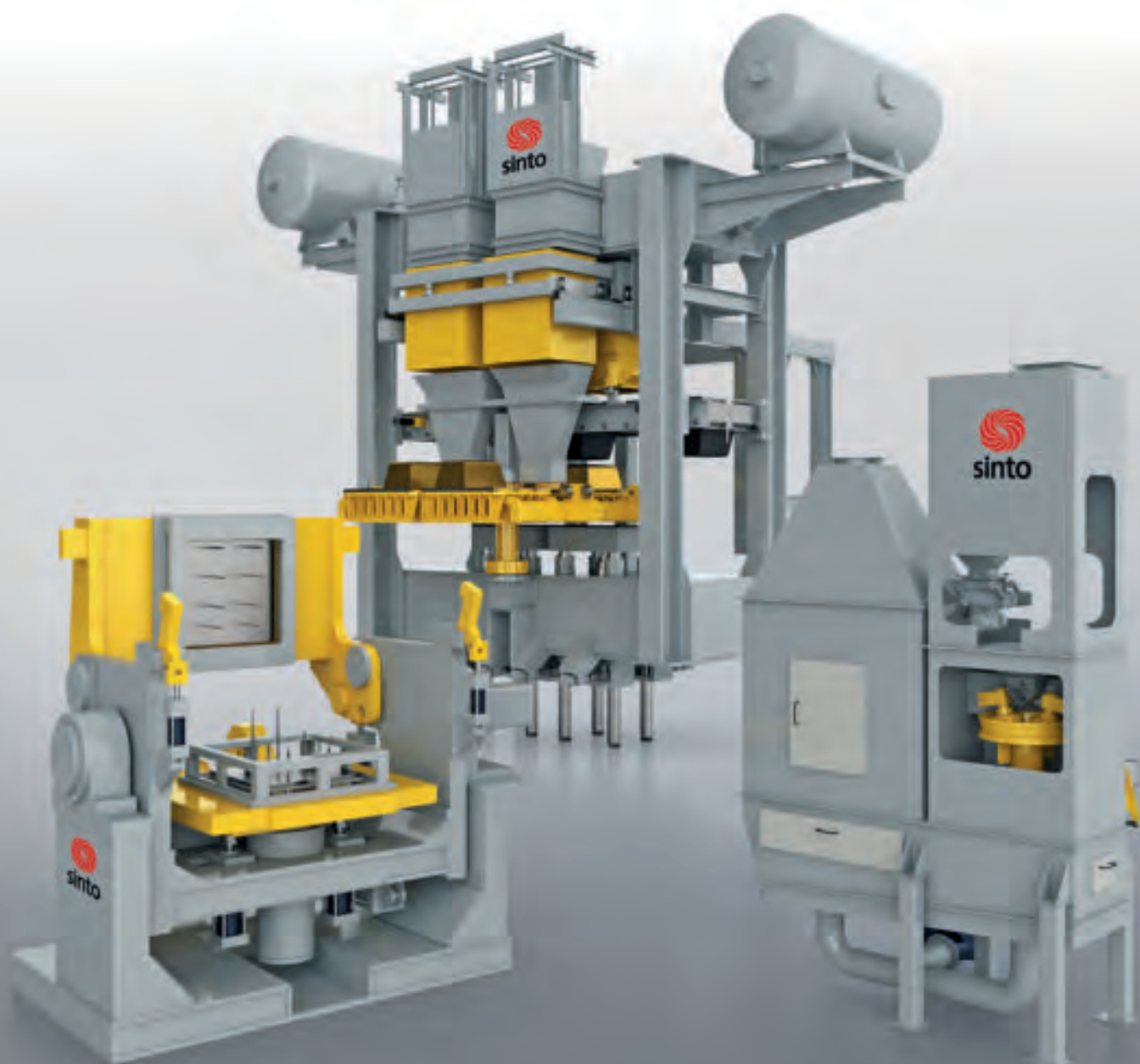




sinto FOUNDRY INTEGRATION

MOULDING – POURING – RECLAMATION

Heinrich Wagner Sinto Products





PERFECTION IN EVERY SINGLE MOULD –

**Moulding plants, pouring machines
and plant technology made by HWS.**

Since we were established, we have been searching for new ways to achieve perfection. What began in 1937 in Bad Laasphe, Wittgensteiner Land has become a true success story by the present day. With more than 80 years of experience, more than 730 customised systems and an expertise network consisting of 340 employees nationally and more than 4,000 Sinto employees worldwide, we know that perfection forms in a sustainable way. Right from the

