

On-going experimentation, processes improvement and product quality are fundamental to Brevetti Waf's industrial plan. This transparent plastic moulding company supplies the wine-making and beverage industries and has a close working relationship with injection moulding machine manufacturer Plastic Metal.

Gianluigi Fortunato, owner of Brevetti Waf (left) with Massimo Virginio, general manager of Plastic Metal



THE TRANSPARENCY ISSUE



When you are building up a company and dealing with the hard issues you must have an in-depth knowledge of your market, an awareness of the technological problems and the determination to achieve your objectives. In the injection moulding industry overcoming difficulties could mean, for example, producing transparent items like glass and in a difficult economic period like the current one installing 16 new systems since 2005, both of which Brevetti Waf has been able to accomplish. The company located in Creazzo (near Vicenza), specialises in producing articles for the wine-making and beverage industries such as buckets, wine holders, bottle openers, stoppers, glasses, trays and other accessories.

Brevetti Waf was founded in 1972 and the company's creativity was immediately clear. The owner, Gianluigi Fortunato explains how it all started: "We had a number of inventions – simple yet extremely effective – which were made by my father Walter and these led to the company's successes in the 1970s and 1980s. When I began working for the company I tried to take these items to other markets. Our desire to be competitive and our determination to rival the copies coming from the Far East led us to specialise in something that was both difficult to produce and, above all, had plenty of added value. With the help of Plastic Metal we got into the plastic processing industry, particularly as regards moulding more aesthetically attractive pieces. In 2005 we spent a year experiment with moulding just one article; at the time we had four presses in production. We managed to extend our knowledge of how to process transparent materials such as methacrylate, polycarbonate, polystyrene and SAN in order to obtain a quality result. Later on we purchased other machines and today we have sixteen operating at our plant with another two due to be installed shortly."

Plastic Metal supplies all the moulding machines Brevetti Waf plant. The two businesses have created a very close professional relation-

ship as Massimo Virginio, General Manager of Plastic Metal is happy to relate: "When Mr Fortunato decided to get into plastic processing he was able to build on the type of work he had done in the past, but there was still a lot that had to start from new. From 2005 to 2009 Brevetti Waf has seen an amazing amount of growth by being good at its job and by relying on us for its machinery. Mr Fortunato has a great deal of expertise and knows how to handle moulding machinery. For this reason he makes a careful examination of every aspect of how our machines function. If they can operate and be competitive in Italy it means the process has been perfected to such a point that the company is producing at the lowest cost per piece possible. Today Plastic Metal is producing even more advanced presses: Brevetti Waf may buy the latest generation of machinery but it always has to measure up to real life application."

THE SYSTEMS

Currently, Brevetti Waf has 16 presses installed at its plant in a tonnage range from 55 to 1,000 tons (with several intermediate steps), and this number is destined to grow to 18 in the near future with the purchase of a further two machines. The aim is to reach 35-40 systems.

The most important objective is competitiveness above all when 60-70% of your production output is dedicated to sub-contract work which is continually scrutinized to ensure it is up to international standards in terms of price. Naturally this output consists of highly specialized items which must be produced to high levels of quality, something oriental processing companies still have trouble copying. Indeed articles produced by Brevetti Waf are not only extremely transparent but also available in thicknesses that are difficult to achieve. In some cases these thicknesses are greater as in the case of wine holders, while in others like flutes and glasses an extremely fine result is desired.

There can be no compromising on quality. Brevetti Waf are certified to US F.D.A. standards as well as by some of the world's leading beverage producers. The polymers used, supplied by top production companies, include methacrylates, polycarbonate, polystyrene, ABS, nylon, filled resins and others, and the company orders between 130 and 150 tons of these materials a month, mostly transparent but also coloured.

Brevetti Waf has dehumidifying, drying and dosing equipment as well as hi-tech conveyor belts systems for moving products and materials. This equipment is supplied by a company called F.lli Virginio srl that is part of the Plastic Metal Group. As well as injection moulding is also able to carry out Brevetti Waf assembly, screen printing, pad printing and ultrasound welding processes.

The degree of difficulty involved in the production of such high specification items leaves the way open to further development for applications in fields other than wine-making and beverages: the automobile, medical, lighting and household goods industries are all potential customers for high quality effect mouldings that have not inconsiderable mechanical and functional features.

THE ENERGY CONSUMPTION FACTOR

These days how to save energy is the issue foremost in the minds of plastic processing companies. Consequently this factor strongly influences the manufacturers' choice of machinery. Finding a good compromise between the right kind of productivity and energy consumption is vital: low production costs can be achieved but we also need to decide the quantity of pieces being produced and at the same time cut back on the amount of scrap.

