

The driving force behind the pumps is the main motor from the Simotics M-1PH8 series, precisely controlled by the Simotion D motion control system from Siemens



Lasco Umformtechnik GmbH

Lasco Umformtechnik GmbH, Germany

Servo efficiency for all

Lasco Umformtechnik now uses the hydraulic servo-direct drive very successfully in presses of various models and sizes



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Lasco relies on control and direct drive technology from Siemens in its hydraulic servo-direct drive and achieves higher output, energy efficiency, flexibility, and quality for all press applications.

Lasco Umformtechnik GmbH in Coburg, Germany, developed a hydraulic servo-direct drive back in 2010. The innovative drive design has now established itself and stood the test in metalworking and across the manufacturer's entire pressing spectrum, in demanding applications and at press forces of 100 to 8,000 t. The results are positive in every single case – the added value in the form of improved energy efficiency, output, quality, reproducibility, flexibility, and/or diagnostics, maintenance, and service is always greater than the additional investment costs throughout the entire service life of the press. The return on investment is achieved rapidly.

Seamless automation

In its control and (electric) servodrive technology, Lasco consistently relies on a distributed system from Siemens. The

core components are a Simatic S7-300F sequence/safety control system including fail-safe I/O devices and a Simotion D motion controller. The latter coordinates the Simotics M-1PH8 asynchronous or synchronous main motors on the pump or pumps. This results in high-precision, accurately reproducible volumes and pressures, ram paths, positions, and speeds, as well as press forces. Ultimately, this means precisely and consistently adjustable production conditions and top-quality parts. And because the electric motors work only when oil is needed, energy consumption is also significantly reduced. If required, Simotion synchronizes the interaction with other drive axes.

Proven in practice on a large scale

Lasco presses equipped in this way are in use in production lines of different designs at renowned companies around the world:

- A German car manufacturer achieves energy savings of 36% as measured on the part, as well as increased stroke rates, on a TZP 800 deep drawing press.
- An Indian manufacturer produces truck axle tubes more energy efficiently, quickly, and consistently on a 1,250-t VPA 1250 forging press.
- The new approach achieves consistently and reproducibly controlled tra-

versing movements and pressures on an EH 315 electrical upsetting machine, resulting in consistent high quality with significant energy savings.

- On an AR D 320 preform system with two horizontal hydraulic cylinders weighing 320 t each, the hydraulic servo-direct drive adjusts the stroke position in the tool-free free-forming of turbine blades, while the motion controller synchronizes the interaction with two servodriven part manipulators.
- An automobile supplier forms high-precision racks for steering systems on a TP 1000 orbital cold forming press. The master/slave coupling of the hydraulic servo-direct drive for the feed motion of the lower piston and a torque motor for the tumbling motion makes the process more precise, with a greater degree of repeat accuracy.

Overwhelming added value

Dr. Stefan Erxleben, engineer, sales manager, and authorized officer at Lasco Umformtechnik, says: "The indisputable advantages of the hydraulic servo-direct drive in terms of energy savings, output, and reproducible precision are complemented by the modern automation technology, which is taking on ever greater significance in the manufacturing of presses. Siemens' modular system approach, on both the control side and the drive side, facilitates solutions for various customer demands that are scalable in both performance and functionality. The greater proportion of electronics also significantly simplifies and accelerates the commissioning, operation, diagnostics, and remote maintenance of our presses. All in all, this makes up for the higher investment costs." ■

Simply efficient – hydraulic servo-direct drive

For the servodrive technology, servomotors are coupled directly with hydraulic pumps. The positioning of hydraulic pistons, the adjustment of the press speed, and the specification of the force values take place without any switching or proportional valves.

This drive technology demonstrates its strength particularly well in positioning tasks. The actual position value of the moving press ram is relayed to the position controller of the axis control. The servodrive then positions the hydraulic pistons in the desired location by pumping the corresponding amount of hydraulic oil into the cylinders. Compressibility and leakage are automatically compensated for in the process. In machines with multiple press cylinders, this technology can achieve simple and highly effective synchronization control, even in changing loads.

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