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DISA FLEX

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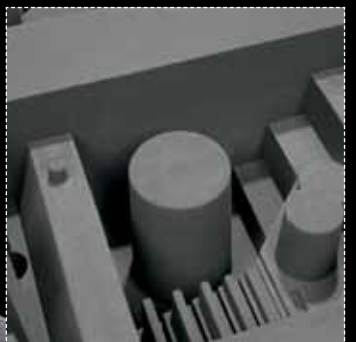
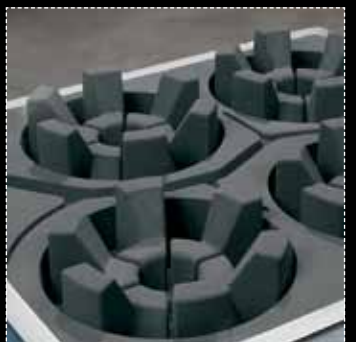
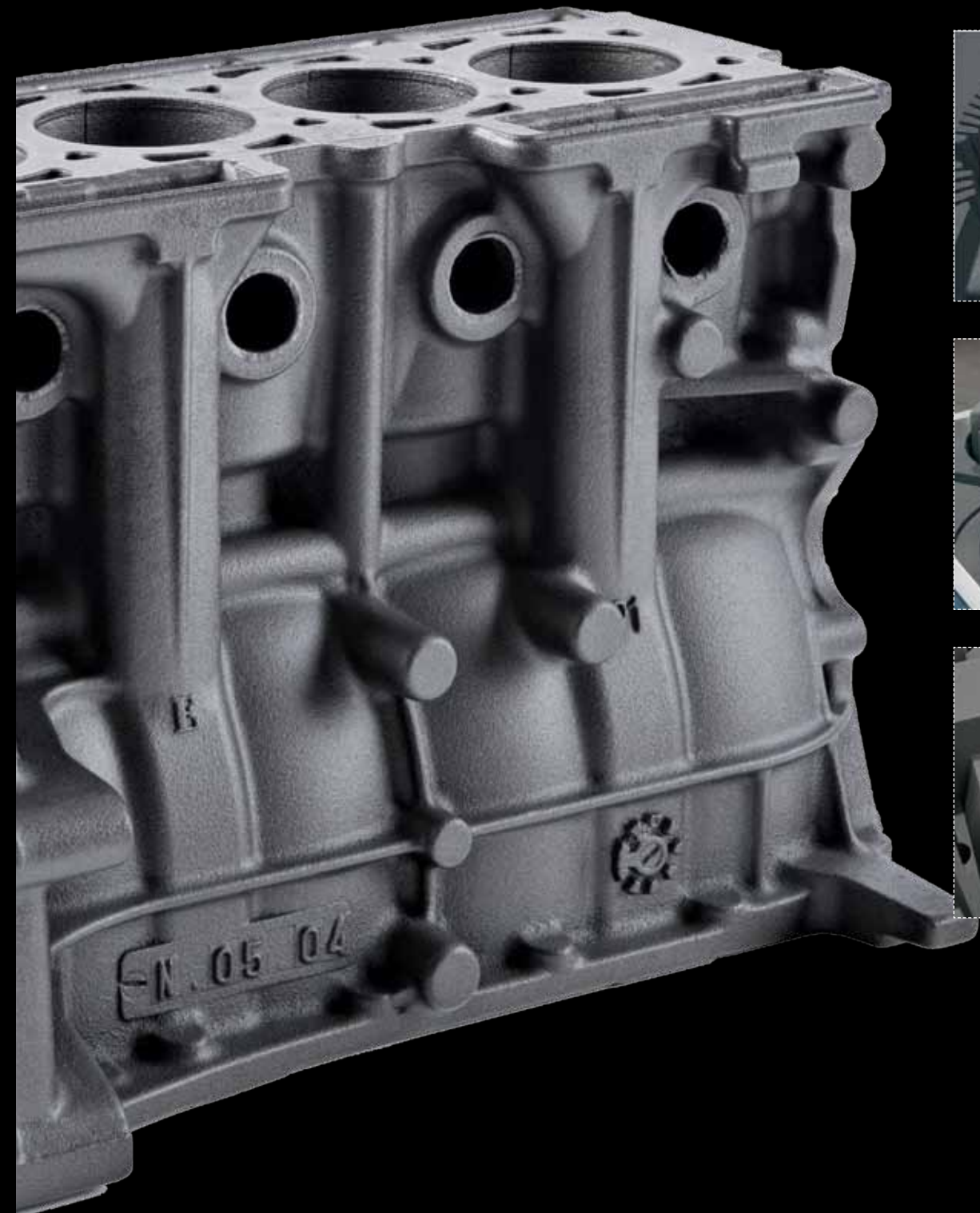
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DISA
shaping industry



