

Original solutions for advanced applications

## Electric injection

*Even today - ten years after their definitive entry into the market (but even more if we count the early models that had already appeared in the Eighties) - electric injection machines face a "cultural" bias: the (almost) inevitable comparison with hydraulic machines. The advent of electric presses has revolutionised, if not the world of plastics and rubber moulding, at least the approach to these process operations. All-electric solutions are now generally acknowledged to offer many advantages over hydraulic machines in terms of precision, productivity, consumption and environmental impact. Manufacturers are starting to develop electric machines no longer as derivative versions - with all the necessary adaptations - of hydraulic presses, but rather as separate machines in their own right. This article illustrates three innovative offerings from Italian companies specialising in this type of technology.*

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### Not just cleanliness

The Canbel range of all-electric injection moulding machines is proposed by Negri Bossi not as a simple alternative to hydraulic solutions but to meet the different - and sometimes challenging - requirements imposed by injection moulding with specific technological characteristics. From this viewpoint, the electric machines are particularly suitable for applications in the

medical field. Here the advantage of electric technology is clear: the oil to feed the hydraulic plant of a traditional press may, under some circumstances, be an unacceptable source of contamination for the hygienic standards that regulate the production. In general, by removing piping, valves, tanks, and hydraulic cylinders from electric machines, any risk of contact between

moulded parts and the hydraulic fluid is avoided. By equipping these machines with a toggle with self-lubricating bushings, an even higher level of cleanliness can be obtained.

This solution prevents the contamination from the automatic lubrication plant that causes the accumulation of grease on sliding blocks, tie-bars, and connecting rods, especially if it is not properly adjusted. This toggle, ideal complement on the electric presses, mounts special brushings on the plugs of the high-resistance aluminium-bronze connecting rods singularly cast with graphite inserts.

The electric machines also offer advantages in terms of precision, output, energy efficiency and environmental impact. In particular, repeatability, which is very important in medical injection moulding, is granted by the motor directly engaged on the mould axis and the rigid

transmission geared on the injection axis. The benefit of this design is that it removes the causes of cycle fluctuations due to the motor, coupling, pump, piping, filter, valve, heat exchanger, and tank, i.e. the components of the drive transmission chain on hydraulic machines.

[www.negribossi.it](http://www.negribossi.it)

### Benchtop machine

Presmall is the name a fully-electric benchtop injection machine, proposed by Presma as a solution for moulding small technical articles.

The idea of an injection machine 1,500-mm long, 700-mm wide and 800-mm tall originated from the consideration that moulders are often forced to purchase large machines and multi-cavity moulds to produce small quantities of articles or microscopic products.

This miniature product is identical to larger units. In fact, the machine was designed on



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the constructive concept of transferring the electrical technology of the "normal" size machines to a product of such dimensions. In effect, there are other small machines on the market, but they feature some differences in respect of real electric injection moulding technology, which in this case is replicated in a traditional way. The machine is equipped with dual-function electrical motors. This means that the motor driving the clamping movement also activates the extraction movement of the moulded article, and the motor driving the rotation of the plasticizing screw also activates the injection shot. This system derives from an original organization of the machine drives and the use of ball screws to transform the motion from rotary to linear. The machine is endowed with larger platens in which mould-holder recesses of 110 x 110 mm are derived. The system for anchoring the inserts to the machine platens allows the mould-holders to be eliminated, with a further reduction in investment costs. Adapters can also be used for mounting moulds already on the market for small machines. The total absence of hydraulic drives and therefore of oil, together with the compact dimensions of the machine, make it ideal, in terms both of investment and production costs, for non-onerous clean room use in medical and pharmaceutical applications.

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