XYMA ANALYTICS
Sensor Driven Decisions

# Next-Gen AI & IoT-Driven Real-Time Temperature Monitoring for Refineries

*Patented Ultrasonic Waveguide Sensor*

***Continuous Contact-Based Measurements***

## Prevent Unplanned Downtime & Maximize Operational Efficiency

**XYMA's Ultrasonic Waveguide Sensors** deliver **continuous, real-time, multi-point temperature measurements** in hazardous refinery environments, with a temperature range of **up to 1450°C**, a **resolution of 0.5°C**, and an **accuracy of ±1.5°C**. Our non-intrusive sensors provide precise and reliable data even in extreme conditions, eliminating drift and reducing maintenance needs. By enabling **proactive monitoring and predictive insights,** we help refineries enhance safety, prevent failures, and optimize energy efficiency for seamless operations. **Unlock next-level reliability with XYMA's Innovative sensing solutions.**

## Key Deployments:

### $C_2$ ROGC Furnace Radiant Tube Skin Temperature Profile Monitoring

Installed in the world's largest refinery, ensuring real-time temperature monitoring.

- ✓ Improved Process Control
- ✓ Continuous Measurement

### Reformer Tube Skin Temperature Monitoring

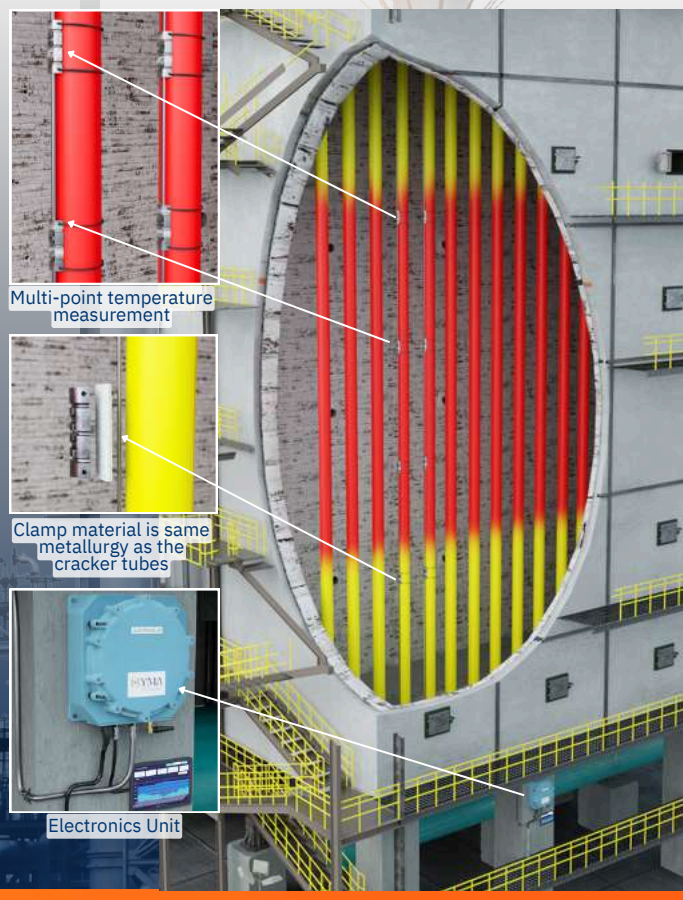
Deployed in India's Major Government Refineries

- ✓ ZERO Manual Intervention
- ✓ Enhance Lifespan

### Continuous Pipeline Skin Temperature Monitoring Vacuum Distillation Unit

Three Years of Proven Performance & Reliability in Extreme Environments.

- ✓ Life up to 50,000 hours
- ✓ Real-time Monitoring




**±20°C fluctuation can halve equipment lifespan, causing failures, downtime, and costly losses. Real-time monitoring is key.**

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# Prevent Unplanned Downtime & Enhance Operational Efficiency

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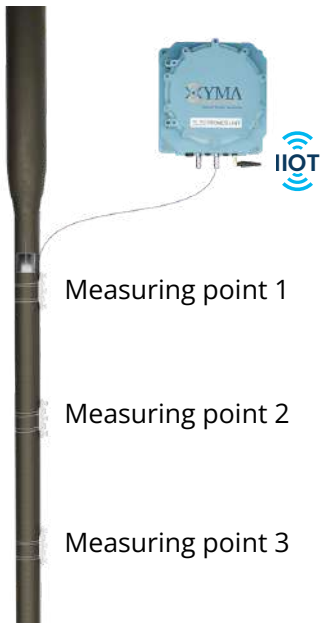
## µTMaps - Continuous, Real-time, Multi Point Temperature Mapping Sensors

XYMA's Ultrasonic Waveguide Sensors (µTMaps) robust high-temperature monitoring sensors that are capable of continuous, multi-point measurements with a single waveguide sensor. Combined with our AI – powered soft sensors, they provide 3D temperature profiles of any industrial assets.

### Specifications:

- **Functions:** Measures Unit Temperature & Skin Temperature
- **Measuring range:** 20°C to 1450°C
- **Resolution:** >0.5°C
- **Accuracy:** ±1.5°C or ±0.5%
- **Communication:** Compatible with Industrial Standards




*Measure multiple points along a pipe up to 20 meters in length*

## World's Largest Single-Site Refinery On XYMA's µTMaps

"RIL deployed XYMA Analytics' innovative high-temperature sensing solution, at our Refinery Off-Gas Cracker (ROGC) furnace, for measurement of tube metal temperature of the furnace tubes in the radiation section.
Designed to withstand extreme environments up to 1100°C, These sensors have operated flawlessly for nearly a year, providing continuous real-time monitoring without any manual intervention. XYMA's µTMaps has provided visibility into furnace tube skin temperature data that was previously not measurable. Beyond temperature measurement, the solution offers detailed thermal profiling and early event detection, helping us to proactively manage furnace tube health and optimize energy efficiency. This technology is a new innovative solution to industry for high-temperature processes monitoring. The reliability and performance of the sensors is satisfactory."
"We are confident that this technology holds immense potential for broader applications across critical assets within refinery and petrochemical operations, driving enhanced safety, reliability and operational efficiency."

**- Reliance Industries**

## Success Story of IOCL, Panipat Refinery & Petrochemical Complex

The Inspection Department at the Panipat Naphtha Cracker Complex (PNC) achieved a major digital transformation milestone with the successful deployment of AI-enabled multi-point waveguide skin sensors developed by XYMA Analytics (IIT Madras–incubated). The advanced ultrasonic waveguide technology enables continuous, real-time temperature monitoring of furnace tubes operating above 900°C, with measurement capability up to 1400°C. Integrated with Generative AI and IIoT analytics, the system provides precise multi-point temperature mapping, offering superior accuracy and reliability compared to conventional infrared pyrometers.The pilot installation at the NCU Heater 200 demonstrated significant improvements in accuracy, safety, efficiency, and energy optimization. The solution reduced temperature deviation by 20–40°C compared to traditional methods, eliminated manual inspections in hazardous zones, and optimized fuel usage and decoking cycles. Encouraged by these results, PRPC is moving towards commercial deployment, marking a step forward in AI-powered predictive temperature monitoring for critical refinery operations.

**- Vivek Sharma, Vivek Sharma, SERM, PRPC**

## Ready to Upgrade Your Monitoring Strategy?

Empower you plant with Continuous, Real-time temperature monitoring

**Get in touch with us today.**

**Scan the QR code to register and schedule a demo!**

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