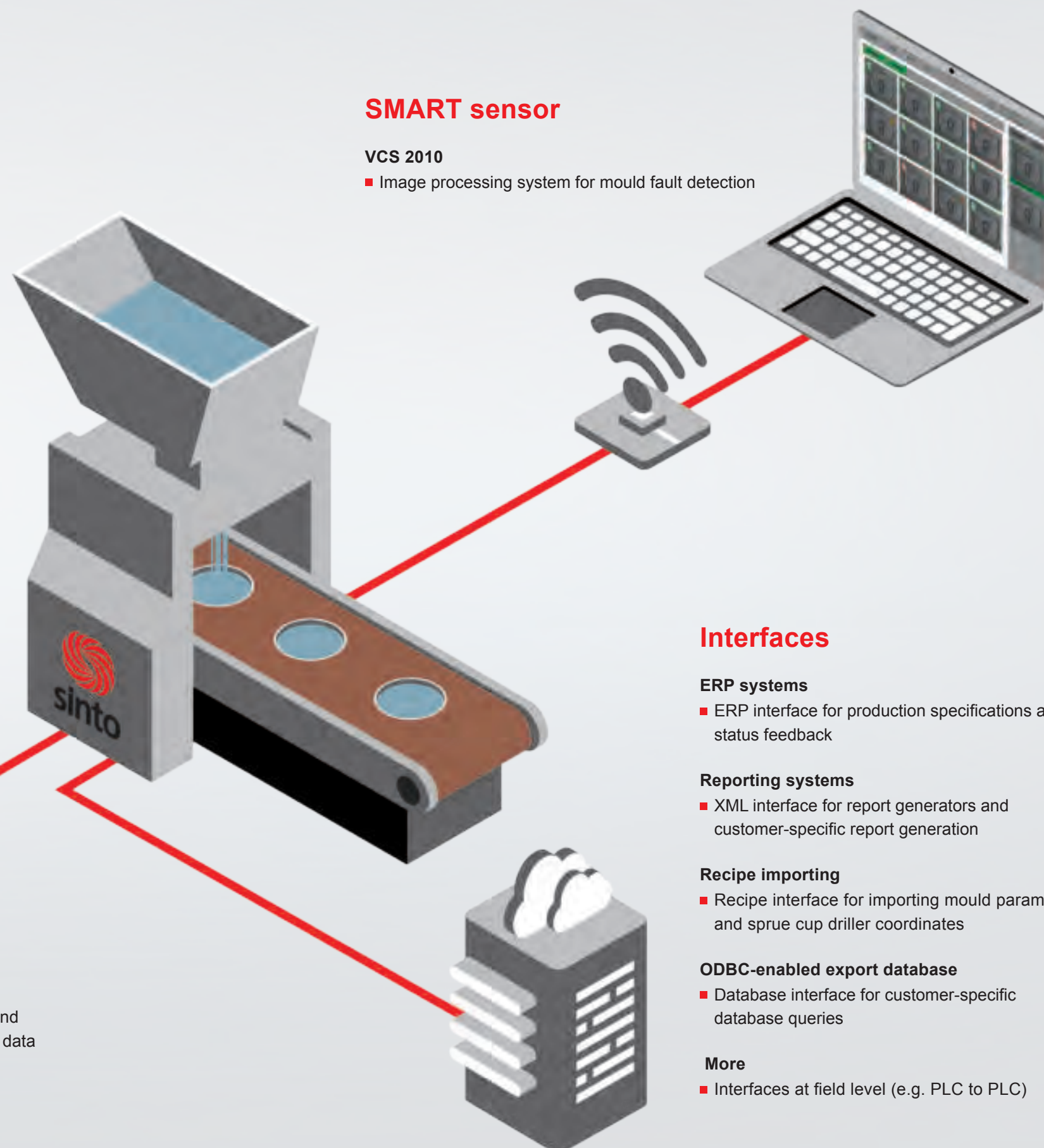
beginning, a pioneering spirit shaped our thoughts and our ambitions for well thought-out system solutions. In this way, as part of the Sinto Group in the 80's, we revolutionised the everyday life in foundries by means of the SEIATSU airflow squeeze moulding process. Even in the new millennium, we contribute to the stable future development of foundry technology as one of the leading companies thanks to sustainable concepts such as HWS sand reclamation.

