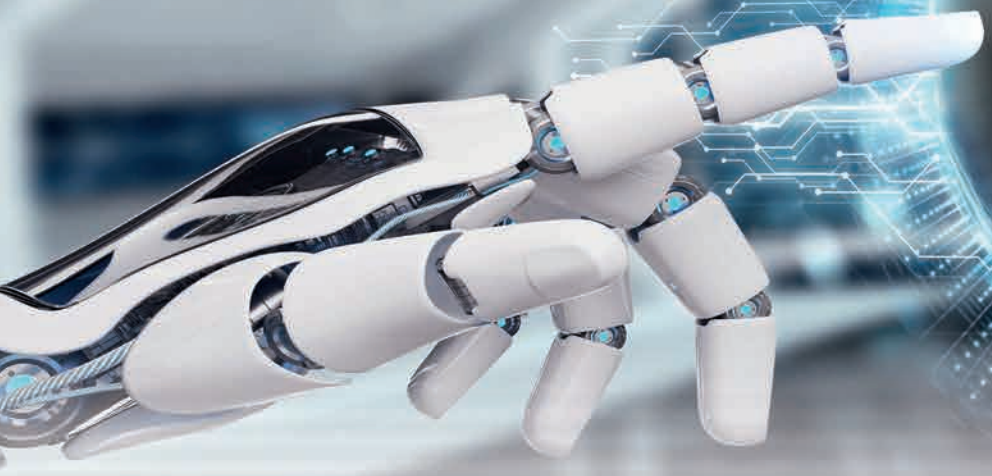
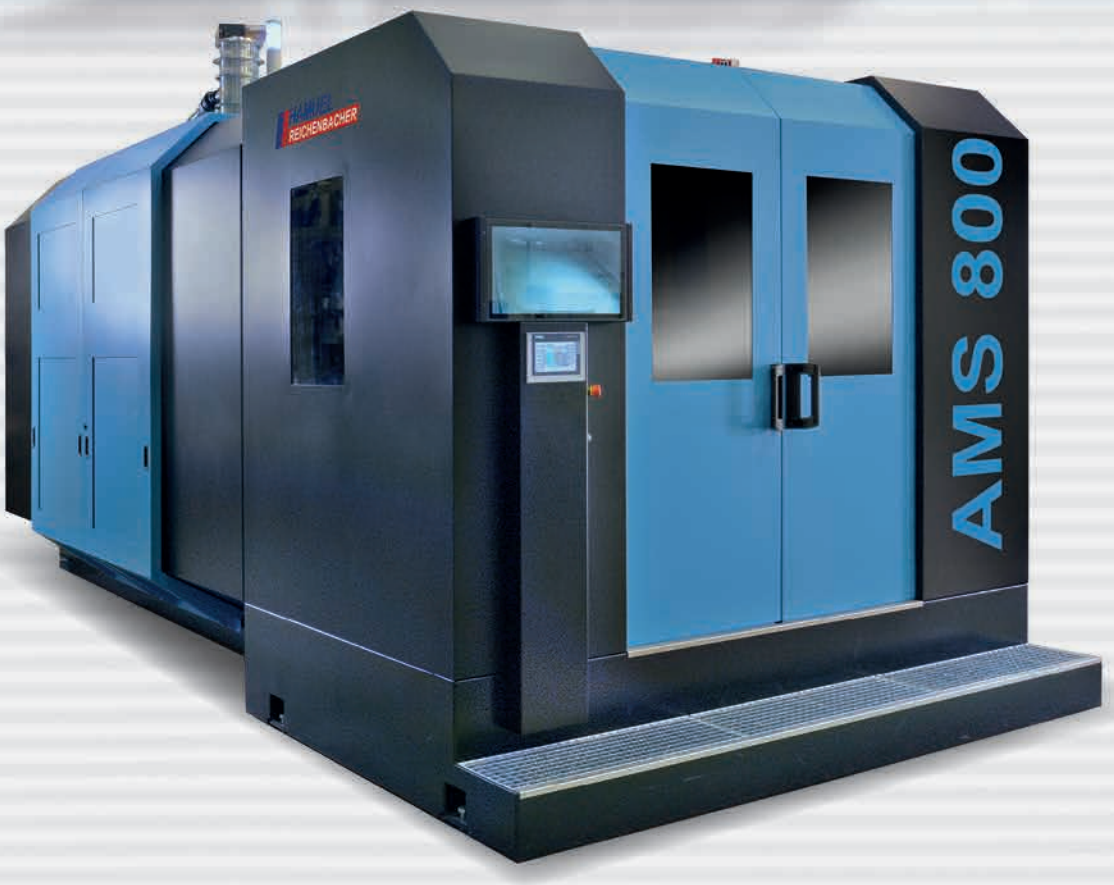
New machine concept

ALL IN ONE





ADDITIVE MANUFACTURING SYSTEMS

HAMUEL REICHENBACHER
Members of the SCHERDELGroup

A highly specialised companie

Trendsetting innovations

Over the last seven decades, REICHENBACHER HAMUEL has become synonymous with trendsetting innovations in the development of high-quality CNC machining centers. 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 customized „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 minimizing risks for our customers. In doing so, we not only focus on reliable after-sales service, but also on preventive measures.

