



The sand throughput should be kept constant. This is often realised by means of an upstream hopper from which a constant amount per time unit is fed into the cooler.

Alternatively, the installation of a belt scale or, at least, the installation of multi-stage belt switches is advisable for adjusting the water addition to the sand volume.

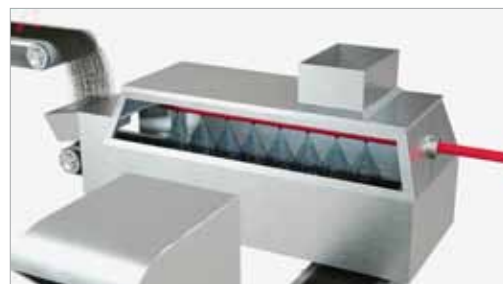
As instrumentation there are probes installed at the cooler entry and exit for measuring moisture and temperature. In addition, air moisture and temperature of the fresh air and of the exhaust air are determined. In the control system the sand volumes per time unit and the desired moisture are stored and from these parameters the required water addition in the cooler is calculated.



THE INSTALLATION OF SENSORS OUTSIDE THE COOLER MEANS LESS WEAR AND BETTER ACCESS FOR MAINTENANCE WORK



By means of the installed water nozzles the water is very finely dispersed and spread over a wide area of the sand bed. The sand is optimally cooled, the moisture increased and the extraction of too many fines from the moulding sand is prevented. And also lump formation is significantly reduced.



The cooled sand leaves the cooler with consistent moisture and is fed into the hoppers. There, the sand has time to regenerate and later enters the mixer in pre-moistened condition. There, only the 'final' amount of wa-

ter and the sand additives are added, which can be worked into the pre-moistened sand quickly and efficiently, ensuring short mixing times and thereby efficient cycle times.

TRUST IN INNOVATION



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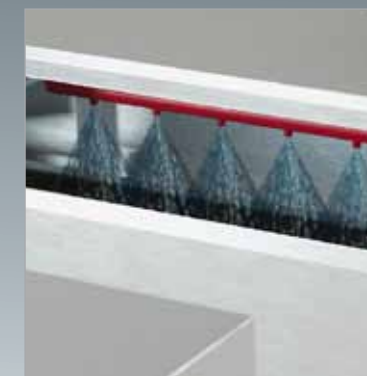
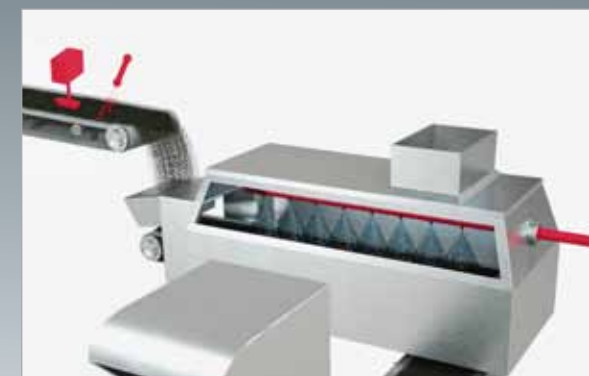


INNOVATIVE PLANT CONCEPT DESIGNS

AUTOMATIC MOISTURE CONTROL FRS-K

AT THE COOLER / CONTINUOUS MIXER

- Moisture measurement greensand
- Temperature measurement greensand
- Material flow
- Water flow
- Moisture measurement air
- Temperature measurement air



