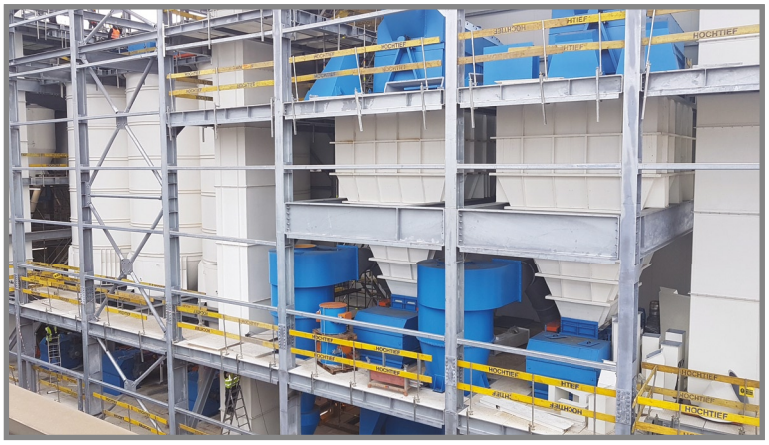
IdeaPro

NOWA SÓL
POLAND



FOUNDRY EQUIPMENT

TECHNOLOGY • PRODUCT • QUALITY

SPM MOULDING SAND PROCESSING SYSTEMS

Moulding sand processing systems are designed for making refreshed homogenous moulding sand in each technological cycle with the addition of fresh sand, bentonite and coal dust, or a bentonite mixture containing coal carriers.

The use of modern devices in the moulding sand making system, as well as the mechanisation and automation of the process, guarantees:

- obtaining moulding sand with stable and sustainable technological parameters
- making moulding sand in accordance with programmed formulae
- improving working conditions in the foundry, including OHS
- reliable working, easy handling, and low operating costs
- limited dusting, thanks to the application of modern dust-extraction systems

Moulding sand processing systems are equipped with electronic-control systems based on PLC controllers, which facilitate:

- the automation of work
- weighing ingredients in accordance with the programmed recipes
- the automatic measurement and adjustment of moulding sand parameters, such as moisture, compactability and compression strength
- process visualisation and control
- recording technological parameters
- the possibility of operating several moulding lines using any mixture of moulding sand
- the possibility of assigning a model number to the appropriate moulding sand mixture
- analyses of the operational status of individual devices and mechanisms, with the immediate identification of potential malfunction causes
- service and online supervision over device operation

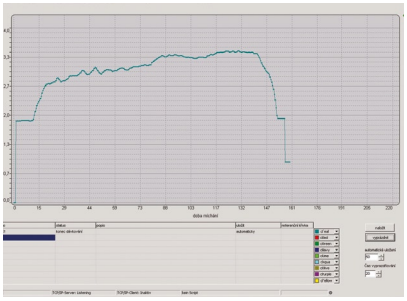
SPM in a horizontal arrangement

SPM in a vertical arrangement

SPM moulding sand processing systems use the FoMaSys moulding sand management system created by MICHENFELDER (Germany). FoMaSys includes the following modules: MICOMP 5 G-CH (green sand mixers), MICOMP 5 G-FBK (CF fluidisation sand cooler) and G-91 (CR rotary sand cooler), SANDLAB and MiPro,which are responsible for the online control, measurement and adjustment of the moulding-sand parameters.

MICOMP 5 type G-FBK and G-91

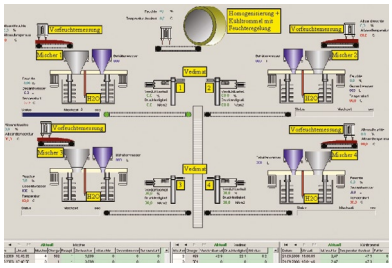
Its purpose is the continuous measurement and control of the moisture level of moulding sand in the cooler. Furthermore the tempearture is measured. This system guarantees that the moulding sand leaving the cooler will have a moisture witha tolerance of +- 0,2% H_2O*. By that the maximum possible cooling effect will be reached.



MICOMP 5 type G-CH

This system is used for the continuous measurement and control of the moisture level of moulding sand, using a probe fitted inside the mixer. The system continuously controls the homogenisation of the sand due to mixing dynamic curves.

It guarantees a moisture level of the sand leaving the mixer with a tolerance of ±0,1% H_2O*.



SANDLAB

It is intended to measure and control the moisture level, compactability and compression strength of the moulding sand.

SANDLAB is a laboratory for the measurement of moulding sand parameters; it is fitted on the conveyor belt directly in front of the moulding machine. The system takes a sample of each completed batch of moulding sand. After taking a sample and checking its parameters, the SANDLAB system corrects the amount of water in the subsequent batches of the moulding sand in order to obtain the required parameters.

The SANDLAB is connected directly with MICOMP 5 type G-CH, fitted in the turbine mixer. It guarantees a compactability within +- 2%* directly at the moulding machine. Further measurement options: gas permeability, shear strength.

MiPro

MiPro is intended for process visualisation in fully-automatic systems for producing sandmix.

