

## Chameleon Foundry Precision Temperature Measurement for Foundries

# Chameleon Foundry

## Elevating Safety, Reducing Emissions, and Optimizing Efficiency

### Introduction

Chameleon Foundry is a precision temperature measurement system designed for foundries, it can measure in the pouring line, holding furnace and ladle. It uses an automated, optical fiber-based measuring system to deliver accurate temperature readings of liquid iron.

### Benefits

**Automated Measurement:** Streamline operations with precise, automated temperature assessments.

- Increase safety because Chameleon Foundry is operated from the control room, or from a safe distance, during the process.
- Reduce human error and eliminate uncertainty associated with operator practices.

**Improved Process Control:** Achieve superior management of foundry processes with enhanced temperature monitoring.

- **Temperature Stability:** Maintain better control with reduced fluctuations in temperature.
- **Consistent Measurement Accuracy:** Ensure precise temperature readings in the same spot for better reliability.
- **Casting Measurement Capability:** Chameleon Foundry has capability of measuring every mould accurately with seamless integration to the moulding line.

**Decrease Carbon Footprint:** Precise temperature measurements enhance process stability. It will also help to reduce scrap, and optimise energy consumption as well as eliminating paper tubes of the thermocouples. Less transportation will also reduce the carbon emission.

- **High Measurement Capability:** One coil can measure up to 6000 times.
- **Optimized Energy Consumption:** Maximize energy efficiency throughout the foundry process.

**Efficient Inventory Management:** Reduced logistical burden leads to improved inventory management.

### Standard features

#### Rugged, shop floor construction

- A robust wire feeder assembly designed for the shop floor
- A rugged control cabinet with armored interface cables

#### High visibility controls and displays

- The remote human machine interface (HMI) connects the operator with the system to take measurement on-demand

#### Reliable measurement technology

- As a leader in temperature measurement technology for molten metal, Heraeus Electro-Nite calibrates and tracks each coil for consistent accuracy

### Measurement Principle

To measure the temperature of liquid iron, we use a specialized optical fiber known as FIMT, or Fiber in Metal Tube. This fiber is wound onto a coil and placed inside the Chameleon Foundry.

- When the optical fiber is fed into the liquid, it transmits light from the molten metal to a pyrobox inside the coil.
- The pyrobox converts this light signal into an electrical signal, which is sent to a PC that calculates the temperature.
- The temperature reading is then displayed on a remote display, where an operator can initiate a measurement with just the click of a button.



FIMT, or Fiber in Metal Tube

## The system

The system consists of two primary components: the feeder unit and the control unit. PC and monitor setup are located inside the control room for user interaction.

### Feeder Unit

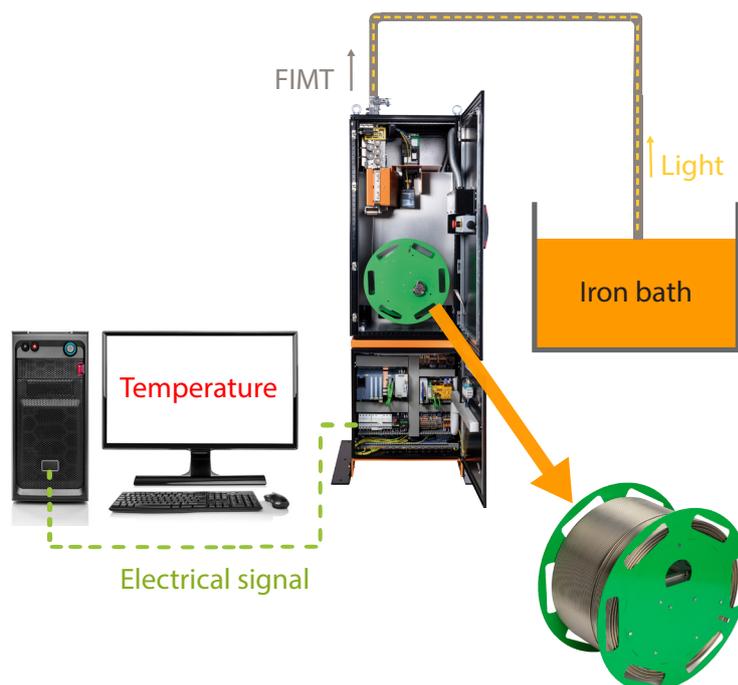
The feeder unit houses all the mechanical parts needed for measurement. Key components include the coil holder, feeder, and straightener.

The coil holder rotates to wind the wire onto the feeder. The feeder securely grips and feeds the wire into the molten iron. Meanwhile, the straightener guarantees that the wire maintains its straightness as it exits the guiding tube.

### Control Unit

The control unit, located below the feeder unit, contains the electronics to operate the system. Importantly, the feeder and control unit can be separated. This offers several advantages:

- Temperature Management: If the temperature near the feeder is too extreme, the control unit can be moved to a safer location.
- Height Flexibility: This design allows us to reduce the height of the system, which can be crucial in space-limited installation areas.
- Cost Efficiency: We can connect multiple feeder units to one control unit, significantly reducing the overall costs.



# Technical data

Item	Description
Measurement application	Temperature measurement on demand
Measurement channel	One analog input
Sample rate	600 samples/second
Measurement ranges	1300 - 1600°C
Display resolution	1°
Display units	°C or °F
Power supply	3x400VAC + N + PE / 50-60Hz
Weight instrument	370kg
Coil outer diameter	460mm
Coil depth	249mm
Max coil length	630m
Max coil weight	<25kg