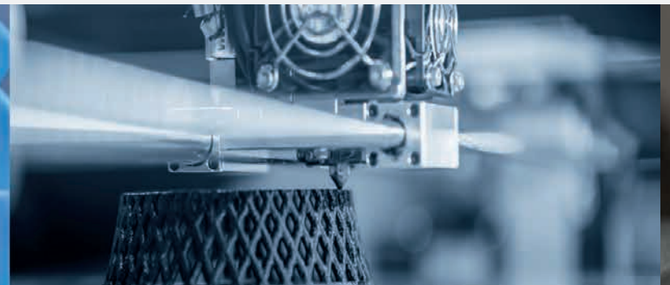
Within the SCHERDELGroup, we also make targeted use of a wide range of process technologies and resources. These synergy effects provide our customers with essential advantages in terms of cost and process optimization.

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 Kawalla-Nam,
Head of Additive Manufacturing Technology

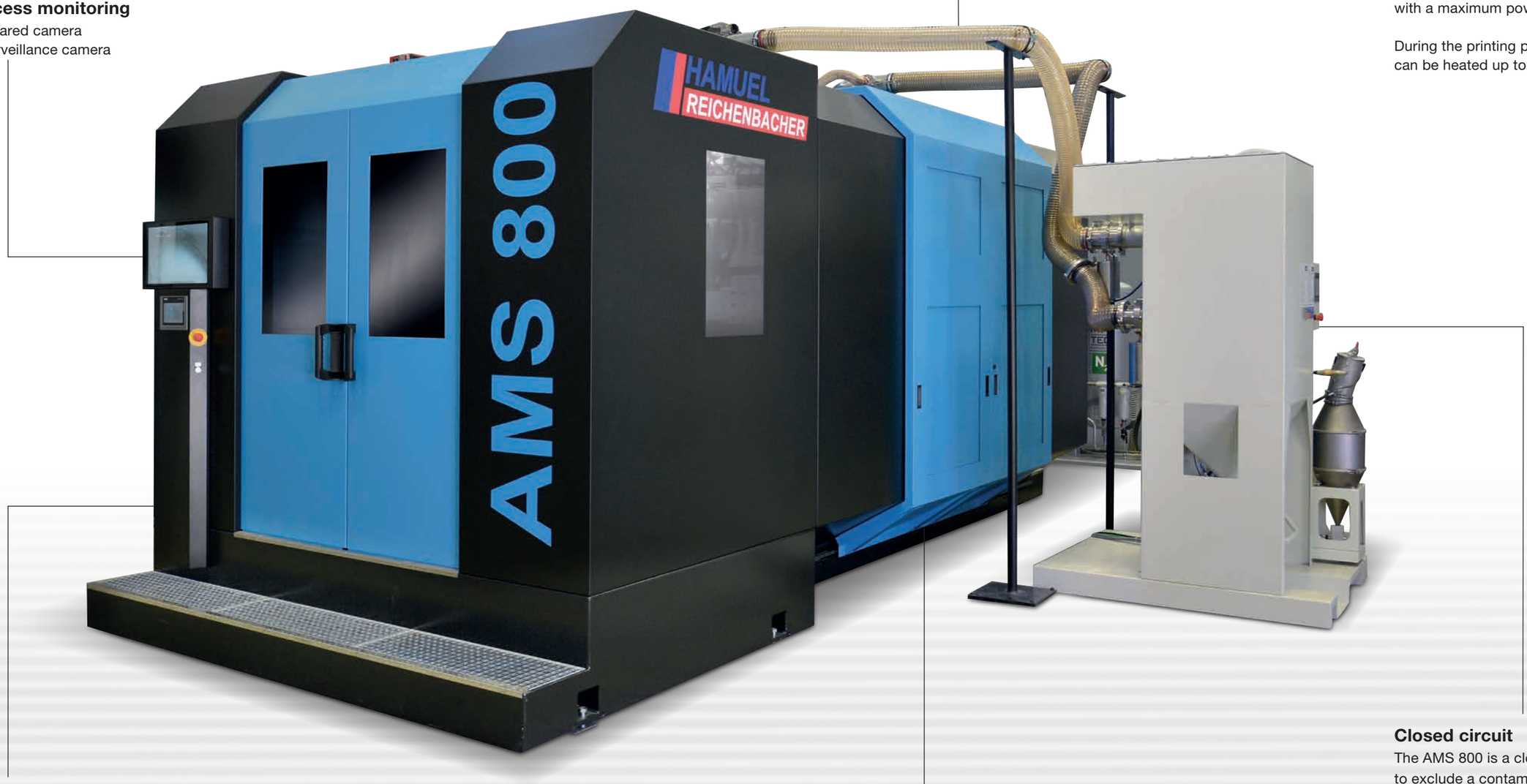
The powder bed process and further processing based on LM and LS (Laser Melting and Laser Sintering) allows many processes to become considerably more efficient. We have set ourselves the goal of offering innovative machine and technology solutions on an industrial scale. In cooperation with our partner, we have developed the AMS 800 primarily intended for manufacturing large-volume workpieces made of metal. The handling of the components takes place outside the building area and the transfer between the individual machining processes is fully automatic.

