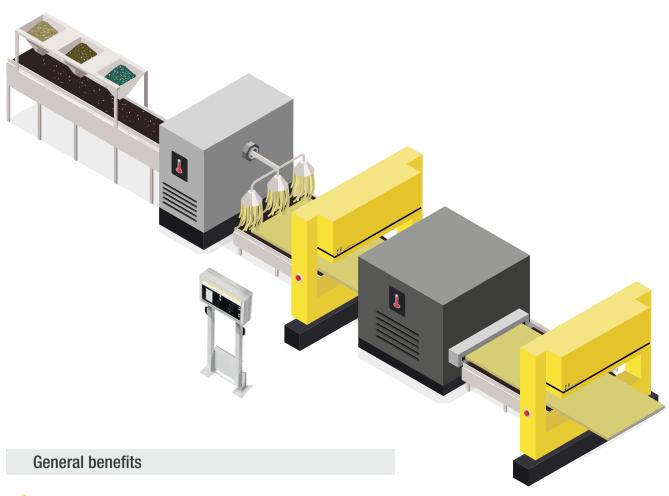


Inline basis-weight and thickness measurements of mineral, stone and glass wool insulation:



- ✓ Using materials and energy more efficiently
- Less manual work needed
- ✓ Keeping production under control
- Making precise measurements for better product quality
- ✓ Improving and maintaining product quality consistently
- Decreasing customer complaints

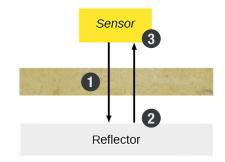
Maximizing Efficiency, Minimizing Waste: Hammer-IMS advances in insulation control

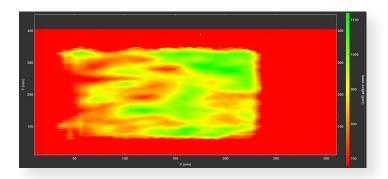
Mineral wool, stone wool, and glass wool are known for their excellent thermal properties and non-flammability, providing a solid foundation for various insulation products. Hammer-IMS offers cutting-edge sustainable measurement systems that provide real-time data, facilitating seamless integration. Allowing manufacturers to adjust parameters promptly, maintain consistent product quality, and reduce waste.

Marveloc Sensor Technologies

M-Ray: millimeter wave sensor technology

The concept of our M-Ray technology for basis-weight (grammage) measurements is straightforward: a sensor at the top sends out a millimeter wave. This wave goes through the material we want to measure. 1 When it reaches the bottom, it bounces off a reflector 2 and comes back up through the material once again. Finally, it reaches the sensor again, where we can capture it and analyze it. 3





M-Ray: real-time detection of product variations

Our sensors spot product variations in your production process at the lowest latency. 2D colormap graphically reveal the areas with highest and lowest grammage of the produced products. Using a frequency analysis tool, any systematic and periodic variations in the machine direction can be retrieved in order to better control these variations.

L-Ray: laser-based sensor technology

For thickness control, L-Ray laser-based sensors are integrated. By employing two opposing laser sensors, our system accurately measures insulation thickness with precision alignment. This integration allows for a complete analysis of the material's thickness profile.



Redefining quality control with sustainable measuring systems

Compared to older radioactive technologies, M-Ray sensors from Hammer-IMS are not harmful for the environment nor the operators handling the system. Moreover, when taking into consideration the licenses required to use traditional radioactive measuring technologies, Hammer-IMS systems do not require such licenses, making it a better total-cost-of-ownership solution.



Experience the benefits of radiation-free technology:

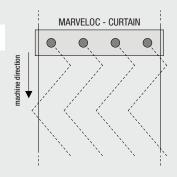
- ✓ No Radiation, No Training, No Costs: Our solutions require no specialized training or costly safety measures, ensuring seamless integration into your production process.
- Elimination of Cooling Requirements: Operate efficiently without the need for additional cooling, reducing energy consumption and maintenance overheads.
- No Bulb Replacement Hassles: Bid farewell to the hassle of bulb replacements, ensuring uninterrupted operation and cost savings.
- Minimal Service Requirements: Enjoy enhanced reliability and longevity, minimizing downtime and maximizing productivity.



Multi-sensor measurement for 100% material coverage

Our quality control system configurations containing multiple sensors, developed to simultaneously measure weight and thickness. The use of multiple sensors provides up to 100% material coverage.

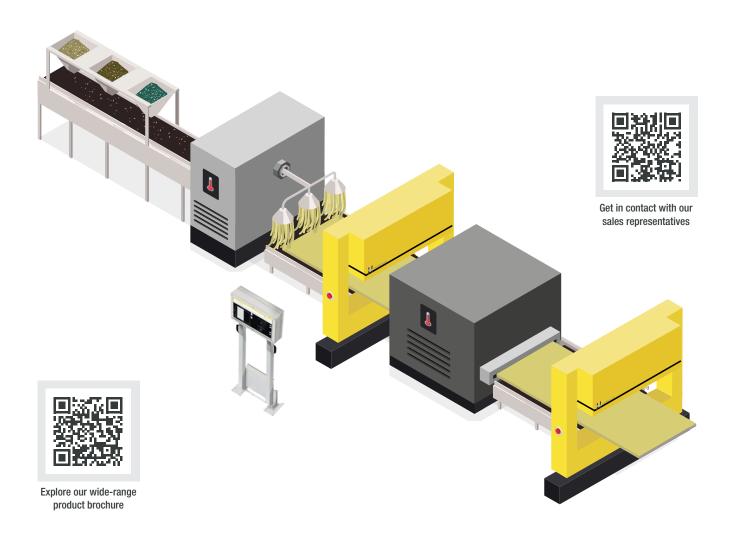
By maximizing coverage, our systems optimize efficiency and minimize the risk of defects, ultimately enhancing the overall quality of the final product.



Different types of insulation

- ✓ Wood fiber wool
- ✓ Calcium wool
- **✓** Rockwool
- **√** Glasswool
- ✓ Silicate wool
- ✓ Ceramic wool







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