



## APPLICATION REPORT Machinery & Apparatus

### Dosing of additives in gypsum plasterboard production

- Equipping a foam generator with electromagnetic and Coriolis mass flowmeters
- High accuracy flow measurement of silicone, soap, water, plasticizer and wax
- Fast PROFINET data transfer for multi-parameter measurement (flow rate, density, temperature, etc.)
- Less wiring and installation costs



#### 1. Background

The Turkish company MMM ERBA Makina engineers and builds high-tech turnkey solutions for gypsum and gypsum plasterboard producers. Among others, the company specialises in the design and manufacture of metering and dosing systems like foam generators.

#### 2. Measurement requirements

Foam generation is crucial for plasterboard production. Foam generators mix a surfactant solution in water with compressed air which is then fed into a continuous mixer where it is added to the water/plaster slurry. Subsequently, this mixture is poured onto a moving belt where it is formed between two papers until the desired width and thickness of the slurry is set and can be cut to boards. These boards are then ready for drying and further processing.

To achieve the desired quality of the end product, it is important that all additives for the foam are accurately dosed and mixed. MMM ERBA Makina engineered a turnkey foam generator for a gypsum manufacturer and therefore required state-of-the-art process instrumentation for high accuracy dosing of the various additives like water, silicone, soap, plasticizer and wax.

#### 3. KROHNE solution

KROHNE supplied various flowmeters for dosing of the different types of additives. In total, the foam generator was equipped with:

- 6 x OPTIFLUX 1300 C: The electromagnetic flowmeter (EMF) was installed in different sizes (DN10, DN15 and DN40) for flow measurement of mixing and process water, supplied with PFA liner. Given the confined installation space, the client also made use of the space-saving sandwich connection of the EMF.



- 2 x OPTIFLUX 4300 C: The EMF for advanced applications with aggressive chemicals was provided in DN6 for dosing of plasticizer. Once again, a chemical resistant PFA liner was selected.
- 2 x OPTIMASS 3400 C: The Coriolis mass flowmeter is dedicated for very low flow and dosing applications. It was thus used for high accuracy measurement of soap with very low flow rates. The tube size is very small with a diameter of only 3 mm.
- 2 x OPTIMASS 6400 C: The high-performance Coriolis mass flowmeter for advanced process applications was selected for high accuracy flow measurement of silicone. It was supplied with a stainless steel twin bent measuring tube in DN10.
- 2 x OPTIMASS 7400 C: The single straight tube Coriolis mass flowmeter is the flowmeter of choice for viscous products: It was supplied with stainless steel measuring tube in DN15 for high accuracy flow measurement of wax. As with all KROHNE Coriolis mass flowmeters, the OPTIMASS 7400 features integrated density and temperature measurement.

All EMF and Coriolis mass flowmeters use PROFINET communication, allowing fast transmission of all readings and diagnostics per instrument.



Flow measurement of additives for foam generation



Dosing skid with EMF and Coriolis mass flowmeters

## 4. Customer benefits

The client was very satisfied with the flowmeter selection that KROHNE recommended. The EMF and Coriolis mass flowmeters met any requirement for high accuracy dosing, even of hard to measure liquids like viscous wax. In this way, the end customer benefits from streamlined operation and an efficient use of raw materials for foam generation. Utilizing PROFINET each flowmeter is digitally connected to the control system. This enables fast data exchange of device and process related information. The OPTIMASS Coriolis mass flowmeters, for instance, can thus transmit flow rate, temperature, density and other readings all at once. Communication via PROFINET also reduced wiring for MMM ERBA Makina to a minimum, saving effort and time during flowmeter installation and commissioning.

## 5. Products used

### OPTIFLUX 1300 C

- Electromagnetic flowmeter for OEM applications and dosing systems

### OPTIFLUX 4300 C

- Electromagnetic flowmeter for advanced dosing applications with chemicals

### OPTIMASS 3400 C

- Coriolis mass flowmeter for low flow and dosing applications

### OPTIMASS 6400 C

- Coriolis mass flowmeter for advanced process applications with high accuracy requirements

### OPTIMASS 7400 C

- Coriolis mass flowmeter for advanced process applications with viscous, aggressive or shear-sensitive media



## Contact

Would you like further information about these or other applications?  
Do you require technical advice for your application?  
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