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Horizontal flask moulding line



The DISA FLEX is a horizontal flask turn-style moulding machine, designed for foundries wanting a flexible solution for production of high quality, medium and heavy near net shape castings.

Unique moulding technology

DISA FLEX is a Swiss proven technology that combines the unique DISA high pressure, double-blow and hydraulic squeeze moulding technique with a rigid machine design, giving the best conditions for the profitable production of high quality castings.

Application

With DISA FLEX bentonite-bonded moulding sand can be used for the production of grey iron, nodular iron, malleable iron, steel, aluminium and other non-ferrous metals.

Patterns made of plastic, wood and metal can be used.

Improved productivity and quality

Compared to the conventional jolt squeeze moulding technique, the DISA FLEX offers:

- Optimum casting quality due to high pressure, uniform mould compaction
- Near net shape castings for less cleaning
- Constant and lower casting weight
- Full utilisation of the pattern plate due to better compaction of pattern areas located close to the flask wall
- Enhanced working environment due to pattern spray and closed sand filling funnel

DISA double-blow/squeeze mould compaction



Stator housing



Engine block



Wheel hub

Features that make the difference

Unique mould compaction

The DISA double-blow/squeeze system is designed to ensure uniform mould compaction throughout the mould. By combining a double-blow mould compaction system (giving an inverse mould hardness profile with highest values on the pattern which decreases towards the back of the mould), with a mechanical squeeze (that has the opposite effect), the advantages of both methods are obtained.

To optimize the squeeze process, the DISA FLEX machine also has a specially designed FLEXIPAD. The pad automatically adapts the squeeze pressure to the patterns, ensuring a uniform mould hardness.

Due to the high compaction in the mould, exothermic sleeves, downgate inserts and iron chills can be moulded in.

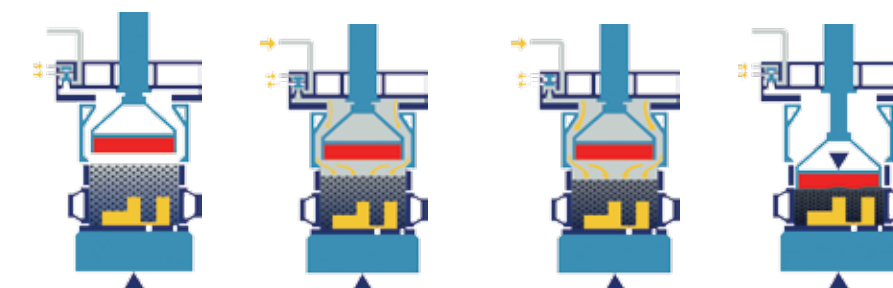
Double-blow pre-compaction

The pressure impulse is divided into two phases. The first wave is a pre-compaction air pressure (0.5 bar), followed by a second wave of higher pressure gradient compaction (5 bar). This ensures a perfect mould filling in critical pattern areas and effective pre-compaction.

Hydraulic FLEXIPAD squeeze

Final compaction by hydraulic squeezing with the FLEXIPAD (10 bar) ensures uniform compaction all over the mould and minimum maintenance.

The FLEXIPAD is very hard-wearing, it has a long service life and is very easy to maintain.



