OMMA

Development of an online measuring system for material flow characterization in processing plants of the gypsum industry

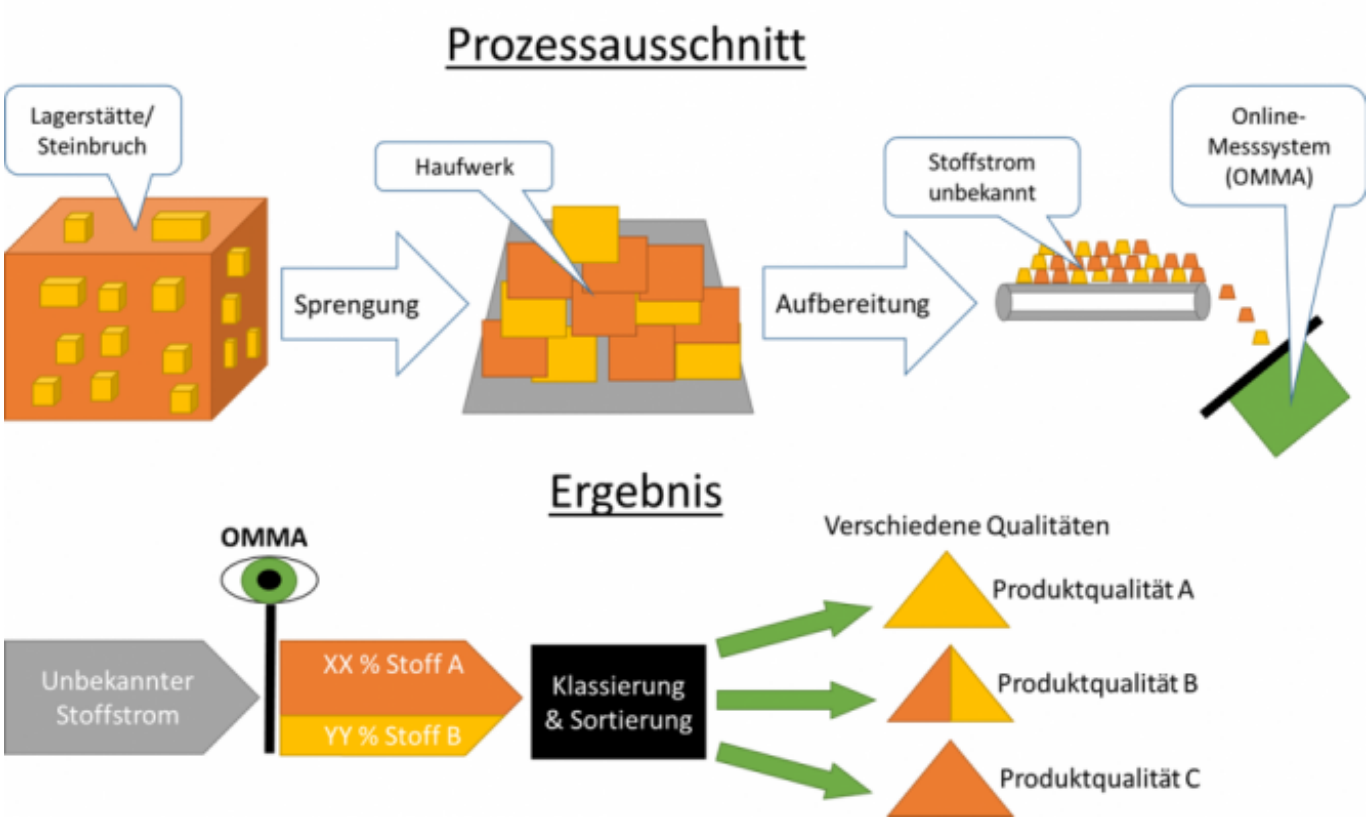
Gypsum and anhydrite are essential raw materials for the construction industry as components of screed, mortar and finished products such as fibreboard and wallboard. For use in finishing products, for example, the gypsum must have a correspondingly high degree of purity. Both raw materials often occur together in nature due to the genesis of deposits and must be distinguished from each other for targeted further processing. However, gypsum (CaSO4-2H2O) and anhydrite (CaSO4) have similar optical and chemical properties. Chemically, they differ only in the water of crystallization bound in the gypsum.

The method for characterizing both raw materials, which has been predominant up to now, involves a time-consuming investigation in the laboratory. Such an analysis takes at least 15 minutes and is performed only a few times a day. Fluctuations in the material composition on the conveyor belt cannot be detected in this way or not in time. This method does not allow direct process control.

This is where the "OMMA" research project, funded by the Federal Ministry of Economic Affairs and Energy (BMWi) through the "Otto von Guericke" Federation of Industrial Research Associations (AiF), came in. The aim of the project was to develop a real-time measurement system integrated into the preparation process for inline analysis of a material flow. In this way, fluctuations in the material composition can be detected by sensors and the substances gypsum and anhydrite can be characterized automatically.

The Acoustic Emission Technology was successfully applied to determine the material in the material flow. This enables the determination of material-specific characteristic values, which can be used to characterize the material by means of pattern recognition methods.

In 2020, the AMT and the AMR (Institute for the Mineral Resources Processing) of RWTH were awarded the German Raw Materials Efficiency Award 2020 for the successful demonstration of material flow characterization in real-time within the OMMA project.


Prozessausschnitt
Lagerstätte/
Steinbruch
Sprengung
Haufwerk
Aufbereitung
Stoffstrom
unbekannt
Online-
Messsystem
(OMMA)
Ergebnis
OMMA
Unbekannter
Stoffstrom
XX % Stoff A
YY % Stoff B
Klassierung
& Sortierung
Verschiedene Qualitäten
Produktqualität A
Produktqualität B
Produktqualität C

back to top