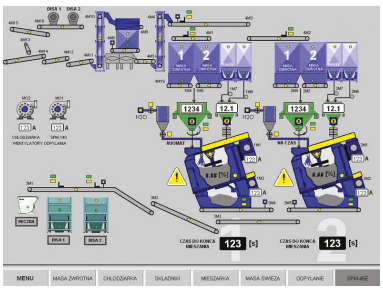
It continuously controles the technological parameters of the preocess, enabling them to be processed, analysed and stored as tables or diagrams. MiPro is connected to all MICHENFELDER systems. The operation parameters of the sandmix-production system can be monitored online. Furthermore it allows remote control for fast failure analysis and technical support.

* 1st standard deviaration

AUTOMATION, CONTROL, VISUALISATION

The control system is equipped with a console providing the following functions:

- an alarm system giving information about an emergency shut-down, shortage of components for the moulding sand, etc.
- a control-and-measurement system for elements and units of the processing system
- a control system enabling the manual operation of the entire processing station
- a graphic control panel on a colour touch screen, including a system for the visualisation of the entire processing



The control system can be equipped with a communication module, which facilitates remote access to the application for the purpose of fast servicing and the recording of data by the process-data-archiving system

The visualisation system enables the full monitoring of operating equipment in real time via the central console, with the following functions:

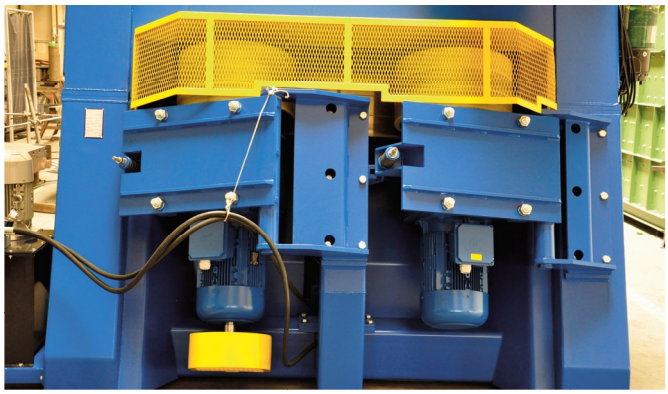
- entering the initial working parameters
- visualisation in the form of animated colour graphics on the computer screen
- detecting, locating and signalling faults
- recording data and generating reports

MDV DYNAMIC MIXERS

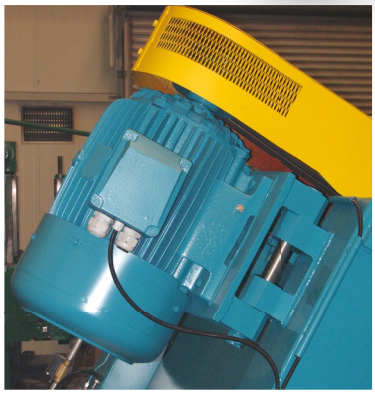
In MDV dynamic mixers, the mixing process is carried out by a high-speed turbine and additionally supported by working elements, i.e.:

- a rotary pan with an inclined axis of rotation,
- a scraping (guiding) blade

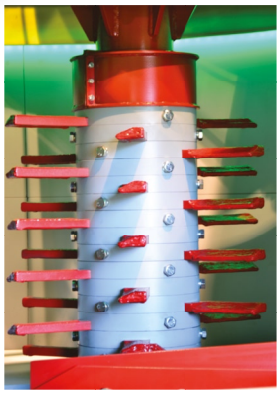
MDV dynamic mixers utilise the effect of gravitational falling and the turbulence of particles caused by the rotating, inclined pan and their proper orientation provided by the high-speed turbine. Rotor working tools can work at different work settings, which enables their use in various processes.



Mixer pan drive MDV



Mixer turbine drive MDV



High-speed turbine MDV

Mixer type	Capacity* ca.t/h	Batch size (litres)	Power of pan drive kW	Power of turbine drive kW
MDV-10	5,8	250	1x7,5	1x22
MDV-11	8,2	350	1x9,2	1x45
MDV-16	14	600	1x11	1x55
MDV-19	35	1000	1x18,5	1x75
MDV-21	42	1800	2x11	1x90
MDV-24	59	2500	2x22	1x110
MDV-26	75	3200	2x22	1x160
MDV-29	94	4000	2x15	1x132
MDV-32	117	5000	2x18,5	1x160
MDV-32A	140	6000	2x22	1x200
MDV-32B	164	7000	2x30	1x200

** values determined for 26 cycles/h and a density of produced sand of 0,9 t/m^3*

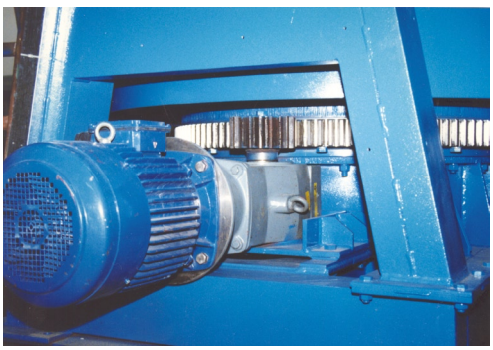
MDH DYNAMIC MIXERS

In MDH dynamic mixers, the mixing process is carried out by a high-speed turbine, and additionally supported by working elements, i.e.:

