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# DISA TM Mixer



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**DISA**  
shaping industry

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Noricor Group is the parent company of DISA and Wheelabrator.

## Concept and features



Mixing tools



Mixing plough



DISA SMC

The DISA TM Turbine Mixer delivers unbeatable reliability, precision, durability and cost-efficient operation. Robust design, precision engineering and quality components combine with the latest process control technology to make the DISA TM superior in every way.

### DISA TM Mixer

#### Important features

- Efficient and economic operation due to high throughput rate and short mixing cycles
- High casting quality due to homogeneous and fluffy moulding sand of consistently high quality
- Full integration into any sand circulation system using the intelligent control system
- Low maintenance requirement due to robust components, automatic lubrication and minimum wear of mixing tools and mixer bowl
- Easy access to all wear parts for quick replacement
- Environmentally friendly operation with no dust leakage or loss of fines

#### Sand Multi Controller

An optional DISA SMC sand controller ensures ideal sand quality by enabling integration of dosing, mixing and moistening:

- Continuous control of sand quality to ensure consistent properties
- Continuous monitoring and regulation of compactability and mould strength
- Monitoring during the mixing process enables correction of sand moisture
- Addition of correct quantities of water and bentonite

## Design and function

### Features that make the difference

#### Economic and precise mixing system

The mixing tools rotate continuously during loading with pre-batched material. The large double "S"-shaped mixing ploughs and the high-capacity blenders (one or two depending upon mixer size), which are mounted from above, rotate in opposite directions, while the mixing pan and guide ploughs remain stationary. This combination guarantees fast, highly intensive preparation as well as perfect homogenization of the moulding sand.

- Exceptionally economic operation due to high throughput rate and improved energy efficiency
- Exceptional castings quality due to homogeneous and fluffy moulding sand of consistently high quality
- High throughput rate and short mixing cycles due to intensive mixing

#### Precision dosing and weighing

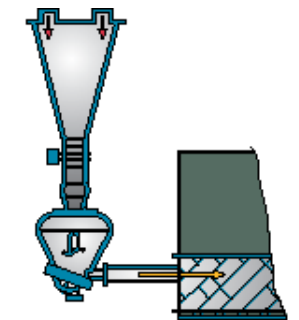
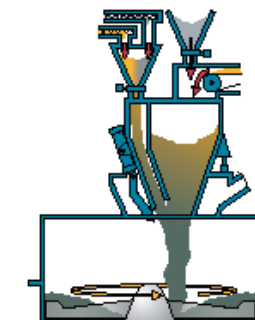
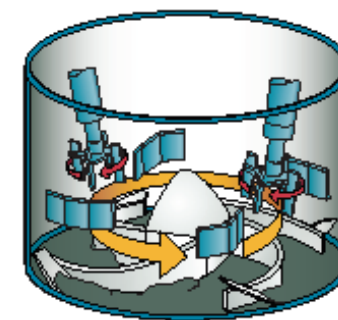
Precise amounts of used sand and additives are dosed simultaneously into the mixer through a single opening. Pre-mixing is achieved with immediate radial injection of water through the mixer wall into the material flow, thus eliminating the dry mix stage. This unique mixing technology enables exceptional preparation efficiency with shorter cycle times. If the mixer is equipped with a Sand Controller the water is automatically dosed to give a pre-selected compactability.

- Optimum sand properties due to automatic moisture level control and controlled material feed
- Radial water injection into the sand batch prevents granulate formation, thus providing an improved casting surface
- High process efficiency and low bentonite requirement

#### Pneumatic bond injection – the flexible solution

The Bond Injection System is an alternative to the addition of bond and sand from the top of the mixer. The batch of additives is first weighed separately in a weigh hopper and then discharged into a pneumatic sender. From here the material is blown into the batch of used sand in the mixer through a flexible hose. This technique enables more flexible location of additive hoppers and reduces the formation of dust and associated fines which are lost to the extraction system.

- Flexible solution with small footprint, excellent for example in confined spaces or complex installations
- Direct injection of additives into the sand improves mixing efficiency and sand quality
- Reduces the formation of dust, thus reducing the amount of additives lost into the dust extraction system





# Control systems

## Control Units

- Main control panel
- HMI PC with graphic display
- Local operator panel
- Sand Multi-Controller, SMC

## Main control panel

The main control panel with a Siemens S7 PLC controls all the functions of the mixer. The controlled equipment and functions include mixer motors and cycle, water dosing systems, weighing, SMC and additive dosing systems. The control includes automatic bad batch rejection.

