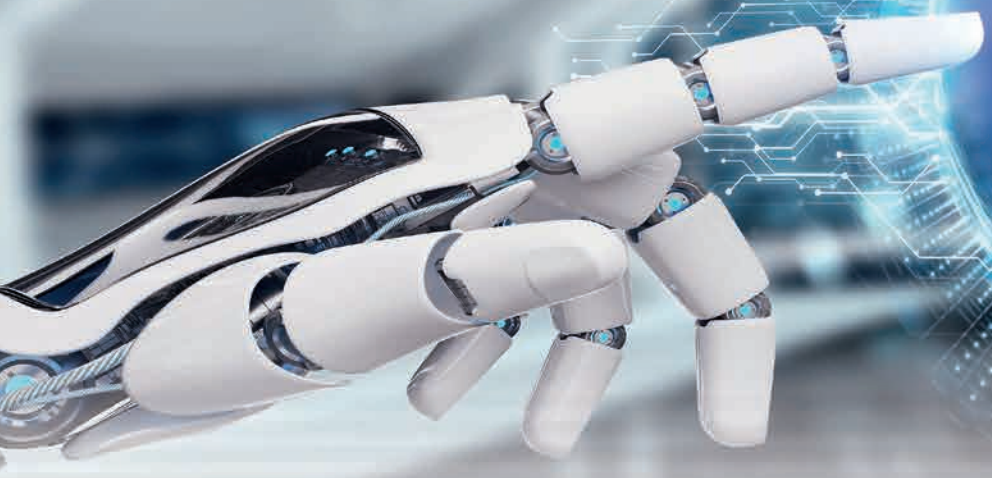
New machine concept

TWO IN ONE



Large-format 3D printing + post-processing

WEBER Additive

HAMUEL REICHENBACHER
Members of the SCHERDELGroup

WEBER Additive

Innovation. Quality. Partnership.

For almost 100 years, the medium-sized family business WEBER has stood for perfection in mechanical engineering and has convinced customers from all over the world with utmost quality and reliability. Innovation, quality and partnership – forming part of our philosophy, these words sum up our values and mission statement.

Innovation: As a manufacturer of extruder technology and wood and metal grinding machines, we at WEBER combine expert knowledge with innovative technologies. We know our target markets inside out and are always researching them to identify new trends at an early stage and respond to them with new solutions that focus on efficiency and innovation.

Quality: For us, quality means not just attracting customers in the short term, but impressing them again and again. This includes the longevity of our products as well as a sustainable basic concept and the reliability of our services.

Partnership: Always focusing on the customer, we place his particular requirements at the beginning of every new development. We rely on long-term partnerships that result in customer-specific solutions. This becomes possible owing to close customer contact and an enormous depth of production with in-house development at our Kronach site.

All of these factors contribute to a combination of tradition and innovation, along with extruders and grinding machines that meet the highest standards of quality, performance and efficiency.

Manuel Kolb, *Commercial Manager Weber Additive*

In my capacity, I am jointly responsible for this production technology at Weber Additive. We – as the Weber company – have more than 60 years of experience in the production of high-quality industrial extruders and the expertise regarding wear protection and the processing of a great variety of materials.

We have now been active in the field of additive manufacturing for almost three years, especially in the area of manufacturing large-volume components using pellets. For some of these applications, a post-process is essential to obtain additive parts that are ready for use. The parts need to be post-processed to accomplish this and our new hybrid machines can do just that: print AND mill.

HAMUEL REICHENBACHER
Members of the SCHERDELGroup

Trend-setting innovations

Over the last seven decades, REICHENBACHER HAMUEL has become synonymous with trend-setting innovations in the development of high-quality CNC machining centres. As our customers' success is based on the first-class quality of their products, they very much rely on our technology to guarantee it permanently.

All systems have the highest safety standards and perfect operations such as milling, sawing and drilling from the point of view of a customised „best-fit solution". They convince with sophisticated technical details, a high level of operating comfort and impressive work results. It is not without reason that manufacturers all over the world successfully use these machines in aircraft and automotive construction, shipbuilding and rail vehicle construction, to name just a few.

As a renowned plant manufacturer, we attach great importance to efficiently minimising risks for our customers. In doing so, we not only focus on reliable after-sales service, but also on preventive measures.

Within the SCHERDEL*Group*, we also make targeted use of a wide range of process technologies and resources. These synergy effects provide our customers with essential advantages in terms of cost and process optimisation.

Mechanical engineering has a longstanding tradition in the company as a whole, which makes a decisive contribution to the continuity and successful implementation of our corporate goals.

Dr. Alexander Nam, *Head of Additive Manufacturing Technology*

Many processes can be made much more efficient by using hybrid technologies. At Reichenbacher Hamuel, we have set ourselves the goal of offering innovative machine and technology solutions which permit the use of 3D printing for the quick production of predominantly large-volume components, such as façade elements, formwork in the construction industry or casting/pressing moulds in mould making industries. Subsequently, CNC machining will perfect their functionality in terms of desired accuracies and high-quality surface finishes.