- a rotary pan with a vertical axis of rotation
- a scraping (guiding) blade

Two turbines and a moveable blade in an MDH dynamic mixer

MDH dynamic mixer



Mixer pan drive MDH

Mixer type	Capacity* ca.t/h	Batch size (litres)	Power of pan drive kW	Power of turbine drive kW
MDH-24	54	2500	1x18,5	2x90
MDH-29	97	4500	1x22	110+132
MDH-32	140	6500	2x18,5	132+160

** values determined for 24 cycles/h and the density of the produced sand of 0,9 t/m^3*

MD SPECIAL DYNAMIC MIXERS

Special Dynamic Mixers are intended for the production of special mixtures in the foundry, ceramic, food, glass-making, and refractory materials industries, as well as for other purposes.
The application of the mixers require specialists from **IdeaPro** to select the appropriate parameters, technology and shape of the blades and turbines.

MPD dynamic mixer with lifting cover			
Mixer type	**Batch size (litres)**	**Power of pan drive kW**	**Power of turbine drive kW**
MDP-10	180	1x7,5	1x18,5
MDP-11	320	1x11,0	1x22,0

MDS dynamic mixer			
Mixer type	**Batch size (litres)**	**Power of pan drive kW**	**Power of turbine drive kW**
MDS-10	250	1x5,5	1x15,0
MDS-11	350	1x7,5	1x18,5
MDS-16	600	1x11,0	1x30,0
MDS-19	1200	1x18,5	1x45,0
MDS-21	1800	2x11,0	1x75,0

Laboratory dynamic mixer MDL			
Mixer type	**Batch size (litres)**	**Power of pan drive kW**	**Power of turbine drive kW**
MDL-03	7	1x0,55	1x1,1
MDL-04	15	1x0,75	1x3,5

MDM dynamic mixer with lifting cover and inclined deflacted pan			
Mixer type	**Batch size (litres)**	**Power of pan drive kW**	**Power of turbine drive kW**
MDM-04	40	1x3,0	1x11,0
MDM-06	90	1x3	1x15
MDM-08	160	1x5,5	1x18,5

POS POLYGONAL SCREENS

Polygonal screens are intended to separate impurities from moulding sand and other dry and moist loose materials which do not get stuck together and do not clog the sieve meshes.
The devices operate continuously and are intended to be fitted to transport lines of return moulding sand.

Type			POS-20	POS-40	POS-80	POS-120	POS-160	POS-250
Capacity		m^3/h	20	40	80	120	160	250
Power		kW	2,2	4,0	7,5	11	15	18,5
The amount of air extracted		m^3/h	5000	5000	7500	12000	15000	20000
Dimensions	Length	mm	2340	2740	3960	4500	6570	6750
	Width	mm	1850	2740	2800	3400	2380	2850
	Height	mm	2060	2740	3000	3600	3030	3700

BCH COOLING DRUMS

BCH drums are intended for separating and knocking castings with moulding sand.
Hot castings with moulding sand are fed to the drum, where they are separated from the moulding sand, cooled, and transported towards the outlet from the drum. At the outlet of the drum, the separated moulding sand is separated from the castings.
The device is intended for continuous operation. The effect of the drum's work is chilled castings without the moulding sand.

Type			BCH-2600	BCH-3200	BCH-3400	BCH-3800
Max. capacity (sand + casting)		Mg/h	30	60	90	120
Time of transition by the drum		min	20	20	30	30
Rotation speed		rpm	3,2	2,7	2,5	2,3
The amount of air extracted		m^3/h	15000	30000	50000	80000
Installed power		kW	30	60	90	125
Drum diameter	D	mm	2600	3200	3400	3800
Drum length	L	mm	10000	12500	15500	20000

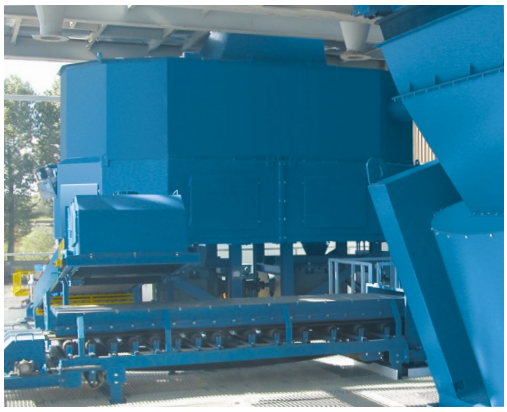
CF VIBRO - FLUIDISATION SAND COOLERS

CF vibro-fluidisation coolers are intended for the intense cooling and moistening of return moulding sand. The cooling process is carried out parallel to the homogenisation and separation of the fine particles (dusts). The coolers operates continuously and allows the cooling of the moulding sand to about 15˚C above the ambient temperature, and its hydration to 1,6 ÷ 2,2% H_2O. Moulding-sand cooling results from the intensive evaporation of water. Hydration is carried out by the spray system controlled by the electronic system.
Thanks to the combination of vibration transport and intensive fluidisation, the vibro-fluidisation coolers are some of the most effective and economical devices.