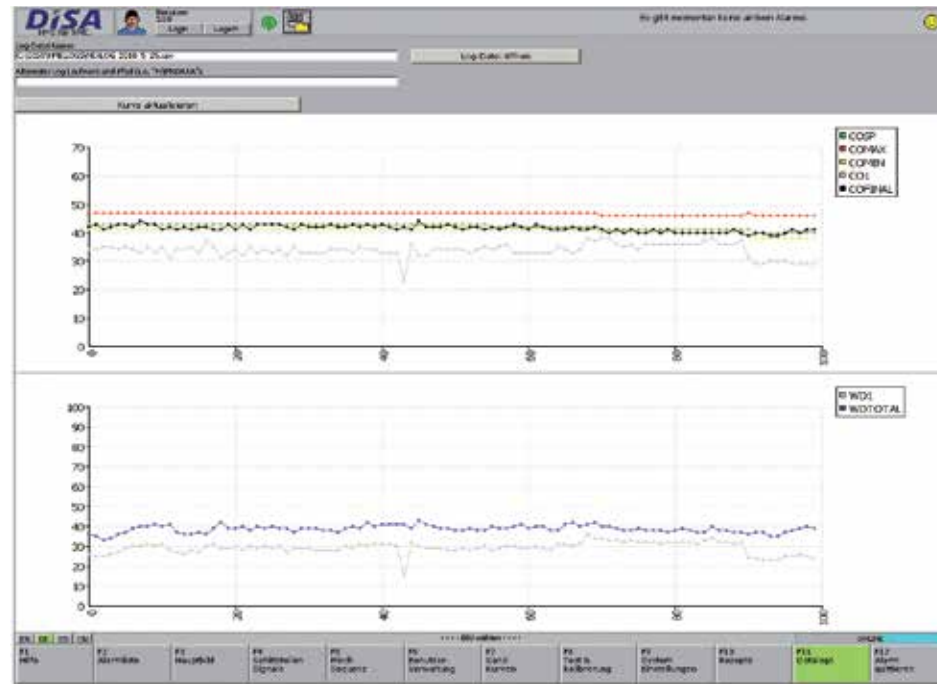
The mixer system is based on a recipe control with 99 different recipes that can be pre-defined. Recipe number, time, target values and achieved values are stored in log files for quality control and traceability. All relevant SMC values are logged for each batch, including protocols with the amounts of additives used.

## Local operator panel, Siemens OP

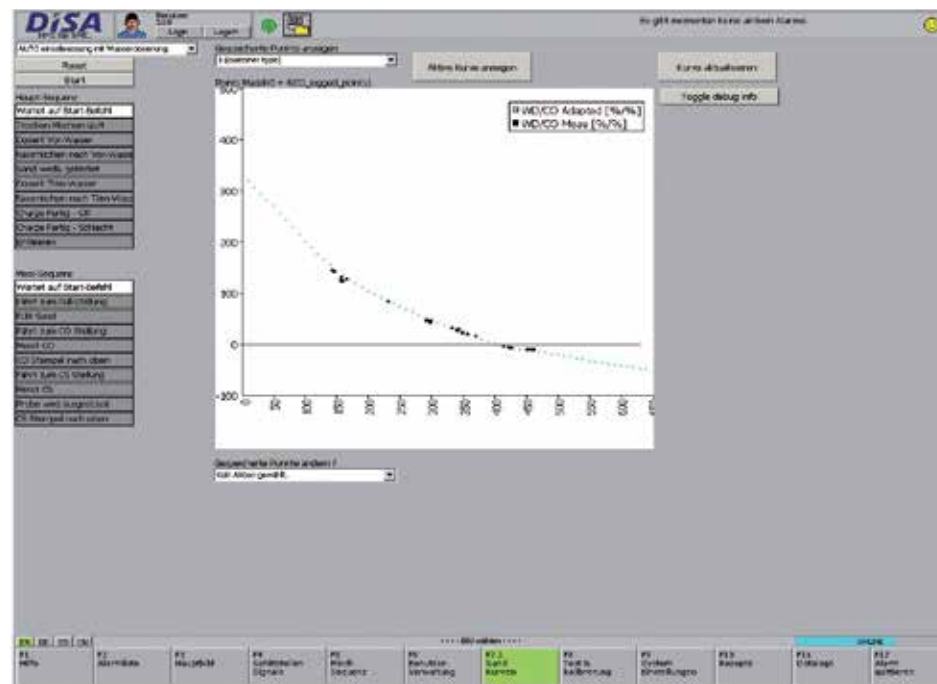
The Siemens OP panel is intended for installation near the mixer, for local mixer operation, changing operating parameters and for fault indication.

## HMI Software with Personnel Computer (PC)

The mixer is controlled via the HMI computer. Mimic plant displays, graphs, fault indications, operating and SMC data and parameters are displayed and filed on the HMI PC.



Screen-shots



Screen-shots

# Sand control



## Sand Multi-Controller, SMC

The SMC measures compactability and sand strength from a 50 mm test sand sample extracted from the mixer. Water is added to the mix based on the compactability measurements.

From the sand strength measurements, the bentonite requirements are calculated and can be adjusted in small increments in following batches towards a target sand strength.

