350 mm) and two stabilization chill rolls, one of which features adjustable positioning.

During Plast 2012, Macchi is showing a 9-layer blown film coextrusion line in operation. The configuration again comprises three integrated



FRIUL FILIERE



platforms equipped with Plastex Barrier 55 extruders and Siemens Torque motorization feeding a COEXflex IBC head with all melt conveying channels at the same level. The inner design is based on the dual distribution concept, first at binary partition and then with conventional spirals, to feed a 500-mm die with automatic profile control. Multiple layers bring various benefits, from a better barrier effect for the same total thickness of PA and EVOH layers to improved physical-mechanical properties, including thermofomability.

www.macchi.it

Thirty-year partnership for compounding

Three new compounding lines for the production of engineering plastics, supplied by **Icma San Giorgio (13 - C29/D26)**, will add 30,000 tons to the total annual production capacity of the Softer Group. The lines are intended for installation in the Forli and Ferrara (Italy) and Silao (Mexico) plants and will enable the Italian group to strengthen its presence in the automotive and household appliance sectors and also to consolidate its role as a global supplier. The machines are three co-rotating twin-screw extruders capable of processing different materials, such as polypropylene and polyamide filled or reinforced up to 50% with glass fibre, at high flow rates. The extruder is made of wear-resistant steel alloys and features a modular design which makes it possible to optimize maintenance costs. The significant results achieved by Softer, one of the largest independent compounders globally, were made possible partially thanks to its 30-year partnership with Icma, which over the years has supplied high performance machines backed by world class customer service. Moreover, the relaunch of the Ferrara plant (former P-Group), acquired in 2011, allows the machinery maker to participate as a supplier in a very positive initiative that



ICMA

helps keep a centre of technological excellence in Italy. In addition to contributing to the recovery plan of the Ferrara technological centre, the new investment confirms the intention of Softer to maintain Italy as a privileged production platform for the European markets. On the other hand, with its strategic location and efficient logistic structures, Mexico is becoming the basis for expansion towards the NAFTA countries: it will be easy to supply companies located in the US or Canada from there as well as to collaborate with corporations that have relocated their production to Mexico and are looking for local partners boasting European technological and quality. The range of Softer products includes thermoplastic elastomers, thermoplastic vulcanizates and engineering plastics. Thanks to its technological know-how, the group can offer innovative solutions with a strong specialization in the automotive, appliance, electrical-electronic, construction, footwear and sports sectors. The group has two manufacturing plants in Italy, two further units in Latin America (Mexico, Brazil) and a sales subsidiary in Germany.

www.icmasg.it

Giant corrugator

The increasing demand for double-wall PP corrugated pipes as an alternative to concrete or PVC pipes for sewerage networks or drainage of rainwater has prompted **Itib Machinery (13 - C25)** to invest greater resources in developing suitable production technology. After producing the F700SH9 shuttle corrugator, of which an exemplar was recently put into operation at the facilities of the Slovak



ITIB

processor **Plastika**, the company is developing its successor, F1200SH10, for pipes with inner and outer diameter, respectively, up to 1,000 and 1,200 mm, depending on applicable standards. The corrugator is composed of 10 pairs of mould halves, 6 of which are in the forming position while 1 pair is in the closing phase, 1 pair is in the opening phase, and 2 pairs are on the return path. In this model, as in the previous smaller one, the mould halves are not moved using chain conveyors but instead by means of a shuttle technology, i.e., a sliding mould-holder trolley. This solution is more suitable for a machine of such large size, reducing the necessary number of pairs of mould halves, the machine footprint and investment costs.

Each mould half is equipped with a circuit for cooling water, which is applied under pressure from an independent inlet-outlet point. Pipe forming is carried out under vacuum assisted by a low-pressure blown air. In emergency situations or in the event of a power cut-off, the F1200SH10 corrugators can be moved backwards in order to allow free access to the head, extrusion die, and the cooling mandrel of the inner layer of the pipe thereby allowing any residual material to be removed.

The corrugator can achieve hourly outputs up to 1000 kg. Moulds of different sizes can be fitted by lifting or lowering the upper structure where part of the cooling and suction systems is installed thereby affording easy access for mould assembly.

www.itib-machinery.com

Extrusion & thermoforming

For thermoforming applications, **Amut (13 - B39/C38)** introduces the evolution of the FFG high-speed automatic machines with steel rule die cutting: the FFG820 ADV model is in operation with air pressure and/or vacuum forming. The toggle system for platen stroke, with planetary roller screws, ensures resistance and duration of cutting efficiency for the toughest



AMUT

vegetable fibres. Thanks to the low revolution speeds and high torque of the screws, it is possible to extrude at high pressure and reduced shear keeping the melt temperature low so as to prevent the degradation of vegetable components. Another machine on display is an EA 75 single-screw extruder for the production of small pipes in special

high-quality components and software fully developed and manufactured by the company. The line also includes a hot runner injection mould for drippers (up to 96 cavities). Production of this new line has enabled the company to achieve very high output and quality standards. Another line was developed at the same time for irrigation pipes with round drippers having the following technical specifications: pipe diameter 16 and 20 mm, insertion capability of up to 400 drippers per minute, production speed 80-100 m/min.

www.profiledies.com

Socketing & packaging

Precisely on the occasion of Plast 2012, **IPM (13 - C37/D34)** celebrates its 25th year of activity, previewing the innovative BA 200 PP belling machine for polypropylene pipes, operating in connection with a fully automated packaging system for pipes up to 500-mm long. Considering the high production capacity of these belling

materials at high speeds, both in the forming and in the cutting stations, with an installed force of 60 tons. Great attention has been given to flexibility and user-friendliness, as seen in the quick mould change system in all the stations, direct connections to the utilities on the mould-holding platens of the forming station, and the electric hoist.

A machine from this range has recently been installed on a complete line for extrusion-thermoforming of PP sheet for high speed production of pots (depth 200 mm) for the flower-nursery market. On this occasion an additional hole-punching station was included to make holes in the bottom of the flowerpots, while the finished items are automatically stacked by a 3-axis handling robot.

Also on display is a BA 130 twin-screw extruder for the production of WPC profiles. The Easy Wood system developed for this application is provided as complete lines (from 300 to over 1,000 kg/h) for direct extrusion, without pre-mixing of materials and additives, with up to 80% vegetable fibres in a polyolefin base (HDPE-PP) and around 50% for PVC. The extrusion line is equipped with a single-screw extruder and a counter-rotating twin screw extruder. The latter is considered the ideal machine for processing highly viscous compounds, such as WPC, with high percentages of

materials for medical and automotive applications. Depending on screw geometry and barrel configuration, hourly outputs up to 750 kg can be achieved. The pipes produced on these lines must comply with very strict dimensional and ovalization parameters. For this reason, the lines are equipped with very accurate measuring and control systems for diameter and thickness, which ensure constant, oscillation-free production.

www.amut.it

Irrigation pipes

Specialized in the construction of extrusion lines for the production of drip irrigation pipes, **Profile Dies (13 - C05)** has recently developed a new fast extrusion line for pipes with flat drippers having the following technical specifications: minimum pipe thickness 0.15 mm, mechanical line speed 150 m/min, production speed up to 130 m/min, insertion of 800 drippers per minute.

The line is composed of the following components: automatic inserting unit for drippers, gravimetric dosing units, extruder with 65- or 80-mm screw, coextruder with 20-mm screw, special head-die, calibration and cooling tanks, haul-offs, mechanical drilling unit, automatic winder, control panel with



PROFILE DIES



www.baruffaldi.eu

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www.primac.it





machines (up to 924 sockets per hour for 50-mm diameter x 1.8 mm), end-of-line management (collection, automatic packaging and conveyance to storage of a huge amount of pipes) is increasingly necessary. Moreover, an automated quality control (checking the correct position of the automatically inserted gasket) and socket tightness check system is also displayed, demonstrating that only the pipes that pass inspection are conveyed to the automatic packaging unit.