Control system that keeps you on track



DISA FLEX 70 flask line

DISA FLEX line controller

The complete mould handling line is controlled by a Siemens PLC control system.

With very advanced programming developed by DISA over many years, the PLC system ensures that all movements are coordinated with excellent movement control to avoid jerks and vibrations of the mould.

The control system can restart the complete line after shutdown and power failure. The system automatically corrects the line units, so all movements are set for starting up the line.

With new operators or in case of production stop the control system will guide the operator step by step, indicating what to check and what to do to bring the line back into production as quickly as possible.

The DISA control system is an important function to help foundry management to get the optimum performance from the equipment.

The DISA FLEX line

Mould Handling System (MHS)

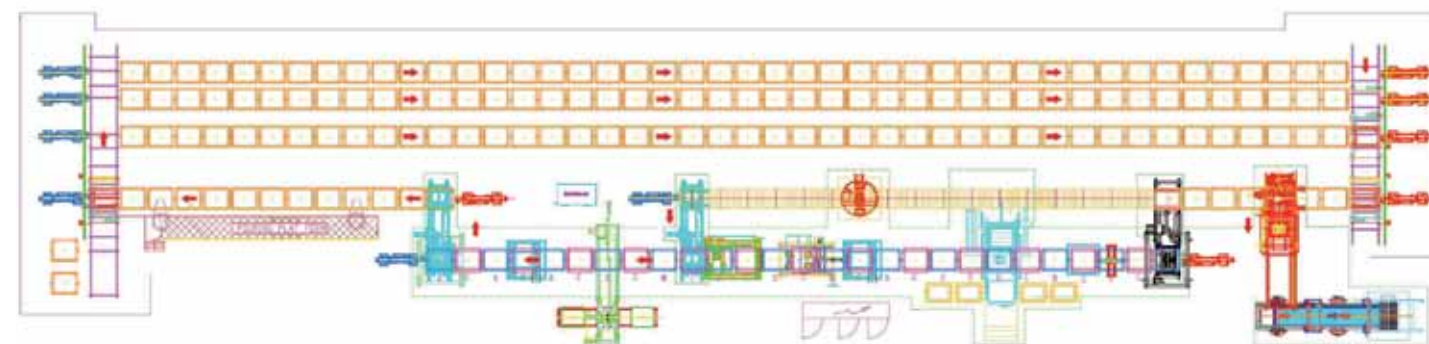
The DISA MHS protects the mould integrity through perfect synchronisation with the DISA FLEX machine.

The system consists of a moulding line for automatic sprue drilling and core setting, rollover devices, closer with clamping devices, transfer cars and a cleaning station in addition to cooling lines, a punch-out station and an automatic flask separator.

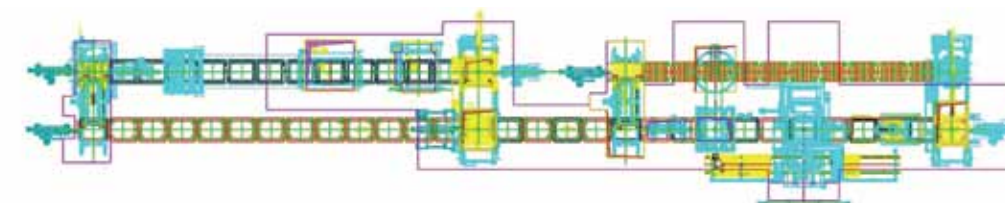
The separating unit

The DISA FLEX moulding line starts with a separating unit setting the cope and drag flask on the moulding line. The emptied flask pair along with pattern plate will be

Mould handling system



2D drawing of the DISA FLEX flask line



Cope and drag line

transferred to Mould conveyor and lifted up to separate it from pallet. meanwhile gripper unit moves up/downwards to separate the cope & drag flask and transfer to the moulding machine.

Unit cleaner

Before the flasks move into the moulding machine special units clean the flask inside, the flask top surface, pin, bushes and checks the flask top surface for melt pearls burnt to the top surface. This feature ensures the smooth operation of the line and helps to improve mould quality. After the moulding machine, the excess sand on the mould back side is removed by a heavy duty sand cutter.

