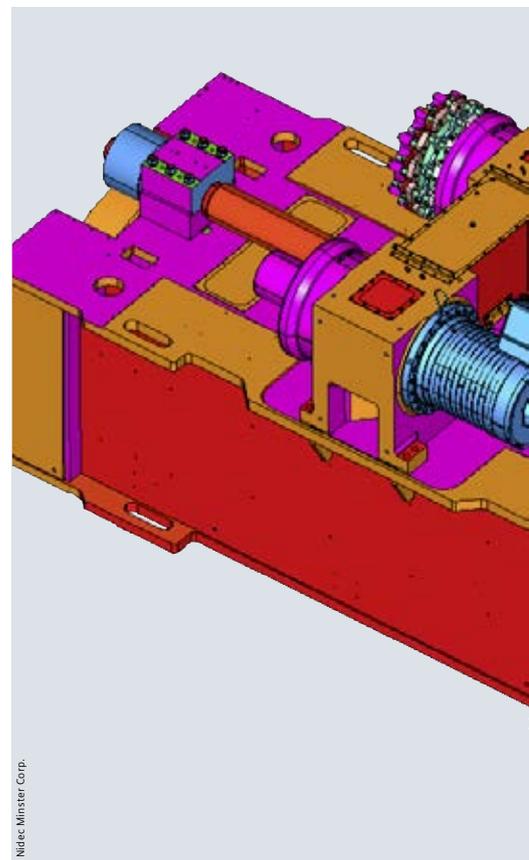


Nidec Minster Corporation, United States

# Clear benefits thanks to optimized kinematics

For its new series of servo-presses, the Nidec Minster Corporation combines a proven platform of its own design with drive, control, and liquid cooling systems from Siemens, thus securing higher productivity for its press customers.



The demand for flexible production is changing the metalforming industry from the ground up. Whether in the automotive industry, in the production of household appliances, or in contract stamping, servo-presses with a pressing force range starting at 200 t offer the key to faster product changes and smaller batch sizes in many areas, as demonstrated by the newly developed FX2 series from the Ohio-based Nidec Minster Corporation.

The new FX2 series is based on the well-known E2 HeviStamper and combines the latter's proven durability, flexibility, and stable value with the typical benefits of servo-presses. With high productivity, rapid tool changes, and quick start-up, the FX2 presses offer a broad performance spectrum and at the same time score highly in terms of both energy management and user-friendliness. An example of this is a recently completed FX2 with a pressing force of 600 t.

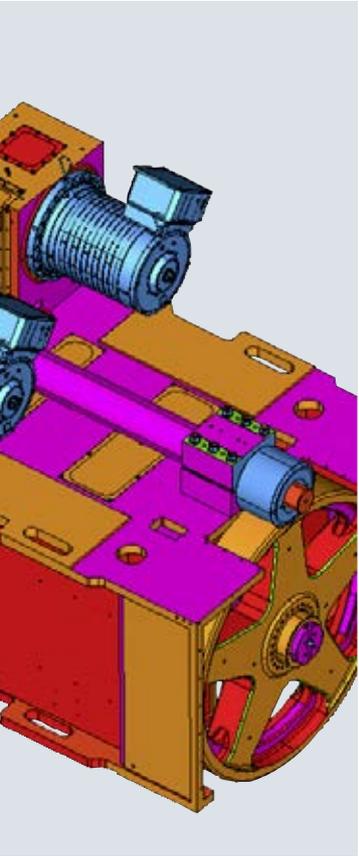
## Intelligent standard drive with individual adaptations

For the drive core of the FX2-600, Nidec Minster opted for a standard solution from Siemens, which has proved itself for more than six years now. Jay Brunswick, engineering manager of machinery de-

velopment at Nidec Minster, explains why: "We opted for Siemens control systems and drives because these systems are world leaders in energy management. The Siemens solution exactly met our high expectations in terms of optimized speed, energy consumption, and wear." In addition to the conventional functions of a press control system, the solution – consisting of water-cooled Simotics torque motors, Sinamics S120 converters, and the appropriate Simotion control system – also facilitates the generation of a specific speed profile for the press ram as well as controlling the energy management system. By using the open software of the Siemens solution as a foundation, Nidec Minster was able to fully concentrate its development effort on machine-specific adaptations as well as individual add-ons.

## Optimized energy management

In the FX2-600, two Simotics T-1FW3285 torque motors, each with a maximum power of 341 kW, are used as the main press drives for the eccentric shaft. Without any additional measures, the two motors would require a combined infeed power of up to 750 kW – with correspondingly high costs for power supply. Thanks to a standard Simotics M-1PH8 main



The new Nidec Minster FX2-600 servo-press

Two water-cooled Simotics torque motors form the main press drive for the eccentric shaft of the FX2-600



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motor acting as an energy buffer and an intelligent energy management system for this rotating energy storage, the infeed power can be reduced to less than 132 kW. The typically occurring peak loads in pressing processes are optimized in the servo-presses by a specially developed PC-based configuration tool: a curve generator creates an application-specific, optimized speed profile and provides a value for the maximum output. The configuration tool calculates the size of the infeed based on the specific working capacity and the desired maximum stroke rate. The tool is able to determine the size of the energy storage so accurately that only a very small current relative to the installed motor power actually flows through the infeed into the press at a constant rate. The infeed thus corresponds to that of a conventional flywheel press with the same productivity.

### Longer lifecycles thanks to liquid cooling system

The control cabinet array from the Siemens factory in Chemnitz, Germany, is designed with an IP54 degree of protection and contains Sinamics S120 converters with direct liquid cooling. In a pressing plant, liquid cooling systems offer crucial benefits. "The Siemens components significantly reduce the aver-

age working temperature. This results in a longer motor service life, reduced heat transfer to the press, and therefore a more stable production environment. And, as this is a closed system, there are significantly fewer impurities than with an air cooling system," explains Brunswick.

### Collaboration for the future

Nidec Minster is also collaborating with Siemens on the expansion of the FX2 portfolio for pressing forces of up to 1,200 t. Jim Schulte, general manager of sales and administration at Nidec Minster, underlines the long-term advantages for customers: "Our collaboration with Siemens enables us to supplement our own rugged, high-performance press platform with a high-torque servomotor and drive. For our customers, this also means that they can make use of the worldwide service and support provided both by Nidec Minster and by Siemens." ■

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