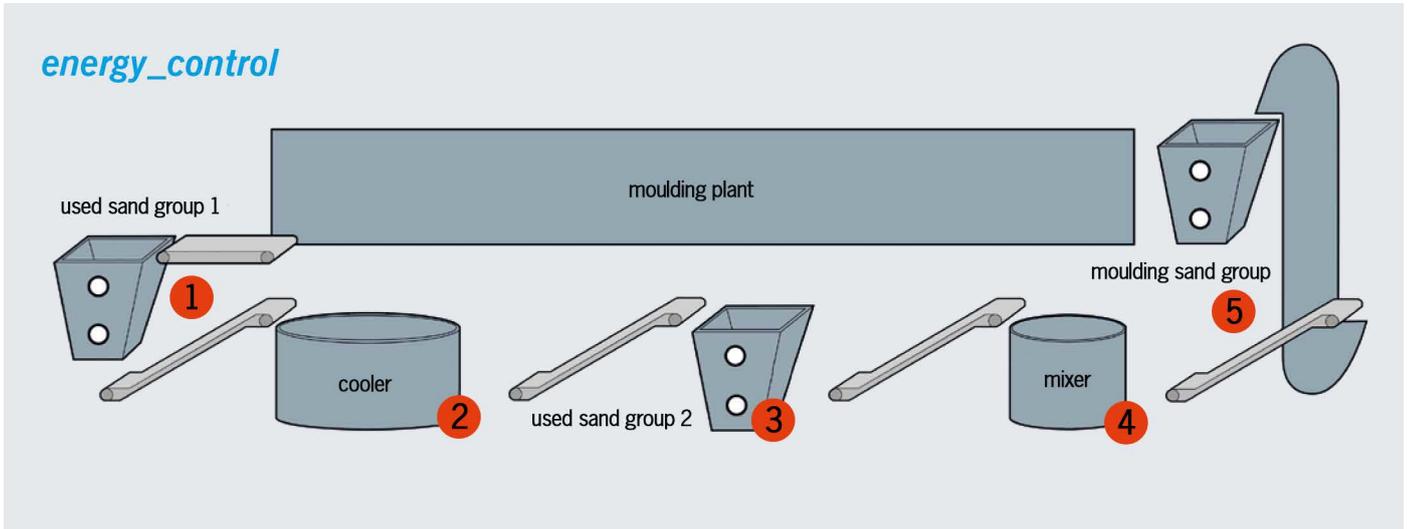


Energy management



Task:

In many foundries, sand preparation is the second largest consumer of electrical energy after smelting operations. In accordance with ISO standard 50001, certified companies are obliged to commit to a continuous and demonstrable reduction in energy consumption.

Approach:

For new plants, energy-efficient motors with frequency converters must be installed, but the complete retrofitting of an existing old plant is not profitable. For old plants, the only remaining option is to run the sand preparation system in such a way that the affected plant components are switched off when idle.

Solution:

Sand preparation is intermittently carried out on the moulding line. These include various treatment steps and the transport of the recirculated sand from one treatment station to the next, each of which is equipped with buffer bunkers. As a rule, production capacity must not be reduced under any circumstances, even in the event of a change in the operation characteristics. On the basis of a potential analysis, in which the idle phases are identified, the affected system parts switch off when idle phases occur. In order to avoid the switching on mechanism reacting too quickly, the sand is processed in a compressed mode.

Energy meter	Consumption
1 Used sand group 1 (shake-out)	5760.0 kWh
2 Cooler	21201.0 kWh
3 Used sand group 2	5601.0 kWh
4 Mixer	43712.0 kWh
5 Moulding sand group	2300.0 kWh
Sum	78574.0 kWh
Moulding sand consumption	13760.0 t
Energy consumption / ton moulding sand	5.71 kWh/t

In particular, the reactions to the filling levels in the bunkers upstream of the moulding line and upstream of the cooler must be optimised by means of continuous filling level measurements. The bunkers are

filled to the maximum and their refilling starts at the lowest possible level. This allows a longer operating phase and also a longer downtime.

Advantages:

1. Energy consumption can be noticeably reduced.
2. Cost savings are generated.



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Dosier- und Automationstechnik GmbH · Alte Salzdahlumer Str. 203 · D-38124 Braunschweig
Fon +49 531 26408-0 · Fax +49 531 26408-20 · E-Mail info@datec.org · Internet www.datec.org