Type	Dimension A x B	Efficiency of cooling t/h			Volume of extracted air m³/h	Water consumption max. l/h
		120˚C -40˚C	100˚C -40˚C	80˚C -40˚C		
CF-1420	700x2500	14	17	20	7920	600
CF-2035	1000x3500	20	26	35	9200	1000
CF-3550	1200x4500	35	39	50	11000	1200
CF-5075	1600x5000	50	58	75	16200	1600
CF-70100	2000x5000	70	82	100	22700	2500

CR ROTARY SAND COOLERS

CR rotary sand coolers are intended for the intense cooling and hydration of return moulding sand. The CR coolers perform intense mixing and move the moulding sand by means of two counter-rotating mixing units. The process of the fluidisation of the moulding sand is carried out as a result of supplying air. The cooler operates continuously, which allows the moulding sand to cool to about 15˚C above the ambient temperature and to hydrate it to 1,6 ÷ 2,2% H_2O.
The cooling of the sand is a result of the intense evaporation of the water, which is dispensed proportionally to the moisture level of the input moulding sand and its temperature.



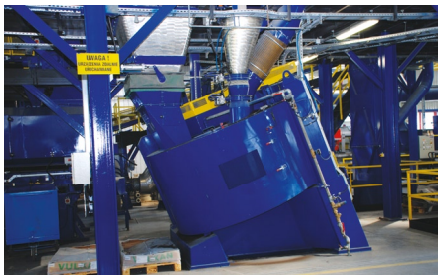
Type	Capacity t/h	Power of blade drive kW	Power of fan kW	Efficiency of fan m³/h	Volume of extracted air m³/h
CR-30	30	22	15	7000	8750
CR-60	60	30	22	9600	12000
CR-90	90	45	37	19000	23750
CR-150	150	75	45	30000	37500
CR-200	200	132	75	40000	50000
CR-250	250	160	132	48000	60000

WTM, WTD Bulk Material Scale

The precise proportioning of individual moulding-sand components in the process of its production requires the use of the bulk material scale. Due to significant differences between the weight of the primary components (circulating material, sand), and additives (bentonite mixture or bentonite and coal dust), two independent weight tanks with different construction and capacity are used:

- tensometric scales of primary components (circulating moulding sand, fresh sand) - WTM, loading of materials: 250 ÷ 7000kg
- tensometric scales for additives (bentonite mixture, coal dust, bentonite, fresh sand) – WTD, loading of materials: 25 ÷ 700kg

Scales made by **IdeaPro** have a high weighing accuracy, with differences below 1%, which guarantees high repeatability of the mixtures.



DT Belt Feeders

DT belt feeders with elastic belts are designed for the continuous feeding of loose, wet and dry materials. Feeder belt width B=500 ÷ 1600mm, belt speed V=0,25 ÷ 1,0m/s, length L=1,5 ÷ 8,0m The belt feeders are mounted under tanks, from which they take the material. The material-feeding capacity may be smoothly regulated by changing the motor's rotational speed (the frequency inverter). It is recommended to operate the belt feeders in the horizontal position.



DS Screw Feeders

DS screw feeders are designed for feeding and carrying loose, medium-grained, dry and wet materials over small distances. Due to their hermetic structure, the feeders are especially recommended for carrying silty materials. The feeders can operate in the horizontal or diagonal positions. The screw feeders are manufactured for different material feeding capacities and in different sizes - D=80 ÷ 400mm. In the casting industry, these screw feeders are mainly used for transporting coal silt, bentonite, bentonite mixture, quartz sand, and silt from the filter, etc. The screw feeders are mounted under the tanks, from which they take the material. The material-feeding capacity can be regulated by using a motor with two rotational speeds or by the smooth regulation of its rotational speed (the frequency inverter).



PT Belt Conveyors

PT belt conveyors with elastic belts are designed for the continuous carrying of loose and grainy as well as wet and dry materials, in a horizontal or diagonal position. Conveyor belts in a diagonal layout can be designed as angled belt conveyors. Conveyor belt width: 500 ÷ 1600mm, belt speed: 0,5 ÷ 2,5m/s. The conveyors are designed with straight or trough rollers, depending on the required capacity of the type of material being transported. The conveyors can be used for transporting materials over long distances and may transport the material at a given angle to different heights.



PK Bucket Conveyors

PK bucket conveyors (elevators) are designed for the vertical transport of loose and fine-grained as well as dry and wet materials, which are non-sticky and do not cause over-caking of the transport buckets. The shape of the buckets, their quantity and the material they are made of are selected according to the customer's requirements by **IdeaPro** specialists. The bucket conveyors are designed for different capacities: Q=3 ÷ 300t/h and for different material lifting (transport) heights.


Pneumatic Transport

It is designed for transporting different loose materials thanks to the entrainment of material particles by air particles. Pneumatic transport is used for: unloading auto-tanks and train tanks, inter-operational transport between storage bins and the production site, transport between particular production stations, and transport of finished goods to the packing equipment. The advantage of pneumatic transport is the possibility of freely configuring the pipeline route.



