

## Differential Pressure Flow Meters

The mineral processing industry has its share of challenging flow measurement applications. The processes often have a high particulate content that can render certain types of flow measurement devices inoperable in a short period of time. So, when System C Industrie recommended the Verabar® for a particularly demanding application at Lafarge Aluminate near Marseille, France, it was no surprise when plant personnel were skeptical.

### Application

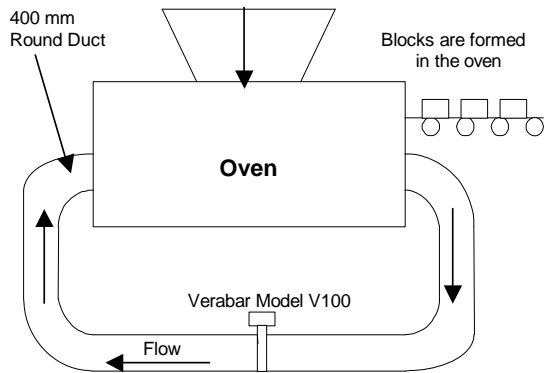
Accurate measurement of combustion air is required to control combustion efficiency of six ovens. Powered bauxite & calcium carbonate are fed into an oven along with combustion air. Bauxite/Calcium Carbonate blocks (kinkers) are formed in the ovens, then shipped to Aluminum producers. The temperature ranges from 20°C (68°F) at start-up to 300°C (572°F) during operation.

### Problem

- 1) Because the combustion air is recycled from the oven in a 400mm (16") pipe, it contains a high concentration of dry bauxite and calcium carbonate particulate.
- 2) Shutdown of the oven was required every two weeks to remove and clean a plugged Annubar sensor.

### Solution

Because the Verabar is far less likely to plug than any other sensor, it can often be applied where other sensors fail. However, due to the high maintenance required for previous sensors, Lafarge would only install a Verabar on a trial (delayed billing) basis. If the sensor outperformed the previous Annubar in a two-month trial, the original Verabar would be purchased along with others for the remaining ovens.



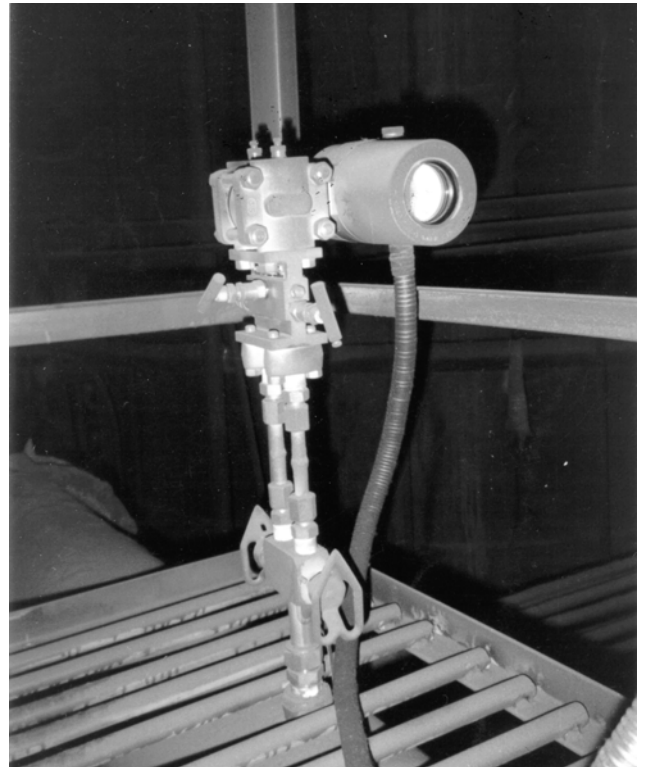
Powered Bauxite & Calcium Carbonate

Fluid:	Combustion Air with Particulate
Industry:	Mineral Processing
Application:	Bauxite/Calcium Carbonate Blocks
Specifications:	No excessive downtime due to clogging

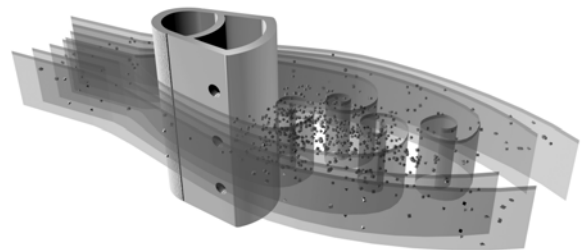
### Results

After the original Verabar performed trouble-free for two months, Verabars were purchased for the remaining ovens.

The Verabar was removed after seven months for inspection. No cleaning was required. Only 1 cm<sup>3</sup> of particulate was found inside the sensor. The last report stated that the Verabars have been operating for over a year in continuous service with no purging or cleaning.



Verabar Model V100 installed in a combustion air line



Low pressure ports of the Verabar are located on the sides of the sensor, away from the clogging zone (partial vacuum) to the rear