The company offers its European customers customized automated solutions for pipe packaging involving the use of robots for pipe handling and packaging into suitable supports, with automatic forming of pallets pre-arranged to be picked up by forklifts and stocked, or for packing shorter pipes into cardboard boxes provided for the purpose. There are many requests from other regions for automatic packaging systems for pipe bundles by means of multiple straps and optional packing into sacks (or wrapping up by film) as well as subsequent palletization of the produced bundles in special cases.

These are fully automatic systems operating in-line with extrusion (sometimes consisting of more than one of the above-mentioned technologies combined together) which are able to pack up to 1,500 pipes per hour with length of 150 to 3,000 mm. Furthermore, it is also possible to handle, sort and pack separately (with socketed ends having opposite position) pipes having different lengths but manufactured in sequence by the same extrusion line.

Another piece of equipment on display during the fair is the new version of the BA 200 RS (Rieber System) socketing machine, which can attain very high output rates thanks to the use of ovens equipped with short-wave lamps. In addition to their very high efficiency and excellent energy performance, these ovens ensure better penetration as well as direct and dynamic temperature control of the material undergoing processing. The direct effect is a reduction of heating times and therefore of power consumption, particularly when

the machine is not working at maximum potential. Moreover, these ovens do not need to be brought to temperature before the extrusion line is started, because they are instantly operative. Lastly, on May 5, the eve of Plast 2012, IPM is organizing an open house at its headquarters to celebrate its 25 years in the business as well as to introduce the new (patented) INJ range for belling of double-wall PP and PE corrugated pipes. The model being demonstrated (BA 1200 INJ) is the largest of the range and cannot be displayed at the fair due to its size. Together with the cutting unit, this machine completes an extrusion line made by Unicor and having its final destination in the Arabian countries. It is able to socket pipes in-line having outer diameter from 315 to 1,200 mm, ensuring the dimensional stability of the socket, even if exposed to highly variable environmental temperatures

www.ipm-italy.it

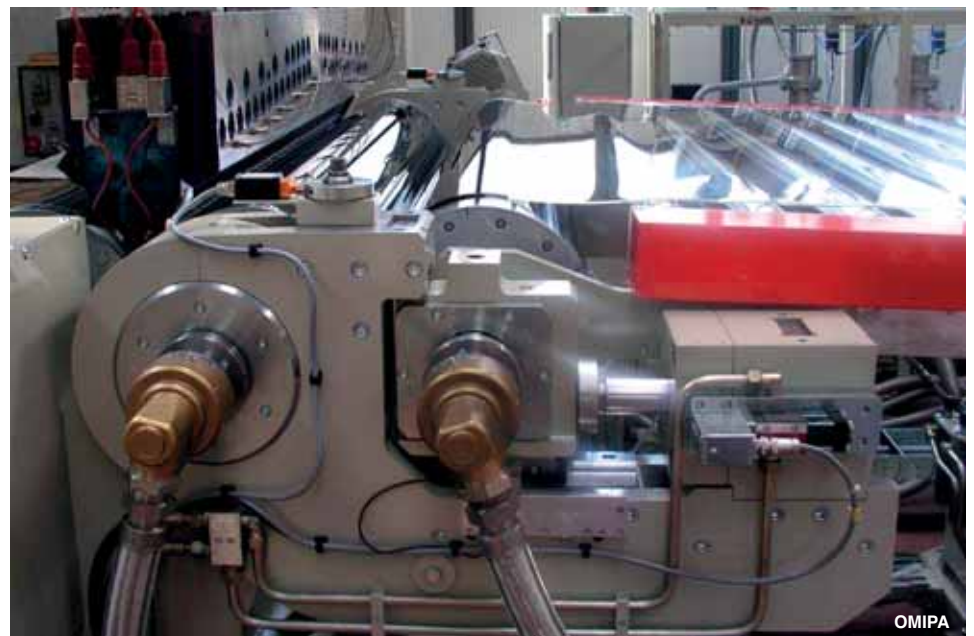
Optical quality

With more than 45 years of experience, development, and in-house production and over 95% of its products exported,

Omipa (13 - C30) is a leader in the construction of complete extrusion lines for various thermoplastic materials. The company is already an established presence in the market for extrusion lines for high optical quality sheets and foils in PMMA-PC-PS-MS with thickness from 0.3 to 10 mm. These products are destined for the continually growing market of LCD, LED and 3D screens, and also for touch-screen technology and advertising applications. For the automotive industry, sanitary applications, food packaging, and appliances the company offers high performance lines for the production of sheets in PE-PP-ABS-PET with coextrusion in up to 7 layers.

In recent years, Omipa has been working with its clients to design and develop hollow polycarbonate profiles with increasingly innovative architectural geometries for application in public and private construction, major projects such as stadium roofing for Olympic and other sports events, stations, shopping malls, and greenhouses.

High line speed is the main feature of extrusion lines for hollow PP profiles in thickness varying from 1.8 to 20 mm for use in industrial and agricultural packaging applications (e.g., fruit boxes, containers, folders etc.) with developments also in the fields of heavy-duty packaging and advertising. In hollow polypropylene profile segment, the company is developing the new Foam System, which makes it possible to reduce final product weight without altering mechanical resistance properties. Fluctuating raw materials prices and the need to improve existing applications have led the company to develop a production system for hollow PP-foam profiles, especially designed for medium-high weights, which makes it possible to reduce raw material





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consumption by 20-30%, producing economic savings and environmental benefits without compromising the physical and mechanical characteristics of the finished product.

An absolute novelty for the market is the new range of machines, presently in the development and testing phase, for the production of low shrinkage EVA for encapsulation of silicon cells for photovoltaic panels. The idea is to build and deliver a turn-key plant, including blend formulation. Lastly, Omipa has successfully carried out tests for the production of hollow profiles in ABS, a material which has not previously been used for these applications. Besides making it possible to replace the products commonly used for heavy packaging, it guarantees excellent performance even when subjected to very low ambient temperatures.

www.omipa.it

High speed for roller shutters

Specialized in the development of advanced technology for high-output extrusion tooling of roller shutters, in which it boasts world leadership with speeds of up to 12 m/min in double outlet, **Baruffaldi Plastic Technology**

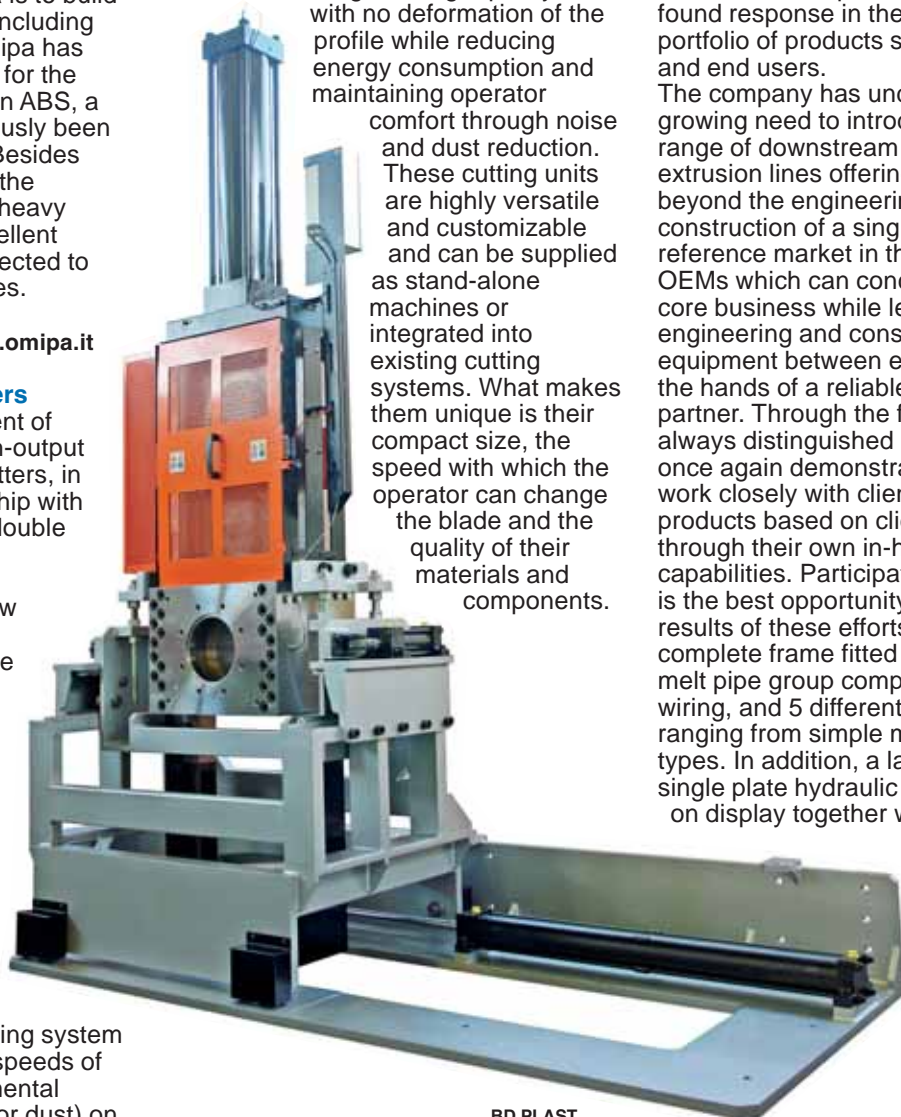
(13 - B43) is introducing a new generation of Combiroll and Combipack, in-line and off-line automatic and semi-automatic machines for assembling and packaging roller shutter profiles of all sorts and sizes up to 12 m, in single or dual outlet. These machines stand out for sturdiness, high production rates, versatility and ease of use.