This trendsetting technology opens the doors to completely new manu- facturing and design concepts, as many of the processes currently available are still too expensive or too slow for the industry and thus not feasible. The goal must be to produce large quantities in a short time at competitive costs. Our systems are the decisive key to achieve this.



Control system
Siemens make
Open system for various CAD/CAM
interfaces and machine control versions.
The customer decides which R&D project he wants to carry out.

Process monitoring
- Infrared camera
- Surveillance camera



Building area
The printing volume permits the manufacture of workpieces with a base area of up to 800 x 800 millimeters and a maximum height of 500 millimeters.

3D printing is performed using 4 fiber lasers with a maximum power of 1 kW, each.

During the printing process, the build-plate can be heated up to 150 °C.

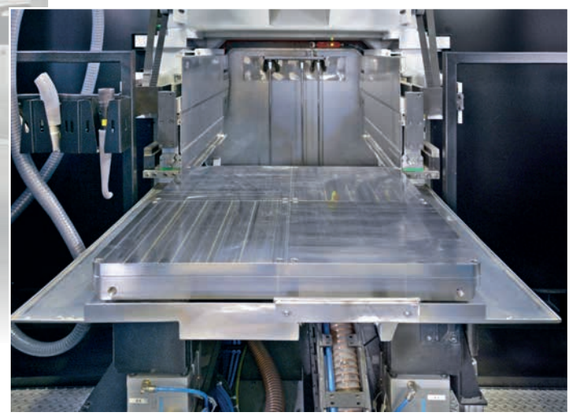
Loading & cleaning
In the cleaning cabin, the operator can remove the remaining loose powder by suction.

The build-plate can be loaded into the machine using a crane.

Recovery
Up to 70 % of the powder is de-powdered automatically in the process chamber and can thus be recovered and reprocessed.

Closed circuit
The AMS 800 is a closed circuit system to exclude a contamination of the environment.

The related periphery consists of:
- Fume extraction system
- Nitrogen generator
- Powder preparation system



Handling
An innovative handling system automatically transfers the build-plate from the discharge station into the process chamber.

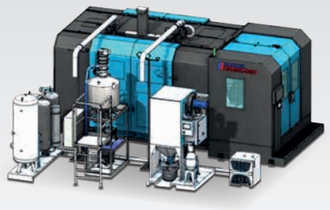
Extraction system
Fume extraction system (filtration) with a sinter-plate filter in combination with safe passivation and integration into the inert gas circulation system.

Nitrogen generator
The nitrogen generator permits the creation of the inert gas atmosphere with a nitrogen purity of up to 99.9 %.

POWDER PROCESS PRINTER	
SPECIFICATIONS	**AMS 800**
Building area (X / Y / Z)	800 x 800 x 500 mm
Laser power / type	4 x 1 kW / fiber laser
Laser wavelength	450 – 1,070 nm (optionally selectable)
Layer thickness	10 µm to 120 µm
Scanning speed	up to 30 m/s
Focus diameter	70 – 500 µm variable
SPACE REQUIREMENTS	
Dimensions (W x L x H)	2,840 x 6,100 x 3,411 mm
Weight	approx. 12,000 kg
ACCESSORIES / PERIPHERALS	
Material	Fe-based alloys
Material feed	semi-automated
Handling	automated
Inert gas supply	external N2-generator
Powder supply	powder preparation system
Filter system	fume extraction system
Connection / power consumption	400 volt 3NPE, 63 A, 50/60 Hz, 7 – 10 kW

THERMOPLASTICS, CERAMICS & METALS

AMS 800



Powder bed process +
further processing based on
- Laser Melting (LM)

Advantages:

- Building area up to 800 x 800 x 500 mm
- 4x 1 kW laser
- Integrated powder preparation
- Integrated inert gas system (nitrogen N2)
- Component handling outside the building area
- Compact design
- Crane hook machine for quick installation
- Open system for various CAD/CAM interfaces

ADDITIVE MANUFACTURING APPLICATIONS

- *Automotive industry and suppliers*
- *Aviation industry*
- *Consumer goods industry*
- *Toy industry*
- *Art and art history*
- *Mold making (rapid tooling)*
- *Medical technology, architecture and landscape design*
- *Various other applications*

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