

# METAL INDUSTRY

## Continuous Temperature Monitoring of collector bars, side shell and cryolite bath - Aluminium Manufacturing

Aluminum is a metal with properties that are highly sensitive to temperature fluctuations. The aluminum smelting process involves high temperatures and the handling of molten metal, which presents significant hazards. By closely monitoring the temperature of the pot shell, operators can detect any abnormalities or potential issues before they escalate into safety hazards such as overheating or equipment failure.

Temperature monitoring allows for proactive maintenance and troubleshooting. By tracking temperature trends over time, operators can identify patterns or deviations that may indicate underlying problems with the equipment or process. This enables timely intervention to prevent costly downtime or damage to the machinery.

### CHALLENGES

- The extreme temperatures involved in the smelting process can make it difficult to accurately measure and maintain consistent readings. The high heat can lead to sensor malfunction or damage, impacting the reliability of temperature data.
- The harsh operating conditions, such as dust, vibrations, and chemical exposure, further exacerbate these challenges by potentially interfering with monitoring equipment and reducing its lifespan
- Moreover, the size and scale of aluminum manufacturing facilities often mean that numerous pot shells need to be monitored simultaneously, complicating the task of ensuring comprehensive and real-time temperature monitoring across the entire operation. This can lead to delays in detecting temperature fluctuations or hotspots, which could potentially result in equipment damage or safety hazards if not addressed promptly.
- Any inaccuracies or delays in temperature monitoring can lead to variations in product quality, increased energy consumption, and production inefficiencies, ultimately impacting the overall profitability of the operation



Installing [μTMaps](#) on collector bars, side shell and cryolite bath in Vedanta plant

### SOLUTION

- XYMA's Multi-point temperature Sensor is capable of measuring high temperatures at multiple points in real-time across any hazardous environment.
- The edge computing unit in the XYMA Electronics Unit is capable of performing advanced computations to extract temperature data from the received ultrasonic signals. The output from the edge classifiers is transmitted to the dashboard using industrial standard, wireless (or wired) communication technology using a transmitting unit. The status can be monitored in the client DCS system and also can be displayed in XYMA's customizable dashboard.
- It can measure the temperature range up from 25°C to 1450°C. The precise and accurate temperature measurement of the collector bars, side shell and cryolite bath can be detected.
- The AI- Powered soft sensors can provide 3D temperature profiles and dashboard gives timely alerts to safely maintain industrial operations.
- Our XYMA sensors are compatible for all industrial standards and electronic unit is designed with ATEX certification assures that product has tested and met the necessary safety standards to operate in potentially hazardous environments.