When it comes to punching profiles, even the largest and thickest ones, an innovative punching and striking system has been designed to reach speeds of up to 15 m/min with no detrimental effects (such as burrs, swarf or dust) on

the quality of the finished products while keeping noise levels and environmental impact to a minimum. The new rotary punching machine, which can handle all sorts of technical profiles including angular ones, can run at 30 m/min, is extremely versatile and can be used in-line and off-line. Simple to operate, it comes with height adjustment and quick changeover tooling.

The patented horizontal guillotine cutting systems, available with either hot or cold blade, give a high quality cut with no deformation of the profile while reducing energy consumption and maintaining operator

comfort through noise and dust reduction. These cutting units are highly versatile and customizable and can be supplied as stand-alone machines or integrated into existing cutting systems. What makes them unique is their compact size, the speed with which the operator can change the blade and the quality of their materials and components.



BD PLAST

Moreover, the company has recently extended its product range to cover machines for processing PVC and polypropylene pipes by acquiring the Primac brand and technology.

www.baruffaldi.eu

Advanced screenchangers

The capability of a company to express its philosophy through R&D of innovative products represents a fundamental factor in its growth and development. Finding new market opportunities through expertise gained over decades of effort requires readiness and flexibility. Following this idea, **BD Plast (15 - B23)** has continuously improved its range of screenchangers, addressing growing demand in a very challenging market and introducing new lines of products strictly embodying its traditions.

For many years the need for melt pipes, elbows and adapters for extrusion has found response in the company's portfolio of products supplied to OEMs and end users.

The company has understood the growing need to introduce a complete range of downstream equipment for extrusion lines offering services that go beyond the engineering and construction of a single component. The reference market in this regard are OEMs which can concentrate on their core business while leaving the engineering and construction of ancillary equipment between extruder and die in the hands of a reliable and qualified partner. Through the flexibility that has always distinguished it, BD Plast has once again demonstrated the ability to work closely with clients, producing products based on client's designs or through their own in-house engineering capabilities. Participation in Plast 2012 is the best opportunity to display the results of these efforts. These include a complete frame fitted with a 5-layer cast melt pipe group complete with heaters, wiring, and 5 different screenchangers, ranging from simple manual to hydraulic types. In addition, a large filtration area single plate hydraulic screenchanger is on display together with a continuous

flow double plate screenchanger with a new sealing systems and protective guard layout.

www.bdplast.com



Technology, Quality, Innovation



E EXTRUSION

- Single screw extruders for PVC, PE, ABS, PS, PET, PP, screw diameter from 20 mm to 180 mm, L/D up to 40.
- Twin screw extruders for PVC, screw diameter from 55 mm to 170 mm, L/D up to 36.
- Complete pelletizing lines for PVC and PO processing.
- PVC and PE pipe lines up to 1.200 mm diameter, PPr and PEx pipes up to 5 layers.
- PVC and PO profile lines, including co-extruded profiles, up to 600 Kg/h output.
- Foil and sheet lines, including co-extrusion up to 9 layers.
- Complete plants for co-extrusion of PVC-TPE-TPO geo-membranes.
- Custom-made lines for special applications.

T THERMOFORMING

The range of plants developed for thermoforming processing is quite wide and includes:

- machines based on the so called "forming & separate steel die rule cutting" technology (three or four stations featured with press for production of holes containers);
- "forming & in-mould rule die cutting simultaneously" machines;
- "forming & in-mould punching" machines (featured with lower mould holding platen available in tilting version or by vertical handling);
- "forming & punching separately" machines;
- accessory machines such as rimming machines, lifting devices, automatic stackers also available in robotized version.

Moreover, it is possible to have complete plants featured with extrusion groups to be combined with thermoforming machines for the in-line production and special high-output machines for articles of wide consumption.



R RECYCLING

- Complete PET bottles washing lines consisting of: high-friction hot or cold prewashing of bottles, automatic selection of polluting polymers, wet or dry grinding, pre-floatation, intensive and high-friction hot washing of flakes, final rinsing, drying and storing. Outputs from 500 to 4.000 Kg/h of cleaned flakes for fiber production, for packaging foil production, for foil destined to thermoforming production till reaching the "Bottle to bottle" quality.
- Complete washing lines for HDPE containers and LDPE film consisting of: dry grinding, pre-floatation, intensive and high-friction hot or cold washing, final rinsing, drying and storing. Outputs from 500 to 2.000 Kg/h of cleaned material.



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HALL 13 - STAND B/C 39/38



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INJECTION MOULDING MACHINES

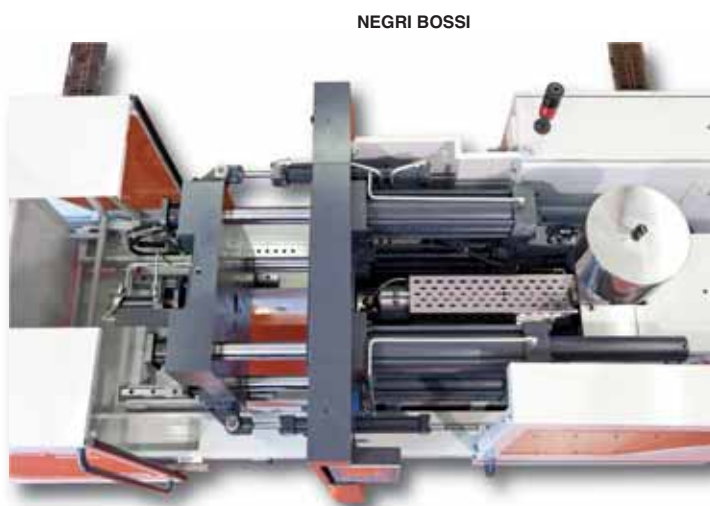
Low tonnage with 2 platens

The introduction of the innovative EOS range represents for **Negri Bossi (24 - C64/D62)** not just an occasion to showcase a new low-tonnage injection machine range - which completely revolutionizes customary approaches to design, providing customers with a new concept in presses of this size - but also an opportunity to offer a solution that combines efficiency, cleanliness, energy savings and enormous versatility at a decidedly attractive quality-price ratio. The impressive features of this innovative series - silent operation, precision, and energy consumption levels comparable to those achieved on electric machines - are all on display to the benefit of visitors.