Rollover devices

The rollover devices are specially designed to avoid sand spill on the mould. The motor drive is on the top of the station for easy service access.

Drilling station

DISA offers both a low cost pouring cup drilling station, where the position is set manually by the operator or an automatic drilling station where the pouring cup position is set automatically by data from the control system.

For high production lines DISA offers fully automated vent hole drilling stations and core setting stations.

Flask closer

The flask closer is a very important unit. The cope flask is set on the drag with high precision, due to heavy guide rods and active position units of both cope and drag flasks. This ensures that the mould halves go together without distortion of sand and cores.

Transfer station

The finished moulds are handled by transfer stations with reliable frequency inverter drives which ensure good motion control and a long service life.

Cooling lines

The cooling lines are equipped with robust hydraulic push and breaking cylinders for good control of acceleration and de-acceleration to ensure the safe handling of moulds.

Punch out

A very robust mould punch out completes the system. The mould is punched out from the lower side, so the mould is pushed up. This gives a safe handling of the castings on their way to the shake-out. By lifting up the moulds the shake-out can be positioned on floor level for easy operator access to the castings.

Performance enhancing features



Flasks

Optimum sand filling

The DISA FLEX has a unique sand filling system that ensures even distribution of the sand into the flask.

The batch hopper is mounted with load cells, which stop the sand feed as soon as a pre programmed weight has reached, flaps below batch hopper open up and uniform distribution will be ensured by VFD. Flask area is accessible for placement of chills and risers, pattern spray nozzles are provided to create the separating medium from pattern to sand.

Provision of facing and backing sand is also available with the use of screening drum.



External pattern changer

External pattern changer

Automatic pattern change station enable complete pattern sets to be changed with in the cycle time. A lifting table lifts the previously used pattern set off the turntable or lowers the new set in the position. Driven roller ways take the pattern sets to and from the station.

Cope transfer and drag lifter/lower device

Cope transfer and drag lifter/lower device is specially designed to transfer cope mould to cope conveyor and drag mould to drag conveyor which helps to facilitate more number of core setting places and more number of vent hole drilling stations/sprue cup cutting stations with the utilization of optimum area.



Mould handling system

Flasks

The robust flasks are designed to withstand the high pressure forces during blow and squeeze, ensuring that the precision of the mould is maintained after the forces are released. Solid hooks in the flask corners keep the cope and drag together during pouring. All hooks are integrated in the flasks so the hooks are protected against melt spill.

Pattern heating system offline

The optional device allows pre heating of the pattern at low temperature conditions which helps to easy stripping of the pattern after squeeze.

Technical data

Type			DISA FLEX 70		DISA FLEX 70HS		DISA FLEX 80		DISA FLEX 90*	
Measurements:	Metric	US	Metric	US	Metric	US	Metric	US	Metric	US
Flask size:										
Height of cope/drag flask, min-max	mm	inches	200-325	7.9-11.8	200-325	7.9-11.8	250-350	9.8-13.8	300-400	11.8-15.7
Width min-max	mm	inches	700	27.6	700	27.6	800	31.5	900	35.4
Length min-max	mm	inches	800-1000	31.5-39.4	800-1000	31.5-39.4	900-1050	35.4-41.3	1200-1250	47.2-49.2
Machine output in complete moulds:	hour		50-90		60-120		60-120		40-100	
Squeeze pressure max:	kgf/cm²		10		10		10		10	
Sand consumption:	tonnes/h	tons/h	20-76	22-84	25-102	28-112	40-132	44-145	48-168	53-189
Power consumption:	kW		40		75		75		85	
Air consumption at 5 bar:	m³/hr	cuft/hr	300-540	10594-19069	360-720	12713-25427	360-720	12713-25427	240-600	8475-21190
Water consumption:										
At 32°C inlet temperature	litres/min	gallons/min	70-90	18.5-24	140	37	140	37	180	47.5

Above data is preliminary and indicative.
*DISA FLEX 90 is only available upon request.
CIM modules are available on request.