

Simply punch hydraulically: CytoMotion in Forming Technology

The ZN-Metall metal construction plant is entering series production of aluminum profiles with a servo-hydraulic punching machine. The heart of the energy and cost-efficient special machine from Dirwimmer: the CytoMotion servo-hydraulic compact actuator from Bosch Rexroth.

ZN-Metall GmbH in Teising, Germany, specializes in high-quality metal and steel construction work for the home and garden. The young company is also proving its worth in contract work from industry. With the new punching machine from special-purpose machine expert Dirwimmer, ZN-Metall meets the high demand for aluminum profiles and their precise, energy-efficient processing. The result is impressive: The new machine punches ten strands in parallel in just eight seconds, providing ZN metal with high productivity and competitiveness.

INNOVATIVE DRIVE WITH SELF-CONTAINED ACTUATOR

With Dirwimmer, ZN-Metall has opted for a renowned family-owned company that has been implementing customer-specific special machines with high efficiency, precision and speed since 1986. With short decision-making processes and a good feel for innovative solutions, the company has become a valued partner for individual projects with a regular customer share of 80%. According to Robert Dirwimmer, responsible for design and project management, the leading electro-hydraulic drive solutions from Bosch Rexroth are an important part of the recipe for success, and the new punching machine for ZN Metal owes its special properties. ZN-Metall commissioned us to develop a high-performance, low-maintenance and energy-efficient solution that we were able to implement with the self-sufficient CytoMotion compact actuator from Bosch Rexroth. This enables mechanical engineering to map linear movements with high forces in a simple, compact and durable manner, and to integrate and commission these movements with ease.“

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High power density

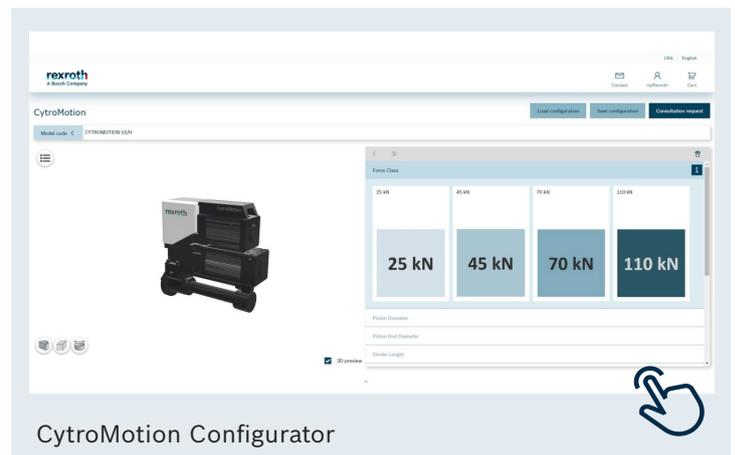
The electrohydraulic functionality of the CytroMotion with displacement control and encapsulated hydraulic part convinced Dirwimmer special machines right away, as it offers many design and practical advantages. “The direct drive solution is significantly simpler, more compact and more powerful than the pneumohydraulic solution of the previous machine,” explains Dirwimmer. Thanks to its high power density, the self-contained actuator achieves press forces of up to 70 kN and speeds of up to 287 mm/s with an engine output of 6.2 kW and a cylinder diameter of 63/45 mm. “For optimum performance characteristics, the CytroMotion control parameters can be adapted to the respective machine, which in turn has a positive effect on the output and process stability,” says Dirwimmer. The system-inherent hydraulic damping, which ensures a high level of robustness against shock loads and vibrations, also contributes to this.“

Purely electrical actuation

Since the CytroMotion also has a digital path measurement system with SSI interface, the self-contained actuator can be controlled just as easily and precisely as an electromechanical actuator. This significantly simplifies integration into the existing control architecture, as special hydraulic expertise is no longer required. Electrical know-how is sufficient. While for other solutions without an encapsulated hydraulic part, pipes, hoses and filters cause additional integration and maintenance costs, with CytroMotion only power and data cables need to be connected. “Since only a small amount of fluid circulates in the closed circuit, CytroMotion is very clean and requires little maintenance,” says Dirwimmer. With this pre-tested overall system, we were able to supply ZN-Metall with a complete turnkey solution.

Easy to configure and order

The original suggestion for the use of CytroMotion came from Dirwimmer’s system integrator Hans Pregler from Deggendorf, who ultimately also designed the appropriate actuator for the punching machine. “As a Rexroth Certified Excellence Partner, we have access to innovative solutions in the field of electrohydraulics,” explains Markus Schwarzkopf from Hans Pregler GmbH & Co. KG. Right from the start, we liked the fact that CytroMotion is compatible with “all common converters and controllers and can be easily selected, designed for specific applications and ordered directly via the associated configurator. This provides design reliability and greatly simplifies engineering



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Energy-efficient, quiet and reliable

With the new punching machine, ZN-Metall not only benefits from high productivity, but also from unprecedented energy efficiency. The reason for this is the speed-controlled displacement control in combination with intelligent function switches, which minimize the energy requirement in each process step. In addition, the current energy consumption of the power-on-demand supply can be monitored and further optimized via the integrated sensors. However, monitoring can also be used to detect potentially critical product statuses at an early stage in order to avoid unplanned downtimes. Another plus point: the electrohydraulic compact actuator has also significantly reduced the noise level in the hall.

„We are very satisfied with our new punching machine,“ explains Christian Zerbin, owner of ZN-Metall. CytroMotion is reliable, energy-efficient and quiet. A clean solution and an all-round successful project.“

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Product Management Industrial Hydraulics

Bosch Rexroth AG

CYTROMOTION: EFFICIENT AND VERSATILE

The compact, self-contained actuator CytroMotion raises the efficiency of hydraulic linear actuators in the power class up to 6.2 kW to a new level. The solution combines an electric motor, pump, cylinder and sensors to create a precise, fully electrically controlled direct drive with an encapsulated hydraulic circuit. The variable speed positive displacement control provides the optimum performance for each operating point. The result: lower energy consumption, emissions and electricity costs. The compact design without external piping minimizes installation and maintenance costs. The precise power-on-demand solution is suitable for a wide range of applications: from forming technology and general mechanical engineering through to the food industry and quality assurance.



FURTHER INFORMATION

Are you interested in compact, self-sufficient axes for stable, energy-efficient processes with simple engineering, fast commissioning and purely electrical control?

Find out more now: www.boschrexroth.com/cytromotion