The new range is proposed with a 2-platen solution clamping unit and extremely wide tiebar spacing while also offering the lowest floor space requirements in its category. The need to meet the challenges of the low-tonnage press segment in an innovative fashion has led the company to focus strongly on product engineering and containment of overall dimensions without compromising ergonomics, performance, efficiency, and moulding quality.

EOS presses are equipped with a new compact twin-cylinder injection unit featuring a practical and fast plasticizing-unit changeover system that provides easy and comprehensive access for tooling and maintenance tasks. The clamping unit adopts a 2-platen solution with the moving platen sliding on prismatic guides while hydraulic oil is circulated through channels in the fixed platen. In addition to streamlining plant engineering, this solution also allows clamping and release to take place at high pressure using a reduced amount of fluid, thereby reducing energy consumption.

Fast low pressure movement during opening and clamping is achieved by two piston-corepullers with reduced cross-section, which ensure outstanding sensitivity during the mould securing phase, thereby minimising mould damage and wear. This new design, together with the decision to support and guide the moving platen on prismatic guides, makes this range ideal for the medical or food sector, or for the production of any items where it is important to ensure that no lubricating oils enter the mould area. The most important achievement, however, has been made in energy consumption. After years of experimentation and practical application with servo-motors, inverters, vector inverters, and regenerative systems (for all-electric and hybrid presses), the engineers decided to take development of the inverter-controlled



with a tiebar clearance of 600 x 600 mm, as well as the movable platen equipped with synchronized central and side ejectors with a 100-mm and 350-mm stroke, respectively. The mould approaching stroke is 600 mm and the maximum distance between the platens is 750 mm.

The injection unit of the twin-screw cylinder model with stationary carriage unit and electrically-driven screw revolution by motor-gearbox and frequency inverter is a 1,000-cm³

variable displacement pump even further. This involved studying and mapping variable-displacement pump efficiency curves and actuator curves to develop a press software that ensures the best combination of motor rotation speed and pump capacity for each phase of the moulding cycle.

www.negribossi.com

Non-standard technology

A leading manufacturer of special injection moulding machines, **Presma (22 - B09)** is displaying two new machines, both upholding the "non-standard technology" slogan. One of them provides a particularly clear expression of the company's aim to attract visitor attention to the new range of fully Italian-made presses for rubber and silicone elastomers.

In this application segment the spotlight is on the PRO 400/100, a 400-ton horizontal press with 4-tiebar direct-piston clamping unit. Its main features are the heated steel mould-holding platens (700 x 700 mm),

FIFO system, with 2,000-bar specific pressure. The unit is also equipped with double thermo-regulated circuit for the plasticizing barrel and for the injection barrel + nozzle, with the possibility to remove the injection punch for cleaning. Injection stroke control involves the use of a linear transducer. The machine is set up for the assembly of feeding systems for rolled rubber bands and silicone blocks. Tool cleaning is accomplished by an adjustable electrically driven brush. The second machine on display is Presmall, a 6-ton all-electric mini-press with electric coaxial drive for clamping and ejection and three independent drives for the injection unit. The machine, equipped with touch-screen interface and dedicated software, offers quick cycle time, high precision and very low energy consumption. This model is particularly suitable for micro-moulding even in clean rooms and can be equipped with a feeding unit for rubber or both solid and liquid silicone.

www.presma.it





BLOW MOULDING MACHINES

Zero energy

After the success achieved with the presentation of the all-electric UMA 12 SeCo EZ blow moulding machine in sequential coextrusion for technical parts, **Uniloy Milacron (22 - A11/B14)** continues the development of new models to enrich its Energia Zero (Zero Energy) range, the brand that distinguishes all the company's technologies without hydraulic drives. The UMS 200 shuttle extrusion-blow moulding machine on display during the fair follows this direction: it is an intermediate model with 200-kN closing force and horizontal 710-mm carriage stroke that has already gained a high level of acceptance among customers. Fit to accommodate up to 12-cavity moulds with 55-mm centre distance, the machine is already prearranged for coextrusion configurations of up to 7 layers. Engineered to easily install the IML system on both sides of the bottle (also available for double-station version), it finds its ideal application in the food, detergent, and personal care packaging industries. The application of the most advanced electrical and electronic technologies, the use of latest-generation servomotors and multiple drives with energy recovery during the deceleration phase of all movements (as it happens in Formula 1 or on hybrid cars) provide exceptionally low power consumption.

The absolute precision of all electric movements of UMS 200 EnergiaZero, not depending on the processing temperature, makes it possible to maintain a constant level of quality of the blow moulded product within narrow tolerances. The possibility of using the innovative parison cutting device with direct electric movement in multi-cavity productions - typical of the food industry - makes greater precision in the cutting phase possible than can be achieved with traditional systems and therefore greater process stability with production scrap reduction.

In addition to the particularly silent operation, the absence of the hydraulic pump and the hydraulic circuit eliminates the risk of fluid spillage caused by leakage or breakages, while the absence of ball screws and bearings for linear movements removes the risk of contamination from lubricants and the need for periodic maintenance, making



the machine suitable for production in clean rooms. Like other Uniloy Milacron's machines, UMS 200 EnergiaZero is equipped with a special bottle take-out system (two-axis movement, fully electric servomotor driven). Bottles are dropped on a linear conveyor system and then released to one side of the machine also in the double-carriage version. The elimination of the traditional bottle conveyors allows a dramatic reduction of footprint and better accessibility to the machine for a quick mould change.

www.uniloy.com

All-electric blow

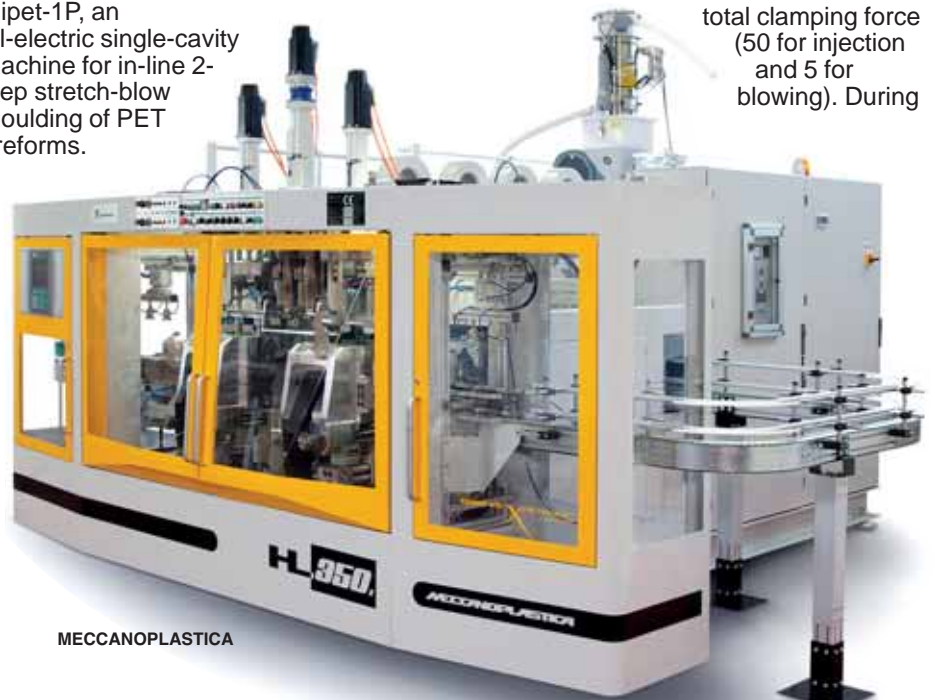
The absolute innovation introduced by **Meccanoplastica (22 - A19/B22)** is Mipet-1P, an all-electric single-cavity machine for in-line 2-step stretch-blow moulding of PET preforms.