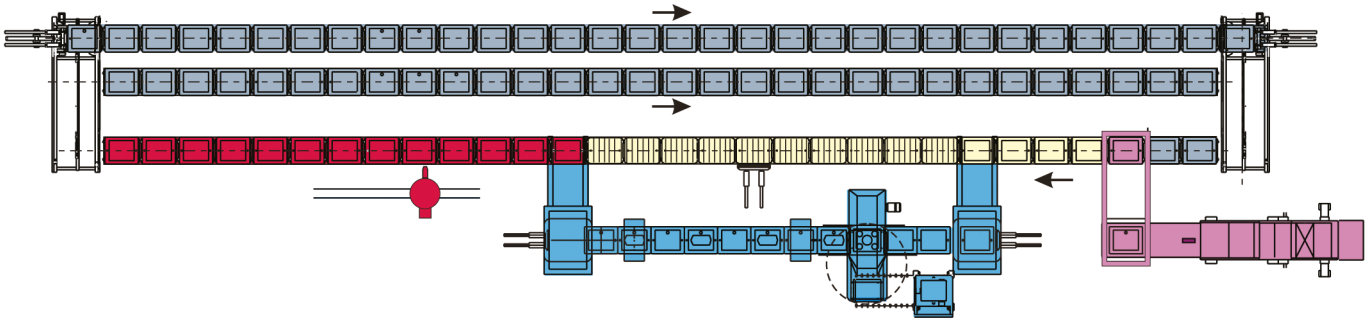
PW Vibration Conveyors

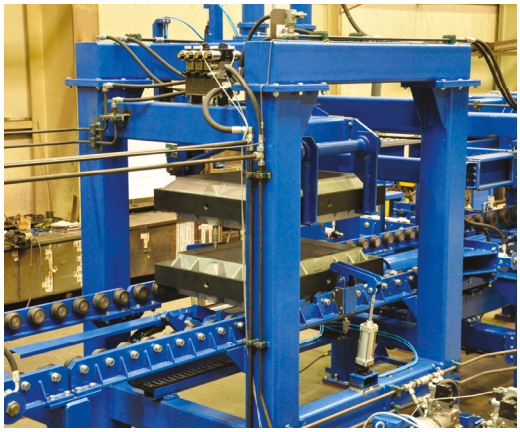
PW vibration conveyors are designed for transporting different loose and grainy materials as well as event hot castings in a horizontal or diagonal plane. The vibration conveyor consists of a trough with a rectangular, round section, and a vibration drive. The vibration conveyors are used in technological and storage transport. Trough width with a rectangular section: 200 ÷ 1200mm, trough diameter with a round section: 60 ÷ 400mm. The vibration conveyors can be mounted one on top of the other, thus forming a transport system.

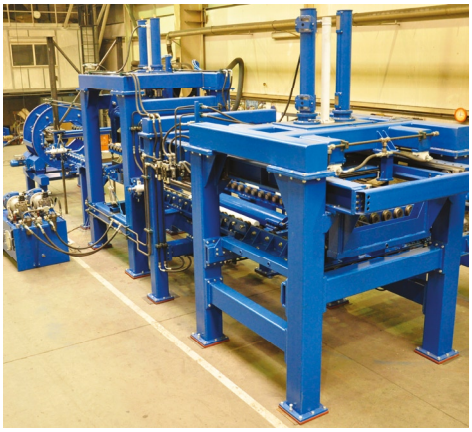


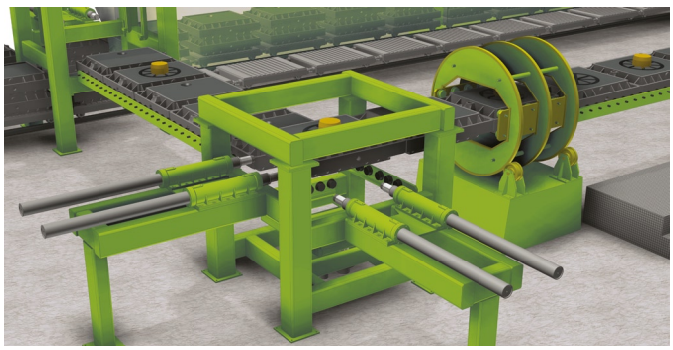
LF/ALF AUTOMATIC MOULDING LINES

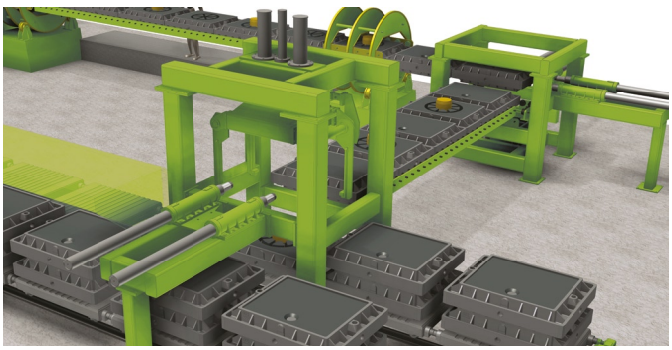
LF/ALF automatic moulding lines, with vertical-form partitions, are used to make casts in sand moulds, in automatic or semi-automatic cycles. Automatic moulding lines are designed and made as modular systems with various capacities and for various sizes of moulding flasks, adapted to the local conditions in a given foundry.
For low moulding capacities, the moulding lines are designed and equipped with FT moulding machines, whereas for high capacities the moulding lines are designed and equipped with FTA moulding machines, which use upper and lower half-moulds alternately.
The high degree of mechanisation of the moulding lines ensures a high production efficiency of the castings and facilitates the limiting of the employment of line servicing. It also has a great impact on the elimination of harmful factors of foundry processes on the environment. and guarantees a high quality of produced castings.