This trendsetting hybrid technology opens the door to completely new manufacturing approaches, because many of today's processes are still too expensive and too slow for industrial use. Our objective must be to produce large quantities in a short time at competitive costs. Our hybrid systems provide the decisive key to this.

Control methods
Mobile control panel
HT2 handheld control unit (optional)
HT8 handheld control unit (optional)
Siemens Sinumerik 840D sl
(User interface HMI Operate, WIN10)

ECO-LT basic machine
Low-vibration portal frame with stationary machining table on a stable substructure. A protective cabin including ceiling element encloses the machine completely. Two versions of equipping the unit and a tool changer with 7 places satisfy most diverse customer requirements.

Printing table
Table surface heatable up to 150 °C
Permanent printing plate (surface)
Base plate from cast aluminium
Plate milled (level or with grooves)
Steel bars with fitted and threaded bushes

Milling unit
The cardanic 5-axis working head provides for an undercut of up to 46° and can be equipped with different head versions. This permits the high-precision three-dimensional machining of free-form surfaces and contours during and after 3D printing.

Extruder
Plasticising up to 450 °C
Maximum material output from 2 kg/h to 20 kg/h
Nozzle diameter from 1 mm to 14 mm
Subsequent to their fusing in the extruder, a nozzle deposits the fused pellets on the build platform/printing table in layers.

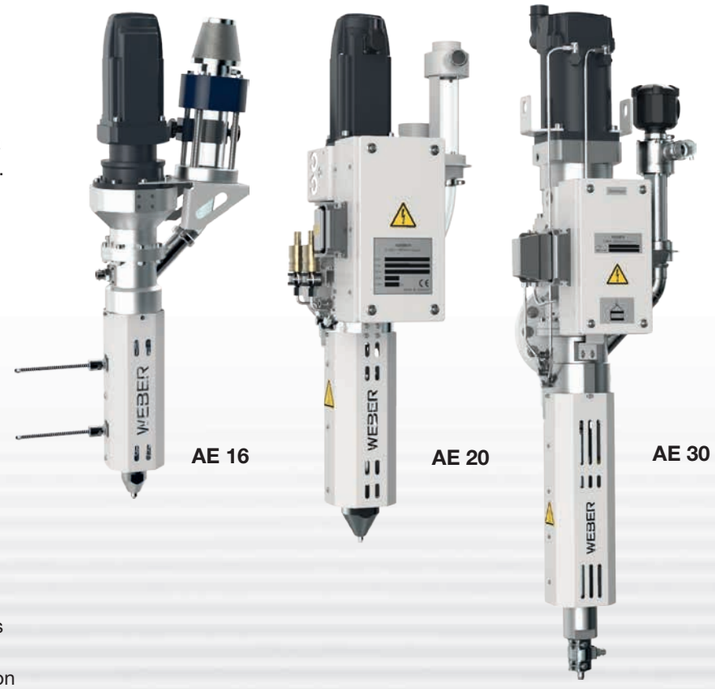
The perfect combination of large-format industrial 3D printing and post-processing system by milling

The new HybriDX-LT machine concept meets the production requirements of a large number of parts and prototypes. The additive manufacturing technology used is direct extrusion or FGF (Fused Granular Fabrication). In this process, the direct fusing of low-cost plastic pellets is followed by the build-up of the component layer by layer. Thanks to the integrated full-fledged milling unit, machining of the parts is immediately possible in the same machine.

The AE Series – Extruders for direct extrusion

The AE series, designed for dynamics: light-weight, optimised for variable output, with a powerful servo motor and compact material feed. The right configuration and size of the pellet extruder depend on many factors:

- typically required extrusion speed
- desired layer and wall thickness
- material and material composition



AE 16 AE 20 AE 30

Selected areas of application

- Prototype construction
- Tool and mould making
- Small series production of large components
- Individualisation and repair
- Architecture, design, art, scenery construction

HybriDX-LT	Basic concept of the machine
Aggregates	5-axis milling unit with cardanic spindle
Tool changer	7-place tool changer
Extraction and chip removal	Room extraction system for lubricating mists and dusts Extraction system for clamping devices
Machine table equipment	Aluminium table surface (level or with grooves) Steel bars with fitted and threaded bushes
Machining area (stroke of axes)	X-direction 1,280 mm to customer-specific Y-direction 1,160 mm to customer-specific Z-direction 800 mm to customer-specific
Workpiece clamping technology	Vacuum clamps Pneumatic clamps Special clamping devices
Control system	Siemens Sinumerik 840D sl (User interface HMI Operate, Win10)
Extruder unit	AE 16 with max. 2 kg/h output, 1 mm to 4 mm nozzle diameter AE 20 with max. 4.5 kg/h output, 1 mm to 7 mm nozzle diameter AE 30 with max. 8 kg/h output, 6 mm to 14 mm nozzle diameter
Printing table	Printing table with permanent printing plates Vacuum table with exchangeable printing plate
Feeding system	Pellet conveyor with Venturi nozzle and storage tank at the extruder
Dryer	25 l / 50 l hot air dryer

Subject to changes in the course of technical progress.

Modification by hybrid technology also available for other Reichenbacher series

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