Manufactured at the Spanish branch in Barcelona, during the exhibition the machine is equipped with a mould to produce 750-ml bottles starting from model 28/410 preforms (weight 38 g). Designed for using both standard and special preforms to produce PET bottles of up to 2.5 litres, the machine can reach a tightness strength (at 10 bar) of 450 kg with a 140-mm max opening stroke. Its peculiar innovative feature is the high speed of the production cycle, thanks to the prompt responses of the all-electric drive.

Another all-electric machine is HL 350 for 2-station continuous extrusion-blow moulding, designed to produce containers having a volume of up to 3 litres. The machine can reach 6 tons of mould clamping force with a carriage stroke in the two versions of 350 and 400 mm, respectively. Its innovative feature is the hydrostatic-pneumatic system used for the clamping phase, actuated by a brushless electric motor. During the fair the machine is running equipped with triple-parison extrusion head (120-mm centre distance) to produce 350-ml HDPE oval-shaped cosmetic bottles (weight 30 g).

Finally, JET55/L, an all-electric 3-station injection-blow moulding machine, has been designed to produce small containers up to a 250-ml volume and

can achieve 55 tons of total clamping force (50 for injection and 5 for blowing). During





TECHNE (GRAHAM PACKAGING)

the exhibition the machine is equipped with a set of 18-cavity moulds to produce 10-ml HDPE bottles (weight 5 g). This is currently the only all-electric injection-blow moulding machine in operation anywhere in the world. The absence of pollutant or noise emissions makes it particularly suitable for pharmaceutical applications, where there is a critical need for clean room work with very strict tolerances.

www.meccanoplastica.com

Advanced generation

In the new Advance generation of extrusion-blow moulding machines, developed by **Techne (Graham Packaging Company Italia)**, the "fully-electric" concept has been pushed beyond normal limits thanks to innovative features such as kinetic energy recovery during machine slowdown cycles. During each step of the production cycle, kinetic energy is stored and then fed back into the network in the subsequent step, producing energy savings. The final result offers a range of machines with an overall energy consumption of 0.31 kWh per 1 kg of extruded material, with a 37% saving in real terms if compared to conventional machines. The flexibility concept was then developed, bearing in mind that nowadays the market requires machines capable of handling different kinds of production processes. In order to manage this important issue, the mould clamping system accommodates a range of containers starting from small single-serving capacity up to 20-litre industrial tanks. The same concept has been

applied to the handling device for calibration nozzles, with the aim to precisely and constantly cut large diameter necks, and conventional ones from multi-cavity moulds. The project is completed by the energy saving extrusion section with high quality raw material plasticizing, heating and stabilization time, and fine adjustment of parison thickness. The extrusion platform includes a wide range of models and sizes in order to cover the most suitable production choice in terms of both hourly output and extruded material. Of course the multilayer and multi-cavity platforms (up to 6 layers and 80 cavities through the neck-to-neck technology) are available as well as the option for production of aseptic containers. Modularity is a unique special feature of the Advance range: machines are built with configuration capacity of up to 4 shuttles, with high output volumes in limited floor-space, making use of conventional units. For limited production output, machines can run with 2 shuttles only or be reconfigured with different cavity platforms. The production cycle has been drastically reduced thanks to solutions which offer 15% increases in productivity for small containers, and over 25% for industrial tanks. The picture is completed by the IML feature, with just one label application robot serving two shuttles, which allows quick application time and high-precision label placement.

www.technespa.com



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MECROPLASTICA IBERICA

MIPET 1P NEW PET PREFORMS STRETCH-BLOW MOULDING MACHINE (SBM) UP TO 2,5 LIT.

The new "all electric" MIPET range of machinery assures highly accurate movements and very fast cycle time. The above showed MIPET-1P single cavity SBM machinery id designed to use both standard and special PET preforms.

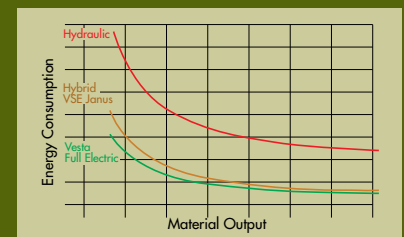
Its production capacity reaches MAX 2,5 Litres volume.
Air tight force 450 KG (at 10 bar) - Opening stroke MAX 140 mm.



Nature has already made her choice.



In a future where sustainability will be an ever-more important company asset, having machines that provide both high performance and environmental friendliness will, quite simply, be priceless. No-one knows this more than Negri Bossi, which produces the most eco-sustainable machines with compete, flexible solutions offering full electric, hydraulic or hybrid operation. Energy savings range from 20 to 75%. Not to mention the oil savings. Nature knows what's best for it: after all, she didn't just fall in love with the great Italian design.



NEGRI BOSSI

The SACMI Injection Moulding Company

For full information on Negri Bossi technology go to www.negribossi.com

OTHER MACHINERY

Thirty years of pad printing

Precisely in concurrence with Plast 2012, **Tosh (22 - B25)** celebrates thirty years of activity in the field of pad printing. This is a unique opportunity to thank customers, suppliers, representatives and all those who have believed in the company and its products. In addition, the exhibition provides an occasion to learn more about possible goals for the future, thanks to the company's expertise and professionalism. Founded in May 1982, the company quickly established a leadership role in pad printing not only in Italy but also in the international marketplace. Passion, solution-based motivation, and design ingenuity made the name Tosh well known among the most satisfied and successful users of pad printing technology worldwide. Gaining leverage from the economic boom of the Eighties, the Logica Series was designed and developed. This line of pad printing machines introduced the clearly innovative technological component of an all-electric operating cycle with digital control of all axes of motion. The choice not to design the systems around the traditional pneumatic drive proved to be a winning one. This is attested by thousands of machines sold to date in a dynamic and expanding market. Parallel to the advancements in the area of machine design, the company worked to develop a complete line of consumables specifically developed for pad printing. Here, a second winning choice was made with the decision to produce, in addition to pads of any shape and hardness, printing inks, clichés and accessories, thus acquiring the capability to provide customers with products that truly meet their requirements. Continuing along the same path and encouraged by satisfied customers, the Nineties saw the company expand outside of Italy and Europe to other countries around the world. New countries brought new opportunities, leading to the development of more sophisticated, application-specific, highly automated pad printing machines. These years were also characterized by the proliferation of hermetically sealed systems that have all but eliminated the old open inkwell systems of the past making pad printing increasingly production-friendly. The first decade of the new millennium reaffirmed pad printing as an essential technique for decoration of a seemingly



infinite number of products. Niche markets developed as companies sought to differentiate their products. At the turn of the century, Tosh was routinely providing customers with solutions that were inconceivable only a few years earlier. During this decade the company recognized the need to divide its Logica range into two distinct lines - High Speed and Flexible - to meet the specific needs of those customers seeking to make

investments in technology that ensures concrete advantages in an increasingly challenging economic environment. In these last two years the range of machines has continued to grow via the advent of Logica Platform and Logica Cartesio. Both of these solutions come "sized to fit" and will serve the customers well as they continue to expand the horizons of the pad printing process. Last but not least, in contrast to most competitors, when Tosh says "made in Italy", it means using 100% Italian design and components, in the full Italian style.

www.tosh.it

Alternative rotomoulding

Some materials currently available on the market have not yet found their best use in rotational moulding because of a lack of adequate automation and process control in the conventional process. Recent experiments carried out by **Persico (22 - A23)** have been focused precisely in this direction.