As options, the SMC can include measurements of return sand temperature and moisture before the mixer. This is particularly relevant for low moisture contents, or for return moisture contents and sand temperatures with large variations.

## Water addition

- Water is added in two stages:
- Pre-water in the beginning of the mixing cycle
  - Trim-water after measurement of compactability

If the moisture sensor option is included, then up to 100% pre-water can be added.

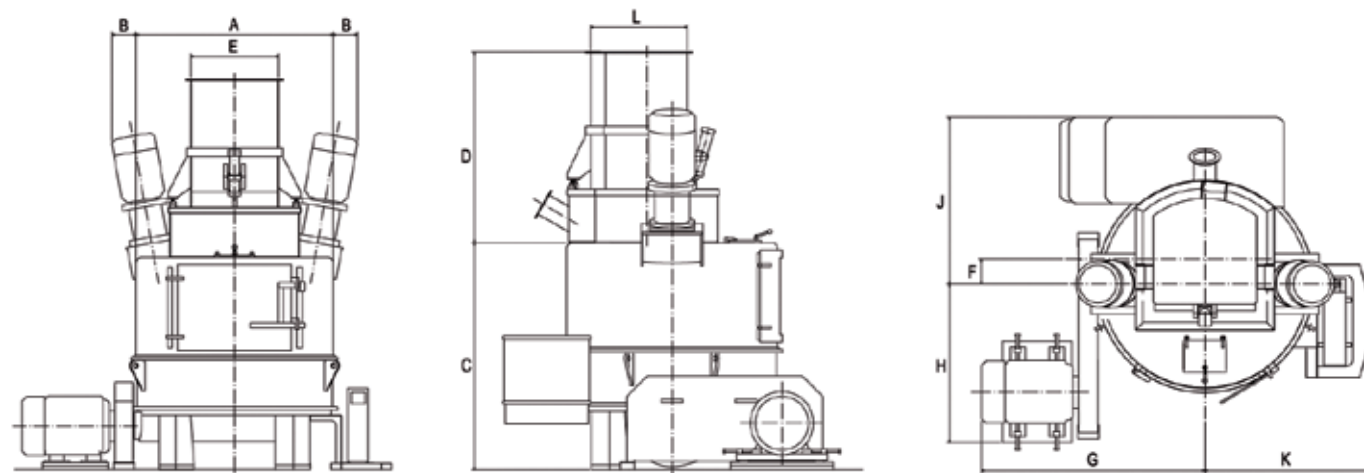
## Automatic water addition via compactability:

The SMC automatically takes and samples from the mixer, measures compactability and sand strength and determines the necessary amount of water. The SMC automatically adapts itself to the sand conditions.

## Automatic water addition via motor current (back-up system):

If the SMC is not functioning, water can be automatically added in the mixer according to the mixer motor current using the back-up water addition programme.

# High-Performance TM Mixer



# Technical data

Type		TM 160-45	TM 190-55	TM 190-75	TM240-90	TM240-110	TM 285-160	TM 285-200
<b>Measurements:</b>								
	<b>Metric</b>							
<b>Dimensions:</b>								
A	Diameter	mm	1650	1950	1950	2460	2406	290
B	Blender width, approx.	mm	200	240	240	300	300	360
C	Height of mixer	mm	1990	2080	2080	2405	2405	2480
D	Height of measuring vessel	mm	1400	1750	1750	1600	1900	1950
E	Int. width of meas. vessel	mm	860	860	860	1200	1200	1500
F	Centre dist. mixer/vessel	mm	250	300	300	400	400	450
G	Depth of drive, approx.	mm	1827	2100	2100	2450	2550	2800
H	Width of drive, approx.	mm	1093	1650	1650	1850	1850	1950
J	Width of unloading door	mm	1330	1470	1470	1975	1975	2330
K	Width of SMC, approx.	mm	1400	1550	1550	1800	1800	2030
<b>Batch specifications:</b>								
	Batch size (max.)	kg	500	700	1000	1400	1850	2500
	Cycle time	s	100	100	100	100	100	100
	Batch	hour	36	36	36	36	36	36
	Mixing rate*	m <sup>3</sup> /h	20	28	40	56	75	100
	Capacity*	t/h	18	25	36	50	66	90
	Vessel cap. used + new sand	m <sup>3</sup>	0.7	0.7	1.0	1.4	1.8	2.5
	Cap. weigh hopper bent. + coal	m <sup>3</sup>	0.1	0.1	0.1	0.15	0.15	0.15
<b>Mixing vanes:</b>								
	Drive power	kW	45	55	75	90	110	160
<b>Blenders</b>								
	Number/drive power	kW	1/22.5	1/30	1/37	1/45	2/45	2/55
<b>Total power</b>								
	Total drive power	kW	67.5	85	112	135	200	250
	Total weight: approx.	kg	4400	6500	6700	12400	13200	16900

\*Depending on water content and sand properties.

The technical data is not binding and may be subject to change.