



Photos: W. Geyer

■ Heller Maschinenfabrik GmbH, Germany

# Partners for Greater Performance

A development partnership with Siemens brings new, market-driven machine solutions for efficient five-axis machining.

With its finger on the pulse of relevant industry trends and with Siemens engineers as development partners by its side, Heller Maschinenfabrik has made targeted additions to its range of machines. The new F-series in the company's machines business offers additional made-to-measure, five-axis machining centers with the Heller trademark performance and efficiency. Now, these benefits are also available for tool- and moldmaking as well as for single-part production. The foundations for this launch were laid with the development of the H-series, which saw Heller become one of the first machine tool manufacturers in the world to adopt the Sinumerik 840D sl – the latest generation of controllers – at EMO 2007. The response was phenomenal, with more than 150 H-series machining centers being commissioned within a very short time. Taking a deliberately phased approach to ensure easily manageable steps for developers and users alike, Heller has also spent a number of years migrating the operating and programming interface, from Sinumerik HMI Advanced to the current integrated Sinumerik Operate operating concept. Today, even the basic versions of the machines in the F-series are equipped with the comprehensive Sinumerik MDynamics technology package for five-axis milling (see sidebar). The innovative functions of this package give machine manufacturers a clear market advantage over their competitors and provide maximum user-friendliness. Complementing the innovative spirit of this approach, the package provides full compatibility and continuity for both hardware and software, so pallets, equipment and the NC programs of the H-series and its predecessors can still be used on the new F-series machines.



The new F-series from Heller offers five-axis machining centers with manual table loading (FT) for use in moldmaking and workshops

### Two models with a single objective: maximum milling efficiency

The Heller F-series will initially comprise two models, with each model offering two sizes of work area (2000/4000). The FP model is designed for maximum production output and availability and is therefore, ideal for serial production with five-axis machining. The FT model with manual table loading is a classic workshop machine ideal for use in tool- and moldmaking, where its flexible, high-precision five-axis machining of complex components caters for even the smallest batches.

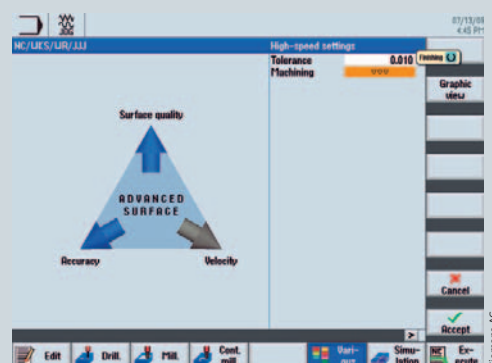
The proven Heller spindle technology features on both models. The high-torque Power Cutting Unit (PCU 63) is offered as a swivel head for users in the high-performance cutting industry. For high-speed >>

### Sinumerik MDynamics

The Sinumerik MDynamics technology package for five-axis milling comprises the Sinumerik 840D sl and a wealth of intelligent CNC functions as well as the full CAD/CAM/CNC process chain. The Advanced Surface intelligent motion guidance assures optimum surface quality even at high feed rates. It perfectly harmonizes the speed profiles of adjacent milling paths using an enhanced look-ahead capability, and the upgraded online compressor minimizes contour deviation. The result is even better surface quality and contour accuracy with no need for workpiece-specific optimization.

#### MDynamics for five-axis milling offers the following functions:

- ▶ Advanced Surface
- ▶ Additional user storage on a Compact Flash (CF) card
- ▶ Spline interpolation (ASPLINE/BSPLINE/CSPLINE)
- ▶ Transmit and peripheral surface transformation
- ▶ Automatic measuring cycles
- ▶ 3-D simulation
- ▶ Simultaneous recording
- ▶ ShopMill/ShopTurn workstep programming
- ▶ Residual material detection
- ▶ Five-axis machining package (Tool Center Point programming/TRAORI)
- ▶ 3-D tool radius correction (CUT3DC/CUT3DF)
- ▶ Kinematics measuring (Cycle996)



Efficient HSC functions like the Cycle832 high-speed setting guarantee optimum precision and perfect surface quality





Intelligent motion control with Advanced Surface produces perfect surfaces at high machining rates and maximum contour accuracy

- ▶ cutters, Heller offers the high-rpm Speed Cutting Unit (SCU 63), which is also a swivel-head unit. These spindles are also available as a Speed Cutting Tilt unit (SCT 63) with a fork head for efficient machining of any freeformed surfaces.

### Focus on user-friendliness

One of the main aims in this latest round of development was to make operation and programming even more user-friendly and so further improve the operator-friendliness of the F-series machines. Newcomers and professionals alike can now use the diverse functions for five-axis machining with confidence, set up their machines quickly, program rapidly even on the shopfloor, and simulate and optimize machining steps. "We looked very closely at the needs of our targeted market segment. We exploited the many years of experience offered by Siemens in relevant sectors such as aerospace and shopfloor programming, and in return, we played an active part in optimizing the current Sinumerik Operate HMI system," says Dr.-Ing. Hannes Zipse, authorized representative and head of Sales at Heller Machines.

For years now, Heller has been an important pilot customer for Siemens, becoming regularly involved in the (further) development of Siemens drive and control systems. As a result, Heller's own control developers boast a high level of competence, which promotes a high level of interchange and accelerates the work process significantly. This close cooperation is of benefit to both sides, and ultimately of course to the user. For example, the new series features a number of functions that users of Heller machines have come to expect, such as integrated performance monitoring (IPM) and the tried-and-tested pallet management on the FP model, both of which are Heller in-house developments.

### Keeping it all under one roof

Sinumerik Operate, the new operating and programming interface for the H- and F-series, fuses the superb flexibility and functionality of Sinumerik HMI Advanced with the intuitive user guidance of ShopMill under a common environment. The operator essentially has two options when programming the controller:

- ▶ ShopMill, the graphics-aided workstep programming application that is very popular in shopfloor environments and achieves very short programming times especially when machining individual parts and small batches
- ▶ Programming in programGuide, DIN/ISO and G-code with cycle support and clear cycle graphics.

Programming with ShopMill and programGuide is further aided by the Animated Elements function, which illustrates the input parameters using short animated sequences. This allows a confident assessment of the machining step to be made before the first chip is cut and offers added protection against operator error. Other features include enhanced, intuitive functions for machine setup, the tool and the workpiece, for example for measuring using different probes or swiveling in JOG mode, and for fast and simple handling of complex workpieces in a fixture. There are also functions for efficient tool and program management, such as the logbook required by Heller. Sinumerik Operate's new online help function, with its detailed description of all controller functions, has also been well received by first-time users. All functions come as standard under a common environment. This simplifies engineering for the machine tool builder and gives users freedom of choice combined with maximum operating convenience.

### The machine tool of tomorrow

Machine manufacturers and Siemens will continue to work together to implement the innovative technologies and topics of today in the machine tools of tomorrow. One such topic is the broad field of energy efficiency, a goal that is being advanced with the use of frequency converters in machine tool ancillary components and peripherals, and also with energy-saving motors. In the future, the two companies will be looking to further deepen their long-lasting partnership by opening up new industries and applications and by training personnel from the Heller Training Center at the Siemens Technology and Application Center (TAC) in Erlangen, Germany. ■

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