One of these experiments regards the production of PA6 components starting from caprolactam chips which are polymerized through anionic addition. The company has designed a material preparation plant for this application in which the raw materials (caprolactam+activator, and caprolactam+catalyst) are melted in two separate tanks where specially designed stirrers uniformly blend the additives. The material in liquid state is mixed in an antechamber and pumped into rotating moulds heated at the proper temperature





for polymerization. Material solidification occurs through a chemical reaction and not by cooling inside the mould. This being a chemical process, it is vital to control and monitor the processing temperature inside the mould. On Leonardo, the first fully-automated rotomoulding machine, the heating elements consist of a series of resistors applied directly to the mould surface. This feature allows for uniform heat transmission and precise, instantaneous control of process temperature, which is required for effective completion of the chemical reaction inside the mould. The second experiment was focused on transparent polycarbonate processing, in which a newly developed version of the Leonardo machine with electric heating uses a vacuum technique. This process also requires precise mould temperature control in addition to rotation speeds higher than in conventional rotomoulding. As is well known, one of the problems of polycarbonate moulding is the presence of tiny air bubbles trapped on the outside and inside surface of the moulded part during sintering. If the bubbles are not eliminated, they negatively affect the mechanical properties of the material as well as its aesthetic appearance. The classic approach to removing the bubbles is to process the material at a much higher temperature and for a longer time than is theoretically necessary to melt the polymer. The higher temperature increases melt fluidity and, by keeping the material in this state for a sufficiently long time, the bubbles can be "reabsorbed" by the polymer. To overcome this technological limitation, Persico carried out some tests comparing the results of different samples moulded under the same processing conditions but with a different internal mould pressure. Thanks to the Leonardo machine, besides controlling the mould temperature directly and precisely, it is easy to monitor internal temperature and even pressurize and depressurize the cavity of the rotating mould. Testing revealed that a vacuum technique leads to the complete removal of the bubbles both on the outside surface and

inside the wall. In addition, the mould surface was subjected to a special treatment, and some adjustments in design and construction have produced a significant improvement in moulded part quality.

www.persico.com

Wood-imitation embossing in register

The market shows great interest in laminated materials and coverings for production of wood-grain flooring, composed of a substrate encapsulating several PVC film layers filled with high percentages of calcium carbonate and possibly reinforced with glass fibre, laminated to a printed film, which can be reinforced or non-reinforced (extensible) and perfectly imitates wood. Progress in printing techniques, including digital printing, makes it possible to obtain very high quality imitations of any kind of natural material. For example, prints can be produced that perfectly reproduce colours, shades, and grains of any kind of wood. But this is not sufficient to give an acceptable appearance to the product, as its surface is glossy and smooth to the touch, which is absolutely unnatural and far from the real appearance of a natural material.

Currently, this problem is addressed by subjecting the material, after the base layer and printed sheet have been laminated together, to an embossing process that imprints relief into the surface, creating tactile irregularities that make the product more similar to its natural counterpart. However, such techniques do not provide satisfactory results since the engraved roll creates relief that does not correspond to the printed pattern. Thus, grain, knots, and other printed features of the wood have no corresponding features in the embossed relief.

This drawback can only be overcome by performing embossing in register discontinuously, thus making it a slow process. Furthermore, the embossing press, working offline, is expensive and cumbersome. Since laminates are, by nature, economical products, the process needs to be simplified and as cheap as possible. It is thus necessary to carry out embossing in a continuous process, i.e., directly on laminated film instead of on pre-cut panels, something hitherto considered infeasible.

Specific patent-pending systems have been invented and are presented at the fair by **Rodolfo Comerio (11 - C42)**. The aim is to offer an effective, fast, and





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economical technology for embossing in register (or synchronized embossing) of single-layer or laminated sheet composed as described above.

www.comerio.it

Insulating panels

Early in 2011, **Saip (11 - A73)** and Dow Chemical established a new company in Spain, CeDePa (Centro de Desarrollo del Panel en Continuo), located in Tudela (Navarre). It is a new, one-of-a-kind, state-of-the-art industrial-scale development centre for thermal insulation polyurethane panels produced with continuous lamination process. Dedicated technical resources and a complete network of experts in equipment, chemical systems, process engineering, and applications assist teams from different companies to confidentially develop, prototype, and test innovative and most effective solutions. CeDePa builds on years of experience in this industry of the two partners, who have decided to jointly invest in this initiative as they both believe that the combination of their respective expertise in chemical and mechanical production processes and technology is a decisive factor for rapid innovation and the enduring success for customers and the industry as a whole. The new company is also open to external R&D and technology centres, universities, quality certification organizations, and other external players interested in innovation and sustainability in this industry. A state-of-the-art industrial-scale line has been installed at

CeDePa and is fully devoted to testing and prototyping. It has been conceived to allow Saip and Dow customers, and the construction industry as a whole, to accelerate the development of novel solutions for the manufacturing of polyurethane panels for thermal insulation and to accelerate the discovery and availability across the industry of novel solutions to help increase energy efficiency through enhanced thermal insulation of buildings while also simplifying and accelerating their construction, durability and safety including fire performance, and final user comfort. The line, with a length of 135 m, includes the whole range of production equipment from the steel uncoiling section to the wrapping section: roll forming section for corrugated and flat steel facing profiles with a quick profile changeover system; primer equipment for steel facing treatment; flexible facing, EPS and mineral wool processing equipment; multi-stream, high-pressure foam dispensing machine (9 components); double press conveyor with operating temperature up to 70°C (panel thickness processing range up to 240 mm); handling section complete with cooling equipment, stacking and panel bundle wrapping; state-of-the-art line process control and supervision system (over 100 parameters constantly monitored); up to 16 cameras monitoring and recording the production and trial process.

www.saipequipment.it



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Shuttle rotomoulding

As a supplier of solutions for all rotational moulding needs, **Rotomachinery Group (22 - C10)** is introducing a new shuttle machine with 3 stations, where each carriage enters the oven independently. The client demanded maximum flexibility for the production of huge tanks (capacity up to 40,000 litres) requiring long cycle times for handling the moulds and moulded parts. The presence of the additional carriage has brilliantly resolved these problems, allowing optimization of resource use (operators and equipment): each arm (with a mould or group of moulds) can be put into operation totally independent of the others, either sporadically or continuously. The insulation system for the walls of the cooking chamber allows high efficiency even with low production volumes. The synergy between Rotomachinery Group's Italian and Canadian research teams has led to noticeable progress in the efficiency of hot air circulation inside the moulding chamber. And the results can be applied to any type of plant in the range (independent arm machines, shuttle machines, and rock-and-roll machines).

Tests carried out on a new type of hot air blower and a better performing directional air handling system have proven a significant reduction in cycle times and lower energy consumption thanks to increased heat exchange in the oven. The goal of reduced consumption is constantly pursued with tests of new insulating materials and auto-adaptive cycle management thanks to software that automatically determines optimal cooking and cooling times and verifies the best



ROTOMACHINERY GROUP

combination of the moulds based on the specific programmed recipe.

www.rotomachinerygroup.com

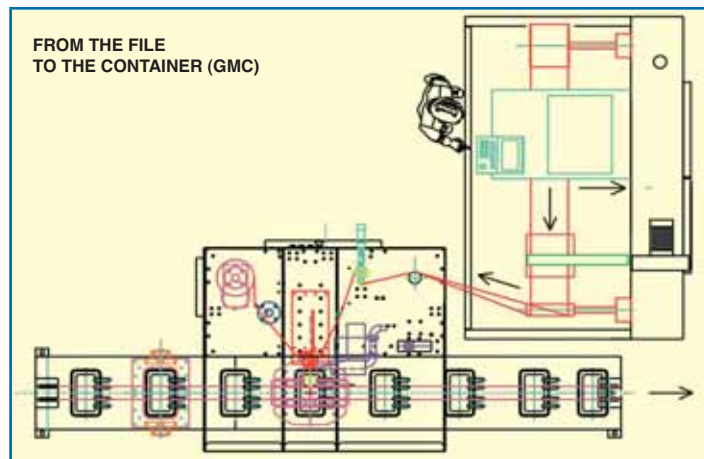
Digital decoration

In 2012 **GMC** is introducing the innovative D-HDT system for direct printing of digital images on plastic containers. The special feature of the system is the ability to print digital images using dry thermoplastic toner, applying them subsequently to the moulding process. The system permits the decoration of plastic pails or jars with different geometries: truncated-cones, cylinders, and objects with oval, round or

square bases with or without handles. The new system was developed in response to specific demand in the printing market for reduced production times with respect to the traditional thermal transfer. This is achieved thanks to the immediate decoration of the object and simultaneous check of the final result, reducing labour costs because the entire process can be managed by a single operator.