 **MADE IN GERMANY**

AHEAD OF INDUSTRY 4.0 – the HWS digitalisation concept.

In today's highly automated production lines, precise coordination of all plant areas is essential. HWS supports its turnkey system technology with a customised digitalisation concept – efficient and smart. Using perfectly matched components – from control hardware and software to high-precision sensor tech-

nology, including programming by HWS specialists – processes are digitally coordinated. Apart from a high interface compatibility, the HWS digitalisation concept relies on intuitive operation and fully automatic data acquisition and management.



Software

ALS Advanced

- Moulding plant monitoring system with functions such as fault analysis

GLS Advanced

- Pouring machine monitoring system with additional information acquisition and analysis

SmartDashboard

- Situation-dependent and rule-based production data representation

SMART sensor

VCS 2010

- Image processing system for mould fault detection

Interfaces

ERP systems

- ERP interface for production specifications and status feedback

Reporting systems

- XML interface for report generators and customer-specific report generation

Recipe importing

- Recipe interface for importing mould parameters and sprue cup driller coordinates

ODBC-enabled export database

- Database interface for customer-specific database queries

More

- Interfaces at field level (e.g. PLC to PLC)

AIRFLOW GUIDED PRECISION –

HWS tight-flask moulding machines and moulding plants.

Targeted moulding sand compaction down to the last corner is possible based on the SEIATSU airflow squeeze moulding process. The turnkey tight-flask moulding machines and moulding plants from HWS

for manual, semi-automatic or fully automatic use create the prerequisites for the moulding of even highly complex pattern geometries – silent and energy-efficient.

PROCESS

- SEIATSU airflow squeeze moulding process
- SEIATSU.plus (pattern-side pressing)
- Aeration technology ACE



Fully automatic lowering moulding machine type EFA-SD



Lifting moulding machine HSP



Fully automatic twin-type moulding machine type ZFA-SD

Lifting moulding machine

Type HSP / HSP-D

- Roller lifting and pattern turntable for the manufacture of cope and drag moulds
- Flat squeeze plate, elastic squeeze cushion or multi-ram press
- Sand filling conveyor belt with option for manual intervention or dosing device
- Automatic or manual moulding box transportation on roller conveyors or with lifting devices

Technical data		
Type	Max. output approx. compl. (moulds/h)	Max. moulding box size (mm)
HSP	35	650 x 500
	18	1,000 x 800
HSP-D	80	650 x 500
	40	1,250 x 1,000

Subject to technical changes.



Lowering moulding machine

Type DAFM-S / DAFM-SD

- Pattern roller conveyor (each one mould half) or pattern turntable (for cope and drag moulds)
- Flat or elastic squeeze plate or multi-ram press
- Sand filling conveyor belt with option for manual intervention or dosing device
- Automatic moulding box transportation on roller conveyors

Technical data		
Type	Max. output approx. compl. (moulds/h)	Max. moulding box size (mm)
DAFM-S	50	1,000 x 800
	10	2,500 x 2,000
DAFM-SD	100	500 x 400
	50	1,250 x 1,000

Subject to technical changes.



