

# Dual identity

HIGH FLOW WITH LOW PRESSURE OR VICE VERSA – THIS NEW RANGE OF HI-LO PUMPS IS IDEAL FOR WORK IN ENVIRONMENTS WHERE LIMITED POWER IS AVAILABLE, AND EVEN ENABLES REDUCTIONS IN MOTOR SIZE

RIGHT: Marzocchi Pompe Hi-Lo pumps



ABOVE: Log splitter noise test in Marzocchi Pompe's R&D department. The gear's high degree of finish has reduced the noise of the Hi-Lo pumps and the machines that use them

To satisfy the requirements of the mobile and industrial vehicle market, Marzocchi Pompe is introducing a new range of pumps with integrated relief valves, check valves, priority valves and Hi-Lo systems. The company's Hi-Lo system is a type of pump with integrated valves, especially designed for applications such as compactors, log splitters, clamping and crimping machines.

The pumps are ideal for applications requiring actuators with rapid advance and/or return with low loads, or alternating slow motion and heavy loads. Because they reduce the peak power demanded by the hydraulic system and thereby its size, they enable better sizing and lower operating costs for the electric motors or IC engines with which they are coupled.

Small electric motors mean it is possible to work in environments where there is limited power available for domestic applications. The Hi-Lo pump is a double pump with a large-displacement rear stage that only works at low pressure (30-80 bar). This rear stage is used for delivering big flow, resulting in a higher speed at the actuator. The front stage, with its small displacement, is the only one that works at a high pressure of 200-250 bar.

Under these conditions, all the available power is used to give maximum force at the actuator, but with limited speed. When



operating at low pressure, and the unloading valve on the rear pump cover is closed, both pumps work together to provide maximum flow. Above the set pressure of the unloading valve, the rear stage is recirculated separately from the main circuit so that the front stage receives all available power to reach its maximum pressure.

Due to its small displacement, it only consumes a moderate amount of power – the stage recirculated through the built-in unloading valve absorbs negligible power. The use of Hi-Lo pumps also gives a reduction in working time, as the passive phases can increase the velocity of the actuators. These pumps have been entirely designed by Marzocchi Pompe for high mechanical and volumetric efficiency.

The inner ducts and the unloading-valve components have been designed using CFD simulation techniques to reduce power losses during internal recirculation. The study of Hi-Lo valve components enabled the team to reduce size without sacrificing reliability. The company's R&D department is now equipped with experimental test benches to study mechanical, hydraulic, acoustic and vibration performance. This is in addition to durability test benches capable of simulating the toughest working conditions.

### Feeding the fire

Posch is a European leader when it comes to the preparation of firewood: its quality products embody more than 60 years of expert development. The range includes easy-to-use firewood splitters and circular saws for domestic use, as well as specialised industrial equipment for trade and industry. Safety, sophisticated technology and sturdy design are the features on which Posch's customers rely. At its production site in Leibnitz, Austria, it develops innovative, state-of-the-art machines, making safe and efficient preparation of firewood possible for both commercial and domestic users.

Posch lives and works by the motto, 'When you stop getting better, you stop being good' – a belief shared by Marzocchi. Posch uses the company's high-quality pumps in its equipment because Marzocchi

stands for top quality, safety and innovation. Its pumps are used in the HydroCombi log splitters, as well as in the powerful SplitMaster horizontal splitters. Posch customers are used to getting top-quality products and the companies' close co-operation and partnership is of great importance in ensuring that Posch continues to meet their demands for this high quality well into the future.

The Hi-Lo pump enables Posch log splitter models fitted with an 'autospeed' function to quickly react under cutting pressure and automatically adjust the cutting speed. The range of Marzocchi Pompe Hi-Lo pumps spans groups 1P, 1 and 2 in a wide range of configurations and can satisfy a variety of applications that require oil flows up to 70 l/min.

The production of high-quality components is assured by long-lasting experience in the field and continuous design and test development, ongoing research for specific materials and sophisticated production techniques.

### Child of the 1960s

Marzocchi Pompe was established in 1961 by Guglielmo and Stefano Marzocchi, in the outskirts of Bologna, Italy. Over the years, the company's product range has broadened and increased to reach its present position as one of the most important manufacturers of external gear pumps and motors in Italy.

Due to the trust and the respect it has gained over its many years of operation, Marzocchi Pompe is considered a very reliable partner, able to provide customers with specific know-how, high-quality products and excellent service for all hydraulic applications.

Current Marzocchi production ranges from 0.19 to 200.3cc/rev (0.0104-12.223in<sup>3</sup>/rev) and is divided into eight groups according to the gear size (0.25, 0.5, 1P, 1, 2, 3, 3.5, 4). Within each group, the displacements are obtained by changing gear width. A wide range of flange, shaft and coupling configurations is also available. These components can also

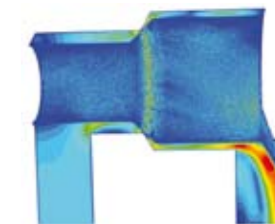
be manufactured according to the customer's requirements.

Cast-iron versions are available in groups 1, 2 and 3. Maximum operating pressure varies, on average, from 230 bar (3,300psi) in the aluminium models to 280 bar (4,100psi) for the cast-iron versions, although it varies according to pump displacement and type. All products can also be supplied with Viton seals and special versions are available for temperatures between -40 to +120°C (-40° to +248°F).

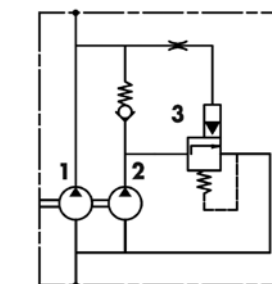
The mono-directional and bi-directional motors are divided into three groups (1,2,3) covering a range of displacements from 2.8 to 87cc/rev (0.17/53.1 in<sup>3</sup>/rev). The maximum working pressures for the motors are similar to those for the pumps, delivering torques up to 250Nm and power up to 60kW. **ivT**

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Fluent study



Hydraulic circuit



RIGHT: HydroComby and SplitMaster products from Posch