Liebherr “in situ” (online) moisture measuring guarantees utmost quality of glass production at Saint Gobain Oberland AG

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Founded in Bad Wurzach in 1946, Saint-Gobain Oberland AG is now a subsidiary company of the Saint-Gobain Emballage S.A., the second largest manufacturer of glass vessels worldwide with more than 10000 customers and 15500 employees. Approximately 1500 workers are employed around various sites in Germany alone, producing top quality glass products such as bottles and preserving jars to order.

At the German production site of Bad Wurzach, around 3 million glass vessels of practically every conceivable shape and colour are produced daily from three melting vats on nine production lines. All essential materials such as quartz sand, soda, calcium and dolomite, feldspar and recycling glass are weighed in the batch house and then fed at regular intervals into the melting vats. The batch is then melted in temperatures of more than 1.500°C. This resulting mass of molten glass is conveyed into the moulding machines via distributing ends and feeders in the form of glass drops.
Systematic energy management, including secondary utilisation of waste heat from the melting vats to generate heat and power, recovery of industrial water from their own well, complete recirculation of the cooling water (re-cooling system) and utilisation of the filter dust and recycling glass, ensures a reduction in costs and exemplary environmental friendliness.

Quality as a result of precise moisture measuring

A search lasting more than 10 years was undertaken to find reliable in situ moisture measuring for the various process stages, to ensure first class quality in the production of bottles and glasses. Numerous tests were carried out with the most varied measuring principles, including infrared, microwave and radiometric measuring. Eventually, outstanding results were achieved with the Liebherr Litronic-FMS II moisture measuring.

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Since then, a further 10 measuring points have been equipped with Litronic-FMSII sensors to ascertain the residual moisture content in quartz sand and recycling glass.
The sensors are installed with sliding shoes on conveyor belts feeding broken glass or quartz sand to the mixer in the batch house. Best positioning achieved by using of a sliding shoe directly above the flow of material guarantees an even and continuous measuring. Not one of the sensors has required replacing within these 10 years of operation due to the hard, nearly wear-free zirconium oxide ceramic sensor surfaces. The housing is designed in stainless steel and can therefore be used in all conceivable situations.

Due to an extensive array of interfaces the moisture measuring can be smoothly integrated into process control systems. It is even possible to connect it to an onsite Ethernet infrastructure. The system, comprising of "intelligent" moisture sensor, evaluation electronics and user-friendly software ensures optimum ascertainment of the moisture, as well as monitoring or even correction of the respective recipe for the production process. An integrated microprocessor determines the arithmetical mean value throughout the entire batching duration. Moisture content of the material is measured in-situ, or rather in real-time.
Complete reproducibility is guaranteed by the microprocessor installed in the sensor, thus no recalibration is required for subsequent upgrades of the plant with sensors, or in the event of sensors being replaced.

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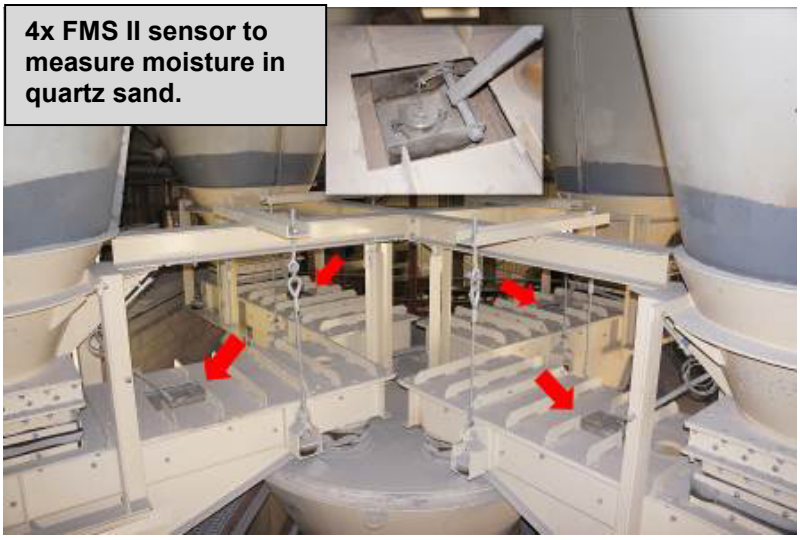
The sensor also automatically compensates fluctuations in temperature of the material, which could in turn have a negative influence on the measured value. This can also be used to ascertain temperature of the material.



4x FMS II sensor to measure moisture in quartz sand.

Application of the sensor on a worldwide scale

In many industrial sectors, reliable moisture measuring and correction of the moisture values of materials is of utmost importance for quality assurance of the products. Likewise, precise ascertainment of sand moisture is essential if the desired product quality is to be attained during the manufacture of glass.

Up to 16 sensors can be connected and networked for each evaluation module. Sensors can be installed on belts, at transfer points, in silo discharge points, chutes or conveyance screws. Reliable and precise functionality of the Litronic-FMS II sensors has been successfully proven over decades of use by customers dealing in bulk materials of every kind (including powder, sand, granulates, cullet, pellets, pet food, cereals and much more).

Distinctive feature: For applications in explosion-protected areas, sensors are available in Dust-Ex and Gas-Ex -protected configuration in accordance with ATEX Guidelines.

Upon request we would be glad to send further information or references.

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