Based on mechanical and software innovation, D-HDT makes it possible to set up a single line to print digital images and apply them to containers, simplifying process management, improving cycle time (warm-up time 5 min; print launch time 30 sec) and increasing productivity. Rolls of variable length (from 1,600 up to 7,000 m) can be used to decorate as many as 450 seventeen-litre pails or 650 three-litre pails per hour. Thanks to the innovative technology of the print controller and process electronics, the printing process offers excellent performance in terms of consistently accurate colour reproduction, simplicity of use, and operational economy.

The new system conserves all the characteristics of the traditional system, such as maximum printing area (1,200 x 300 mm), resolution (1,800 x 600 dpi equivalent) with pantone colour calibration, a commercial print engine model that is widely distributed and serviced all over the world to ensure clients full freedom and autonomy in acquiring and managing consumables. The new system is characterized by a quick size changeover, absence of mandrels, reduced maintenance, and easy management.



www.gmcprinting.com

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ANCILLARY EQUIPMENT & COMPONENTS

Innovative approach to drying

The Eureka project has been developed by **Moretto (22 - A33/B34)** to significantly reduce energy consumption and improve performance in drying systems. It includes three exclusive technologies: the new X MAX modular dryers, the Flowmatik control device and the OTX hoppers.

The modularity of X MAX dryers makes it possible to create large drying systems with capacity of up to 20,000 m³/h. The units can be configured from a minimum of 3 to a maximum of 10 with up to 32 drying hoppers, with no need for air pressure or cooling water. The result is a faster, consistent and gentle dehumidification of hygroscopic materials, ensuring a significant reduction in energy consumption.

The main feature of this multi-bed system is the capability of maintaining a consistent and uniform dew point during the process. High efficiency levels can thus be achieved with total operating flexibility. The individual units are rotated for regeneration: while one dryer is being regenerated, the other units are in operation, guaranteeing constant performance. The variable airflow adjusts automatically depending on process requirements, thus preventing thermal stresses and viscosity variations in the polymer.

Flowmatic is an automatic integrated system for process air distribution in multi-hopper systems. It supplies the correct quantity of air needed by the hoppers. This technology manages the system by adjusting the individual hoppers and process variables. The machine uses only the process air needed, which is calculated on the basis of the quantity and type of polymer to be handled. This produces excellent results in terms of minimizing consumption. The proprietary OTX hopper has an innovative geometry which resolves the problem of non-uniform material falling flows and results in more efficient management of the drying phase, keeping the process inside the hopper under control. The particular hopper configuration provides homogeneous airflow and temperature, thus ensuring optimal treatment of the granule with a considerable reduction in energy costs in comparison with conventional hoppers. The high impact Spyro finish, besides providing this new hopper with its distinctive look, also makes it more



resistant than those using standard linings.

www.moretto.com

Cooling & thermoregulation

The new range of Raca Plus Energy chillers is now complete with the innovations to be introduced by **Frigosystem (15 - B30, 24 - D40)** during the fair. This series boasts successful worldwide installations: many customers have already attained the benefits of the ecological R410 gas, saving an average of 35% energy compared to the traditional R407. These chillers are also appreciated for their highly reliable technology and the flexibility of application.



However, the company continues to enlarge and enrich its range of products to better address the needs of its customers. In its quest to stay ahead of competitors, the new series will include models from 50 to 1,200 kW of nominal cooling power, all with multi-circuit and multi-compressor systems. The max ambient temperature range will move from 43 to 45°C without options. The free-cooling system, integrated or not, has been optimized too, and will consequently reduce the energy consumption in the most favourable climatic conditions. i-Remote is the name of the newly introduced control system, a local and remote supervision system, applicable also to the most complex cooling plants.

Innovations are also announced on Kite air and water chillers, purpose-built and engineered for blown film extrusion and already valued by German, Italian and North American customers. The technical focus remains on energy savings, R410 efficiency and flow variations, with constant and precise control of process temperature. The range now offers units with 1-2-3 cold air outlets and heat regulated water connections for extruder utilities.

On the temperature controllers, the company is presenting the new i-Heating units, with a new-generation control system. In 2011 Frigosystem was named number one Italian manufacturer of temperature control units, with more than 150 models in its catalogue and 2,800 produced units: water or diathermic oil, simple solutions or sophisticated technologies, but always and totally "made in Italy" with an excellent quality-price ratio.

www.frigosystem.it

Band granulators

Band granulators from **Sagitta (11 - C06)** are suitable for dicing non vulcanized rubber compounds of any type, natural or synthetic, as well as thermoplastics, linoleum, cellulose, and silicone.

Feeding extruders and moulding machines with granules instead of



strips offers several advantages, such as the ability to blend different compounds thus obtaining better product quality, less pulsation in extruder screws, energy savings, and automatic operation. Many solvent manufacturers take advantage of band granulators because the dissolving times can be reduced considerably by means of granules (5x5 or 3x3 mm). The use of the GR 450 S2 model is recommended for processors who often have changes of compounds or colours. On this machine the cutting unit moves forward for easy cleaning.



Sagitta delivers machines with working width of 135-235-430-620-830 mm for granules of 3x3, 5x5, 8x8, 10x10 and 15x15 mm. Toothed feeding disc-cylinders are available for very hard materials in order to prevent slippage. Hardened metal knives can be supplied for granulating very abrasive compounds. The hourly output capacity ranges from 300 to 10,000 kg according to the machine model and granule size. Machines with or without automatic powdering equipment are available. Furthermore, the delivery program includes pneumatic conveyance of granules and de-powdering systems as well as de-packing powder feeding equipment.

Sagitta also produces other rubber processing machines: horizontal splitting machine to divide elastomer sheets (max width 550 mm, max thickness 60 mm, minimum thickness 0.2 mm); automatic machine for trimming and cutting elastomer gaskets placed on rotating spindle and trimmed with extreme precision by lance tooling; automatic machine to cut elastomer sleeves on rotating spindles into rings by means of special knives; automatic machine to cut extruded elastomer profiles and hoses by electronically-controlled revolving circular knives.

www.sagitta.it

In-line recovery

Among the innovative proposals introduced by **TriA (15 - C26, 24 - C55/D50)**, a special emphasis is put on the evolution of JM grinders, devoted to in-line recovery of injection moulding scrap. Following sales of more than 4,000 units, the company decided to sum up in these machines the Blue Line design philosophy that it has developed in recent years.

This vision has led to thoroughgoing research into performance while maintaining flexibility of use, compliance

with standards and legislation, advanced ergonomic solutions, and management economy combined with constructive quality to ensure a medium-term return on investment.

The aims which have served as guidelines in renewing the JM range may be summarized as follows: low noise level (below 80 dBA) for in-line grinding; low energy consumption (max 700 W) with motor power reduced by 20% while ensuring the same performance; ergonomic design and reliability with simplified access to the hopper and funnel, and a 27% reduction in footprint. Similar design standards and solutions have also been applied to other widely used machine ranges, Series 30 and 42,



which are proposed in updated versions.

As for large-sized machines, a revamped version of the Series 80 (rotor diameter 620 mm) is on display for grinding in-line (thermoforming and film scrap) and off-line (extrusion and recycle). A new counter-knife securing system has been designed for the watertight grinding chamber; moreover it is possible to fit stationary or rotary discs and three different shafts, including a forged one for wet grinding or extrusion spurges.

A further innovation on display is the CR K high speed forced loader for film fluff, designed in cooperation with major manufacturers of cast film lines. Equipped with visual warnings and video cam for internal monitoring, its special design allows it to integrate with any type of extruder.

www.triaplastics.com

Sprue-pickers & driers

The sprue-picker manipulators in the AVP range, suitable for on-board use with injection moulding machines, have been designed by **Dega (24 - D14)** to pick-up sprues or parts (with grip device and vacuum generator) from the mould area. Amortized pneumatic cylinders and large solenoid valves permit a considerable reduction of the extraction cycle times. Thanks to the programming software designed by the sister company Dega Automation, the manual control allows constant and accurate monitoring of all cycle times, with visualization of each movement on the display. The selection of standard programs is easy and fast: there are 4 pre-set programs in the memory which can be called up and modified at any time. Moreover, it is possible to create new programs and store them in memory. The operating functions, such as vacuum circuit, part grip verification, and part pick-up from the moveable and fixed platen, are easily selected by a key on the hand-held control.