Fully automatic lowering moulding machine

Type EFA-S / EFA-SD

- Pattern roller conveyor and pattern shuttle truck or pattern turntable (for cope and drag moulds)
- Multi-ram press as standard equipment
- Sand filling via dosing device
- Automatic moulding box transportation on roller conveyors

Technical data		
Type	Max. output approx. compl. (moulds/h)	Max. moulding box size (mm)
EFA-S	60	1,000 x 800
	20	2,500 x 2,000
EFA-SD	140	500 x 400
	80	1,600 x 1,250

Subject to technical changes.



Fully automatic twin-type moulding machine

Type ZFA-S / ZFA-SD

- Pattern roller conveyor and pattern shuttle truck (for simultaneous production of cope and drag moulds) or pattern turntable (for 2 cope and drag moulds or 1 pair of moulding boxes)
- Multi-ram press as standard equipment
- Automatic moulding box transportation on roller conveyors

Technical data		
Type	Max. output approx. compl. (moulds/h)	Max. moulding box size (mm)
ZFA-S	250	500 x 400
	160	1,600 x 1,250
ZFA-SD	250	500 x 400
	160	1,600 x 1,250

Subject to technical changes.



Aeration moulding machine

Type ACE

- Pattern turntable
- Mould compaction via aeration sand filling and double-sided pressing, no overfilling of sand
- Automatic moulding box transportation on roller conveyors

Technical data		
Type	Max. output approx. compl. (moulds/h)	Max. moulding box size (mm)
ACE	150	750 x 500
	120	1,200 x 1,000

Subject to technical changes.



FLEXIBLE MOULDING WITH SAVINGS POTENTIAL – HWS flaskless moulding machines and moulding plants.

Flaskless moulding machines and moulding plants from HWS create ideal basic conditions for quick and flexible casting production. All essential processes take place within the closed moulding machine system

including a two-stage, uniform compaction using opposing squeeze plates. The highest precision – without flasks – is possible thanks to the horizontal mould partition.



Moulding machine FBO

Compact moulding machine Type FDNX

- Can be used as a compact stand-alone machine or as manual or fully automatic component in the plant environment
- Optimally suited for casting production with low core content
- Excellent mould quality due to aeration sand filling technology

Technical data			
Type	Max. output approx. compl. (moulds/h)	Max. moulding cod sizes (mm)	Max. moulding cod height (mm)
FDNX-0	100	450 x 350	150
FDNX-1	80	500 x 400	180

Subject to technical changes.



Moulding machine Type FBO

- Different machine sizes for optimal coordination with production programs
- Ergonomically optimised workstation environment for the insertion of cores into lower mould halves
- Exceptional quality thanks to air flow sand filling

Technical data			
Type	Max. output approx. compl. (moulds/h)	Max. moulding cod sizes (mm)	Max. moulding cod height (mm)
FBO-III-S	160	610 x 508	200
FBO-IV	100	710 x 610	250
FBO-V	144	812 x 812	350

Subject to technical changes.



EFFICIENT MOULDING IN ANY POSITION –

HWS vacuum process moulding machines and moulding plants.

Physically bound and compacted with negative pressure – high-quality casting production can be realised under the most challenging environmental conditions using the V-Process. Flexible in the operational capability of the mould sand that manages without additional binders, the vacuum process moulding machines and moulding plants from HWS ensure high surface and dimensional accuracy as well as easy separation of the moulding sand and the casting using film.

Fully automatic V-Process
moulding plants

Test moulding machines

- Optimal for prototypes, pilot series, individual and small series production of special to series production castings
- Low investment volume

Semi-automatic moulding machines and moulding plants

- Optimal for the production of heavy cast parts, small series or castings in medium quantities
- Automated process within the machine system and manually operable components such as hoists for the pouring, cooling and shake-out area

Fully automatic moulding plants

- Optimal for series production of everything from fittings to railway castings



VERSATILE AND PRECISELY
COORDINATED –
HWS pouring equipment for sand moulds.

Adapted to the respective job profile, pouring equipment from HWS ensures precise, repeatable and sensor-controlled dosing during the pouring process in all flaskless or tight-flask moulding machines or in core package processes.