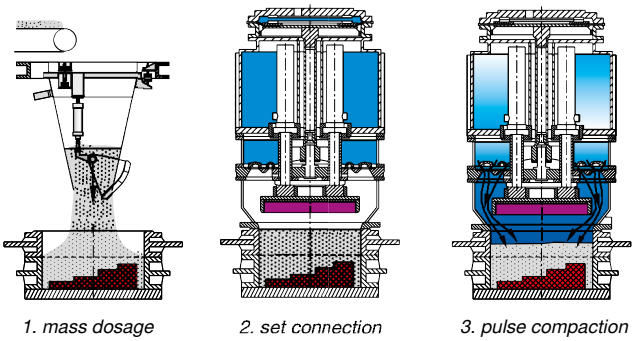




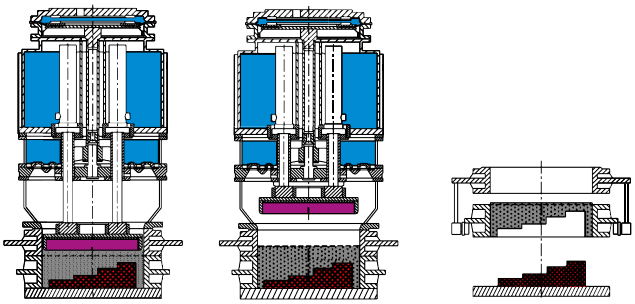
PULSE - PRESS MOULDING TECHNOLOGY

Pulse-press moulding technology is a modern and effective method of thickening moulds in bentonite material. Mould thickening technology is based on low-pressure pulse moulding technology and pressing of the upper half-mould surfaces.

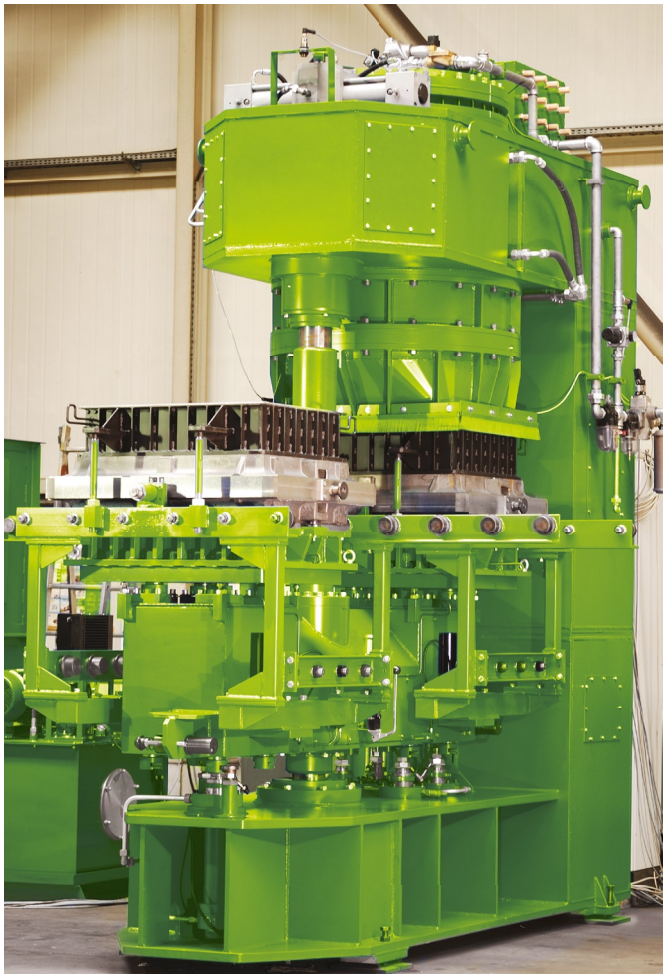
The pulse moulding process is carried out with a compressed air gradient exceeding 10 MPa/s and reaches 300 MPa/s. Such a rapid pressure increase means the compressed air pulse has very high dynamics, which allows to thicken the sandmix in the flask. The highest concentration grade can be obtained directly next to the match plate and model surface.



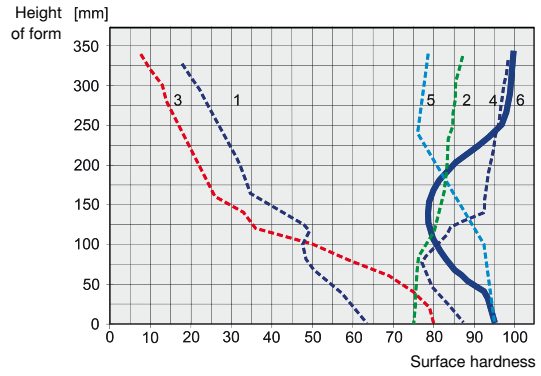
1. mass dosage *2. set connection* *3. pulse compaction*