"What I've noticed in recent years," says Mr Fortunato, "is the low consumption levels of Plastic Metal's hybrid presses, especially in slow production cycles and greater thicknesses of between 3 and three centimeters. We have a 1,000-ton machine that used the same amount of energy as a 270-ton model. I don't think anyone else has an electricity bill like ours! Operating 18 machines plus assembly lines, cooling units, compressors and all the other equipment for at least 16 hours a day we spend about 12 thousand euro on electricity a month. Our working partnership with Plastic Metal is well established. We often go to them with a mould and they let us use their machine pool to run our tests. This is a very important service because that way we know we are buying the right machine. We stay competitive partly due to the technical support Plastic Metal gives us and partly thanks to low production costs. The cost in personnel and equipment is a high one and saving on energy costs is what allows us to stay competitive."

"Brevetti Waf chose our hybrid presses," Mr Virginio points out. "This company is a customer that knows what it's doing. By coming here, mounting a new mould and trying out a test run the company can obtain a great deal of process data. What attracted this company to our presses was a combination of technology and economic considerations: the lowest possible production costs. Today there is no such thing as a

standard machine. Presses can't be mass produced and if you are producing 200-250 machines a year you can give the job the kind of close-up attention needed for such highly specialized machinery. The manufacturer has to be prepared to follow each system he builds every step of the way by, for example setting up and carrying out a test run so he can solve any problems that may emerge. This is why I believe you shouldn't make exaggerated promises but try the machines out in the field and then use the real life data you have."

HYBRID OR ALL-ELECTRIC?

Hybrid or all-electric moulding machine? This is a very relevant question among plastics moulders: the decision depends on a number of technical elements.

Fortunato has no doubt: "Based on our experience, I would choose the hybrid configuration. It offers definite benefits. By installing accumulators and a continuous feeding pump, it is possible to reduce energy consumption down to a minimum; moreover, a more powerful injection unit is available when it is needed, enabling shorter production cycle times. With all-electric machines, on the other hand, it is more difficult to install a barrel corresponding to the machine size: it has to be smaller, while we need larger barrels and a higher injection power."

A hybrid moulding machine offers a number of benefits from the viewpoint of energy saving, too. "Our 1,000 tons moulding machine – Fortunato explains – is a good example of this. When we were testing the machine, we thought we did not have enough power to make it run. We began to work in this facility seven months ago, with an electrical substation which was not able to deliver the required power. So, when we started up the 1,000 tons machine, we thought that we had to stop two injection moulding machines. However, when the machine began to produce mouldings, we realized that there was still energy left, and that the new press could run while keeping the other two operating. According to our analyses, this machine consumes 7 euros of energy per hour, which is really nothing."

Energy consumption always depends on the moulding cycle, on the kind of product and on the shot weight. This is why each moulding machine in the Brevetti Waf range results from in-depth technical analysis and is intended for moulding only few products with similar shot weights, cycle times and thicknesses. Each one of these machines features its own set of moulds, which are optimised to be used only on that particular machine.

The hybrid solution also results extremely versatile, as Virginio underscores: "Even in relatively slow cycles it could be necessary to perform fast injection steps or handle heavy shots, or extremely fast cycles where only speed, and not energy consumption, is important. For this reason, I would recommend all moulders to perform their tests on field and not only on a computer. We have some customers coming to us with their ammeters to carry out their measurements. Today, keeping pace with technology developments has become a must: those who will not upgrade their machinery will not be able to remain competitive. Bre-



The injection moulding factory Brevetti Waf



Gianluigi Fortunato with a seat produced with a Plastic Metal 1000 ton injection moulding machine

vetti Waf is taking into consideration to replace the machines bought in 2005, now outdated by the latest technology. When consumptions become too high, it is necessary to replace the machine."

STEADY EVOLUTION

A large part of the technical innovations integrated into the next-generation Plastic Metal moulding machines is represented by electronics. For machines manufacturers, it is essential to provide as many adjustment options as possible, in order to offer converters maximum operating freedom. The three most recent machines, for instance, incorporate CanBus system with completely new electronics: the signal is thousand times faster, the low-frequency range does not generate magnetic fields and there is a single cable running through the entire machine. Another essential element is represented by technical support: the lack of spare parts must not result in a machine downtime. Each component of the Press Metal moulding machines features an identification plate with model and manufacturer names, making it easy for the user to find it.

So, the keywords are steady evolution and experimentation of new solutions, not only for manufacturers, but also for converters, taking both technology and costs into account. The Brevetti Waf development agenda, in cooperation with Plastic Metal, is very interesting from this point of view and worth to be followed up in the future, too: we may be able to see something really new.