PROCESS

- Operator-controlled pouring process
- Semi-automatic pouring process
- Fully automatic pouring process



Pouring machine
P-series

Pouring machine
P-series

- Semi and fully automatic pouring via electrically driven ladle-tilting device with synchronous servo-motors and PLC controller for all iron grades and aluminium
- Optional: automatic height adjustment of the pouring position, inoculation devices with up to 4 inoculant tanks, pyrometer and much more

Technical data	
Type	Ladle content (kg)
P10-W	600 – 1,400
P20-W	1,400 – 2,400
P30-W	2,400 – 3,200

Subject to technical changes.



Pouring machine
GIMA-series

- Manual pouring via hydraulic ladle-tilting device for all iron grades and light metals

Technical data	
Type	Ladle content (kg)
GIMA 8	500 – 900
GIMA 12	1,000 – 1,500

Subject to technical changes.



Pouring machine
FVNX-series

- Manual, semi or fully automatic pouring via electrically driven ladle-tilting device with synchronous servo-motors and PLC and micro-controller for all iron grades
- Optional: Pouring temperature measurement with a pyrometer, inoculation devices with inoculant tanks

Technical data	
Type	Ladle content (kg)
FVNX 8	500 – 900
FVNX 12	1,000 – 1,500

Subject to technical changes.



DEVELOPED FOR
THE HIGHEST DEMANDS –
HWS pouring machines for aluminium die casting.

Regardless of whether it is an individually adjustable tilting angle or adjustment of the pouring speed, HWS pouring machines for aluminium die casting rely on a number of adjustable parameters for maximum casting quality and sustainable material use. Thanks to their compact dimensions and efficient characteristics, they are the guarantee of high productivity at comparatively low cost. Ergonomic operation and effective maintenance options round off the made-to-measure pouring machine concept – which is tailored to the respective requirement profile from the single machine to the turnkey complete solution.

- PROCESS
- Gravity tilt casting
 - Low pressure casting



Low pressure casting machine LPD-II

Tilt casting machine
PLS-series

- Flexible adjustability of the tilting angle and the tilting speed
- Precise control of the tilting movement
- Independent control of pouring ladle and die
- Compact and powerful machine units

Technical data				
Type	Upper die plate (mm)	Lower die plate (mm)	Opening height (mm)	Overall dimensions (mm)
PLS-I	980 x 620	920 x 700	650	2,050 x 2,050 x 2,000
PLS-II	1,250 x 620	1,200 x 800	900	2,300 x 2,450 x 2,400

Subject to technical changes.



Low pressure casting machine
LPD-II

- Powerful closing and opening unit
- High removal precision
- Compact and powerful machine units

Technical data				
Type	Upper die plate (mm)	Lower die plate (mm)	Opening height (mm)	Overall dimensions (mm)
LPD-II	2,040 x 1,000	2,500 x 1,400	1.835	7,000 x 4,500 x 5,600

Subject to technical changes.



Cooling system for die casting

- Targeted temperature management of the die via air and water cooling
- Individual control types corresponding to the specific needs
- Better material characteristics
- Short cycle times



RESOURCE-FRIENDLY INTO THE FUTURE – HWS systems for sand reclamation.

The disposal of used sand, landfill disposal and new sand procurement are reduced to a minimum with HWS sand reclamation systems. HWS provides one of the most energy-efficient and material conserving mechanical processes on the market for the removal

of binders using sophisticated system technology. The HWS process is individually adjusted to the respective characteristics of the output sand by using ceramic pressure rollers, a variably controlled contact pressure and the resulting reclamation intensity.

PROCESS

- Reclamation of green sand and green sand/core sand mixture



Sand reclamation system USR-II

- Energy-efficient, flexible process – unlike other comparable thermal reclamation
- Integrated sifting for separating sand and dust and for reducing fines
- Preservation of natural resources due to sand recycling

Technical data	
Type	Input quantity (t/h)
USR-II	Max. 5

Subject to technical changes.





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