4. compression of mass *5. opening lock system* *6. separate model of form*



Compaction of sandmix in the mould for various moulding technologies



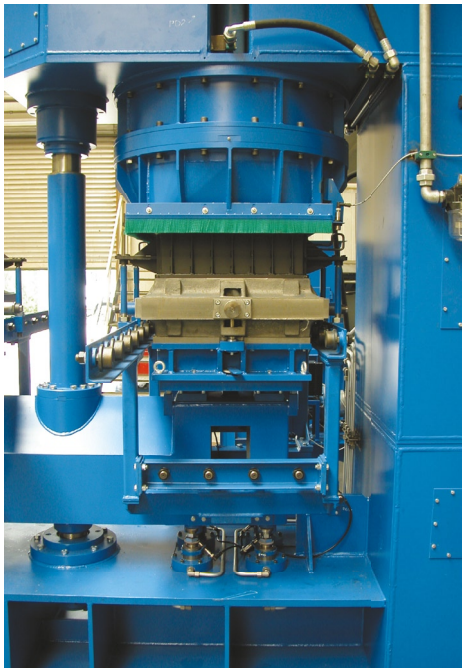
1. shaking,
2. shaking and pressing,
3. with stream of air,
4. stream - press (Seiatsu)
5. thickening by gravitational dusting and pressing (FORMIMPRESS process)
6. pulse-press (**IdeaPro**)

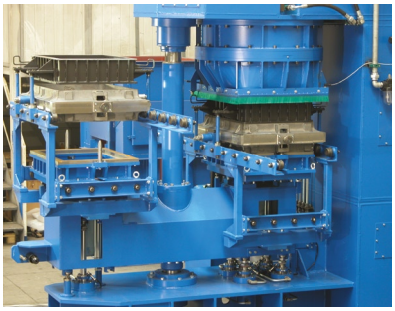
The pulse - pressing forming technology used by IdeaPro in FT/FTA moulding machines is characterised by:

- a high accuracy of reproducing complex patterns and dimensional repeatability, which allows to obtain a very good quality of the mould surface and this translates directly into its quality
- the possibility of eliminating cores and better use of the match plate surface
- a high degree of mould density and its favourable layout, enabling perfect gas permeability
- maximum possible reduction of surface treatment for the completed casts
- a significant decrease in power consumption and low consumption of compressed air
- the possibility of making lower and upper half-moulds using one moulding machine
- automatic operation of the moulding machines and possibility of regulating and controlling operation parameters
- a low noise level, below 85 dB

All the aforementioned factors enable the production of high-quality casts

FT/FTA PULSE PRESS MOULDING MACHINES



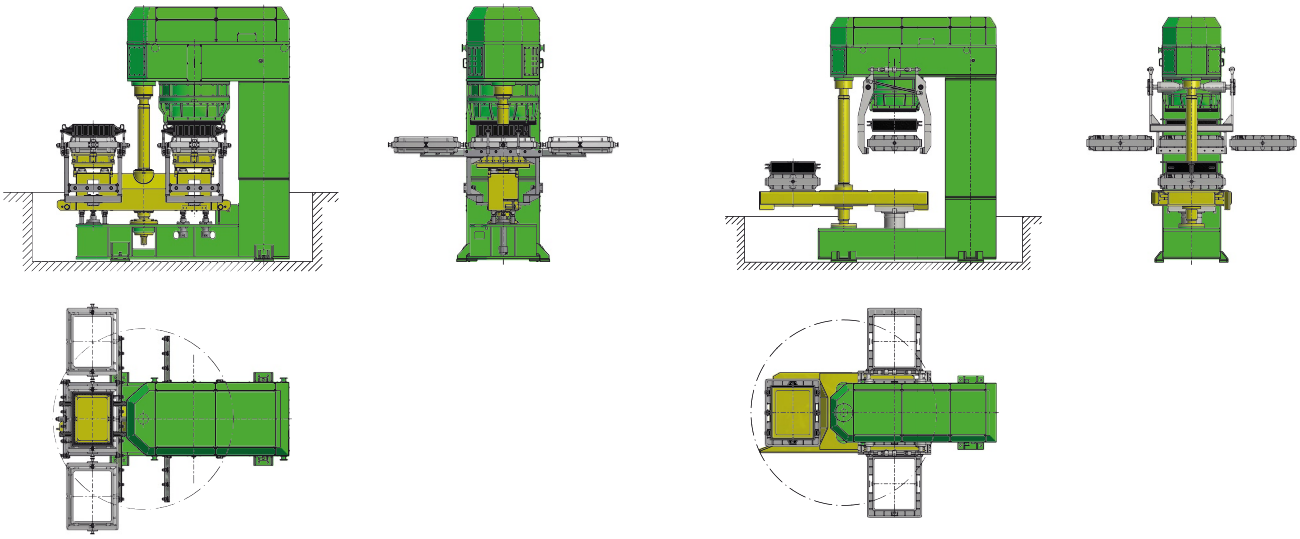


FT MOULDING MACHINE

The FT moulding pulse-press machine is designed to make moulds in mechanised moulding sockets or in single moulding stations. The machine makes upper and lower half-moulds alternately in a semi-automatic cycle.

FTA MOULDING MACHINE

The FTA moulding pulse-press machine is intended to make moulds on automatic moulding lines. The machine makes upper and lower half-moulds alternately in an automatic cycle.