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MOISTURE CONTROL FRS-K

AT THE COOLER / CONTINUOUS MIXER

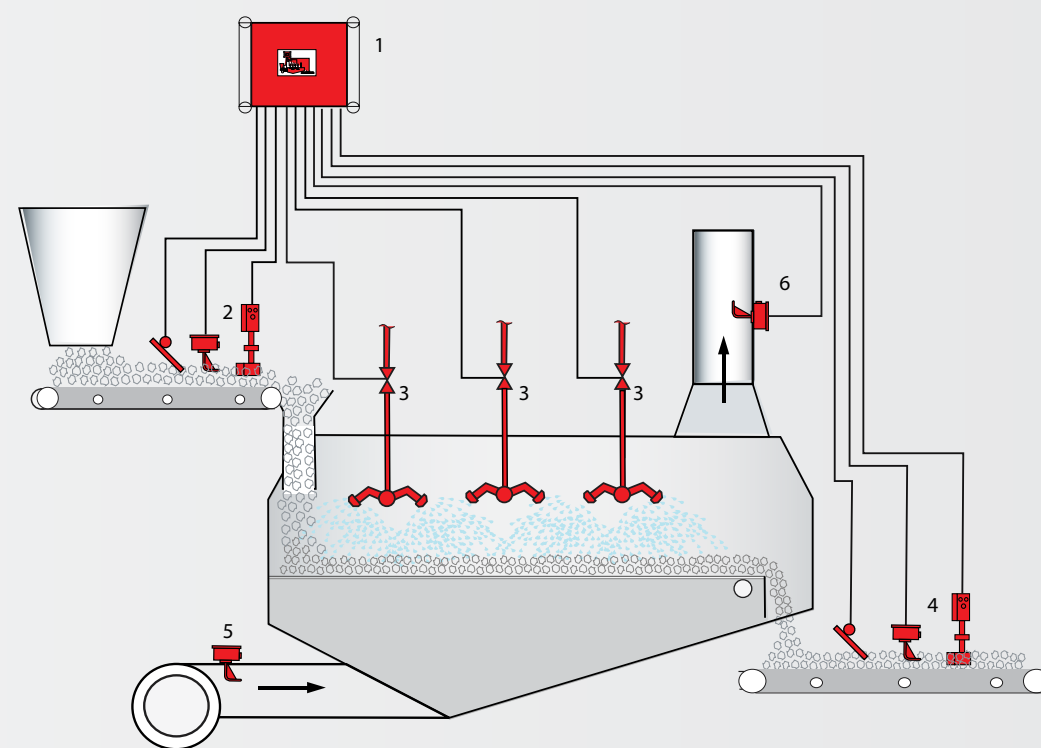


By implementing of moulding sand coolers the used sand is to be primarily cooled down effectively after shake out. A further very important objective is to pre-moisturise the used sand for initiating and accelerating the regeneration of the used sand in the hoppers prior to the further conditioning cycle. To achieve this objective, a constant sand moisture in the range of approximately 1.8 to 2.5 %, depending on sand type, should be aimed at.

With all cooler types the evaporation cooling principle if used. Example fluid bed cooler: The cooling air is blown in, the sand is fluidised and a large evaporating surface is created. In many cases the exhaust air is ducted through a downstream cyclone where the fines are removed and returned into the used sand. Our automatic moisture control system has the function to ensure optimum water additions and to prevent over- or under-moisturising.



A CONTROL SYSTEM BASED ON TEMPERATURE ALONE CANNOT FULFIL THIS TASK



1. PLC system with touch panel
2. Moisture and temperature measurement at cooler entry
3. Water dosing system with a number of water dosing elements depending on cooler size
4. Moisture and temperature measurement at cooler exit
5. Temperature / air moisture fresh air
6. Temperature / air moisture exhaust air

Example: Automatic Moisture control system



HARDWARE

As a module for connection to the FRS-Central or as a single version with its own HMI in a control cabinet.

A Siemens S7 PLC is used. It is also possible to adapt to existing older PLC versions.



SOFTWARE

- Multi-touch menus
- Presentation of the process data
- Intuitive user interface
- Measuring watchdog function



DATA BASE

All process-relevant data are filed in a data base and presented graphically for evaluation. In addition to the control parameters the following data can be stored in the data base:

- Moisture measurement greensand
- Moisture measurement air
- Temperature measurement greensand
- Temperature measurement air
- Material flow
- Water flow

Special customer-specific features can be integrated.



CROSS LINKING

- Data security
- Mobile HMIs / User interfaces
- Remote maintenance / diagnostic

