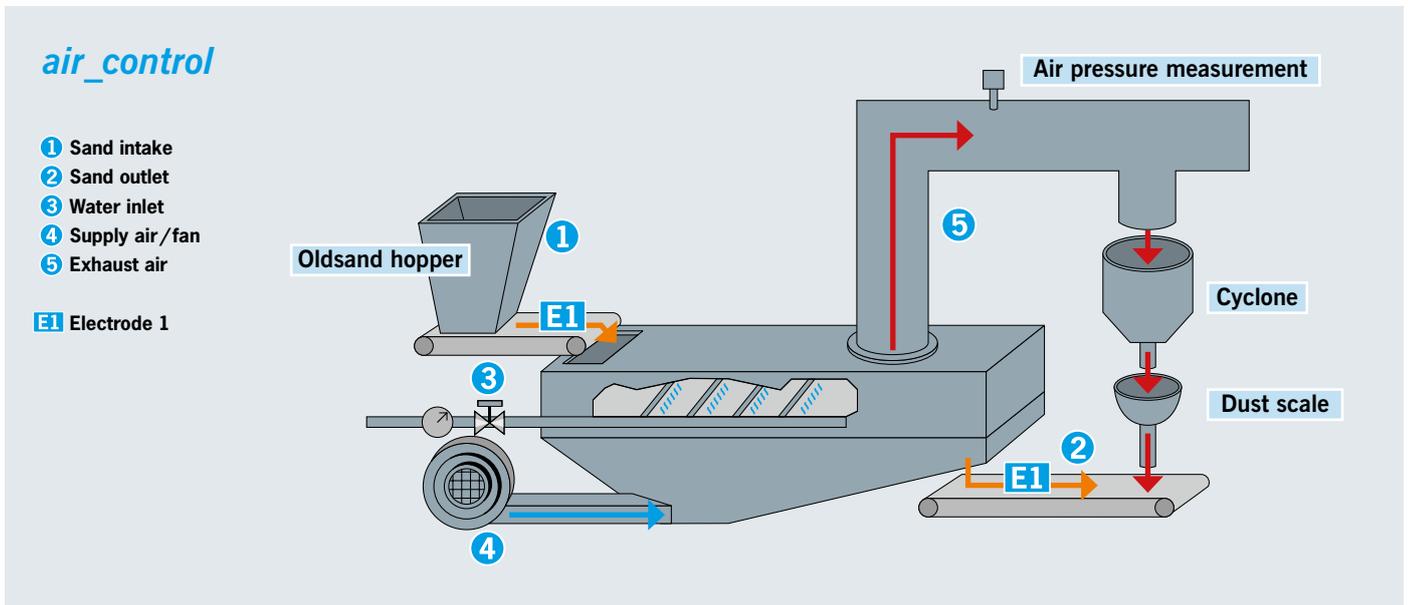


Measuring the exhaust airflow from the cooler



The task:

In the process of cooling the used sand, the flow of air is an important component. The air picks up the water that evaporates, although there is a limit to how much it can absorb. The evaporation process is energy intensive and uses the heat energy from the warm used sand. Irregular airflow creates fluctuations in the cooling because different amounts of water evaporate. An appropriate measuring device should monitor the flow of air continuously.

The used sand should be cooled evenly.

Approach:

The warm waste air that comes out of the cooler is heavily contaminated with dust, while the high proportion of bentonite hardens on the surfaces very quickly in the saturated state. Under these circumstances, measuring devices quickly lose their accuracy, with the result that they can only be used if they do not come into direct contact with the exhaust air. If a sensor is used for dynamic air pressure measurement against the airflow, it quickly becomes clogged.

Solution:

The static air pressure gauge does not have a sensor that is exposed directly to the air. The flow of air creates a vacuum that is recorded by a sensor installed outside the exhaust air pipe. The airflow can then be determined using a special recalibration process.



Advantages:

This method of measuring airflow has a number of advantages.

1. Permanent monitoring of the flow of air in the cooler is possible.
2. Fluctuations can be identified when pipes become clogged.
3. The simple design, which includes visualisation and data recording, can be integrated into the control system.

Optimisation (options):

Measurement of the quantity of dust

The quantity of dust extracted by the exhaust air has a significant effect on the quality of the sand. Variations in the quantity of dust removed are reflected in the quality levels. A weighing device in the exhaust pipe of the cyclone measures the quantity of dust.

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