For small batch dehumidification with a stable process quality, Dega is introducing the latest version of its DD60-R, a small dehumidifier with a 60-m³/h rotor which is positioned in a container that rotates, divided into 3 different compartments, each specialized in a different function: processing, regeneration and cooling. With this system, the processed air exits the rotor always at the highest level of dew point, eliminating the rippling effect observed in conventional systems.

When it is dried, industrial compressed air (6-15 bar) has a dew point of 3-5°C. When it expands to atmospheric pressure, the dew point falls naturally



to -20 or -28°C. With the Series AC micro-dehumidifier it is possible to reach an average and constant dew point of even -18°C. Hence, for small batches it becomes convenient to adopt this solution because similar results are achieved, per unit of energy consumed, as with traditional dehumidifiers, with the advantages of small space requirements, temperature control managed by specific software, micrometric control of the air flow at low pressure, insulated hopper with rolling cover, and air diffuser positioned in the socket adapter.

www.dega-plastics.com

Quality first

The latest innovative solutions introduced by **Doss Visual Solutions (11 - A31)** in the field of artificial vision systems and industrial automation include Migl II, which makes it possible to sort complex and irregular parts with length up to 600 mm and width up to 200 mm. Linear cameras and laser measurement systems collect all the data necessary for repeatable quality control. The point-to-point laser acquires the real part thickness and the cameras carry out both surface (on two sides) and dimensional checks.

The machine can be equipped with loading and unloading robots. A turnover system has been developed specifically for 180° flipping of any type of part or material. All sorting data are saved to a database that can easily be accessed by the operator and statistics can be arranged in tables that can be exported whenever needed.

Designed for the sorting of large gaskets up to 200-400 mm (in two versions), the Duet machine is composed of a first robot, guided by a camera, which picks up the parts directly from a bin: 2 different cameras frame the scene from two different viewpoints and send back to the PC all the information about the XYZ position of the part to be picked up. The robot then places the part on a back-lit plate for dimensional check; a

second robot rotates the part and passes it in front of a camera for inspection of the entire external surface. The software detects

stains, rings, scratches, tears, flash or missing material. Depending on the outcome, the robotized arm places the part into the bin for good parts or the scrap bin.

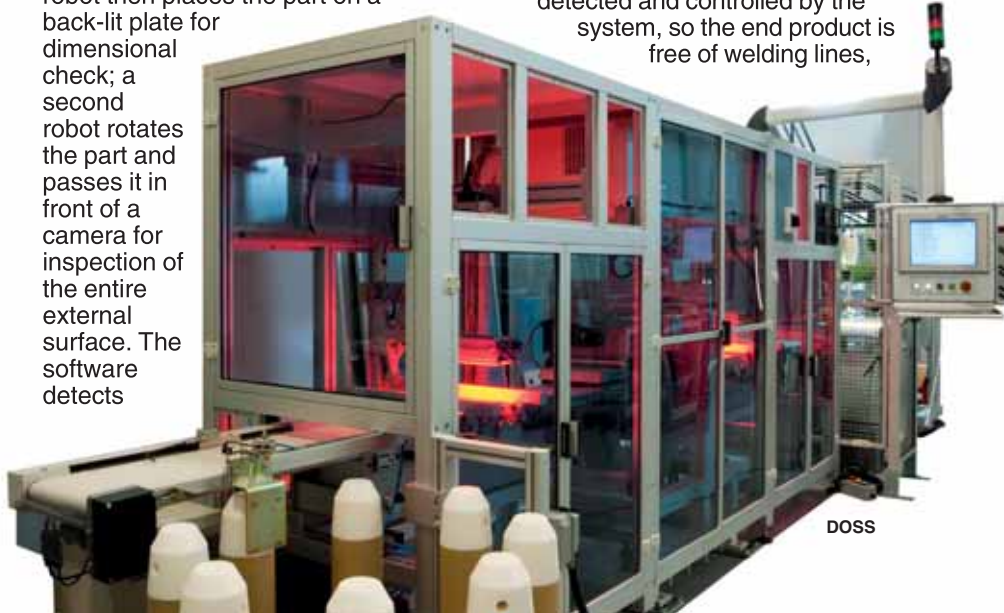
www.doss.it

Nozzles & controllers

Innovations introduced by **Thermoplay (24 - D34)** for injection systems include a new nozzle for multi-cavity moulds used for manufacturing tubular-shaped parts, which contributes to the elimination of traditional "tunnel" sprues normally used in these applications. Injection is direct in the annular cavity wall. The nozzle structure allows easy machining of the injection system housing in the mould. In addition the nozzle is provided with a double sealing ring preventing material leakage. The thermal profile of the nozzle body and the isolation of the tip from the forming matrix make it possible to use process parameters aligned with those suggested by plastics manufacturers. The extraction operation helps create a defect-free injection point thanks to the lateral injection.

Another innovative injection system envisages that the nozzle, with or without the shut-off group, can be mounted at different inclinations and assembled to the manifold ensuring perfect perpendicularity to the injection platen. An innovative system of joints that distributes expansion inside the manifold enables the use of nozzles without minimum length constraints depending on distance from the centring element. The system is supplied prewired in various configurations based on specific needs and equipped with conditioning and electrical circuit, and pneumatic/hydraulic system, simplifying handling and installation of the system in the mould.

Thermoplay also introduces a new sequential controller designed to optimize the molding process in critical applications. Each shut-off valve is detected and controlled by the system, so the end product is free of welding lines,



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thus meeting the most strict quality standards. Technical characteristics include: sequential control of pneumatic and hydraulic shut-off valve systems, automatic and manual test operation for function testing of each valve, maximum configuration 16 valves, mobile high-resolution touch-screen unit and shockproof case, temperature control of conditioning circuits.

www.thermoplay.com



THERMOPLAY

Strategic maintenance

Today more than ever, maintenance is recognized as a strategic asset for any company. An accurate maintenance strategy, together with the use of system components that enable reduction in overall operating costs, is fundamental in optimizing machine function and plant operation in the plastics processing industry. Even though service processes often play a secondary role in the production system, **Wamgroup (11 - B92)** offers new specialized components aiming at optimizing processes, improving performance, and ensuring high safety standards for both personnel and equipment. The new VHS pressure relief valve, manufactured from engineering polymers, relieves any excess pressure occurring during silos filling or generated by physical or chemical reactions that may take place inside containers. The valve conveys dust emissions to a collections point to ensure constant safety in the work area. Reliability in operation coupled with easy maintenance make the VHS valve a one-of-a-kind component fully compliant



WAMGROUP

with environmental protection regulations. Reduction in maintenance time and costs also plays a key role for Torex, another Wamgroup company, which has developed VAR, a drum-type diverter valve for pneumatic conveying systems. This valve, with standard inflatable seals, has been specifically designed to minimize maintenance and considerably extend the product life cycle. Distinctive features of diverter valves are specific anti-abrasive coatings designed for the plastics industry and a particularly maintenance-friendly design. Finally, the GT pipe couplings, developed to join plain pipe ends of pneumatic conveying lines in a safe, quick and rigid way, help reduce installation costs as compared to welded junctions, at the same time ensuring greater flexibility of use, work safety and no pressure drop along the pneumatic line.

www.wamgroup.com

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LINE

HOLLOW
LINE

FLAT
LINE

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- Plants for multi-layered cast film
- Plants for hollow sheets
- Flat dies and equipments for special profiles
- Special plants for fluoro-polymers
- Plants for lighting profiles
- Special plants on request

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