Technical specifications of FT moulding machines				
Type		**FT-65**	**FT-86**	**FT-108**
Dimension of box	mm	600x500	700x600 800x600	900x800 1000x800
Height of box	mm	200-350	200-350	200-350
Press pressure on half-mould	MPa	0,1-0,7	0,1-0,7	0,1-0,7
Power	kW	6,5	16	22
Capacity	mould/h	32	30	30

Technical specifications of FTA moulding machines				
Type		**FTA-65**	**FTA-86**	**FTA-108**
Dimension of box	mm	600x500	700x600 800x600	900x800 1000x800
Height of box	mm	200-350	200-350	200-350
Press pressure on half-mould	MPa	0,1-0,7	0,1-0,7	0,1-0,7
Power	kW	6,5	16	22
Capacity	mould/h	55	50	50

OTHER FOUNDRY EQUIPMENT

Many other self-manufactured devices and equipment delivered for the purpose of fulfilling orders are used in **IdeaPro** projects, including:

- vibration conveyors for transport of forms with castings, and for the transport of castings, screenings, sand, etc.
- moulding mass disintegrators: disintegrating mills and turbine disintegrators
- core crushers, return moulding mass crushers and crushers for other lumpy materials
- dedusting installations with filters for all technological devices and lines
- box moulding lines – VACUUM PROCESS TECHNOLOGY
- ovens for automatic form casting in moulding lines
- equipment for transport and storage of loose materials, such as sand, lime, soda, bentonite mixtures and others
- stands for preparation of fire-resistant materials, resin mixtures for cores and others
- stands for knocking out castings: knocking out grates, knocking out drums

Dedusting installations

Knocking out castings and acoustic enclosures

Vibrating vertical conveyors for transporting castings

Box moulding lines - VACUUM PROCESS technology

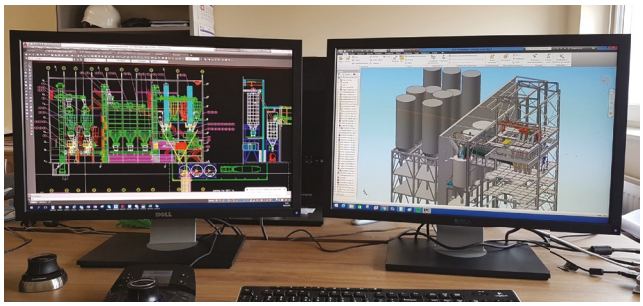
Workstations for the preparation of fire-resistant materials, resin mixtures for cores

DESIGN

The high quality of the machines, devices and technological lines produced by PPP IdeaPro Sp. z o.o. is guaranteed by the experienced designers employed in our design and construction departments:

- Automation and Electric Control Department
- Moulding Sand Preparation Techniques Department
- Moulding Sand Preparation Techniques Department
- Moulding Techniques Department

The machines and devices engineers and designers use the following designing software: Solid Edge, T-Flex, AutoCAD. The software available to the technical personnel guarantees efficient and effective teamwork, creating new machines, devices and technological-line structures to a very-high technical level, and the capability to complete fast, new, innovative ideas.
The high level of control systems with which machines, devices and technological lines are equipped, is ensured by the Automation Laboratory, which includes modern computer supporting systems such as EPLAN, SEE-EE, TIA, STEP7, and WinCC.



INSTALLATION

IdeaPro completes “turnkey” projects, which include the fitting of all devices and installations which are part of the implemented project, produced by the Company, or by other domestic and foreign producers.
We have extensive experience in installing DISAMATIC and DISA MATCH sandless moulding lines, de-dusting installations and filters, and devices produced by the companies FONDARC-China, EIRICH-Germany, HWS-Germany, GENERAL KINEMATICS-USA, SIMPSON-USA, SERT-France, APP-Germany and others.

Installation of drum Q=300 t/h

Installation of enveloped sands lines Q=4 t/h

Installation of Sand Plant Q=300 t/h

Building a new cast- iron foundry

The machines, devices, and complete production lines manufactured by IdeaPro are designed specifically for use e.g. in the foundry, automotive, glass, iron and steel, mining, ceramics, insulating and refractory materials industries, and many other

We provide assistance and technical support services, putting our consultants and their extensive experience at your disposal

We provide comprehensive project implementation services, which include:

- the development of underlying concepts
- the formulation of technical and business objectives
- industry-specific projects, e.g. water supply and compressed air lines, gas and electric systems
- foundations and construction works
- machinery and equipment
- shop floors and steel structures
- dust removal systems
- power supply and electric control systems
- the organisation of project-related supplies and deliveries
- the installation and start-up of the resulting technological lines
- the implementation of manufacturing processes

Drawing on our many years of experience, we have developed our own know-how based on technologies designed for building machines and technical equipment, including in particular:

- shot-blasting machines
- sand processing stations
- turbine mixers
- vibro-fluidised bed and blade-mixer coolers
- fluidised bed and vibro-fluidised bed dryers
- pulse-press moulding machines
- automatic moulding lines
- the maintenance and online monitoring of manufactured and operating equipment and production lines

We also provide supply services in the following areas: designing, engineering, control and automation, repairs, mechanical treatment, welding steel structures, shot blasting, and painting, as well as other services, according to our own machinery park

IdeaPro

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