

Customer Reference for the Online X-Ray Elemental Analyzer OXEA 3000 by Indutech

The RHI is operating a magnesite mining industry in Breitenau, Austria. The final product is supplied to the fire-proof industry. The quality of the final product is essentially determined by minerals which adversely affect the refractability of the material. This is mainly silicon which even in comparatively small quantities has an adverse effect on quality.

History and problems

In the mid 90ies, RHI has installed an online X-ray fluorescence system on a partial flow. However, the well-known difficulty of measuring elements with low atomic number appeared to be so pronounced with this device that silicon could not be measured. Moreover, this device required a grain size < 1 mm. This required a second crushing step which proved to be very susceptible to interference, so that the availability of the system was not satisfactory.

To work with the old system, one had to fill a graduated beaker with material. The measurement was carried out through a window in the side wall of the beaker. The drawbacks were as follows:

- Only the material directly at the window was covered by the measurement.
- Material that stuck to the window while emptying the graduated beaker was measured again during the next measurement cycle.

Indutech's solution

When we first heard about Indutech in 2004, we carried out tests using an *OXEA 3000 atline* to see if we were able to measure Si with sufficient accuracy in a concentration range from 0.1-1.5%. It appeared that the desired accuracy is met even with a grain size <3mm. This means that the interference-prone second crushing step can be skipped. In early 2005, *OXEA 3000* was installed as online RFA device in our factory. The material is conditioned on a small measurement belt, so that a material layer with a constant layer thickness of approx. 1.5 cm is available during measurement. One batch is measured in 180 s.

Calibration was performed using prepared samples which were poured into the feeding hopper on the measurement belt and collected again at the discharge point. Thus, we were able to carry out the calibration with 30 samples within half a day. The accuracy obtained was even better than in the tests.

The reliability and availability of the device is very high. Re-calibration, which is required each quarter, is carried out within the framework of a service contract by Indutech via modem connection.

The *OXEA 3000* by Indutech fulfils all expectations. It permits the online measurement of the silicon concentration with high accuracy, so that the material can be classified into different quality classes. In addition to silicon, other elements, such as Al, Ca, Fe and Mn are measured as well. We plan to use the device for other applications within our corporate group.

Due to EU Data Protection (GDPR) all personal data of the people involved in the project have been removed.

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