

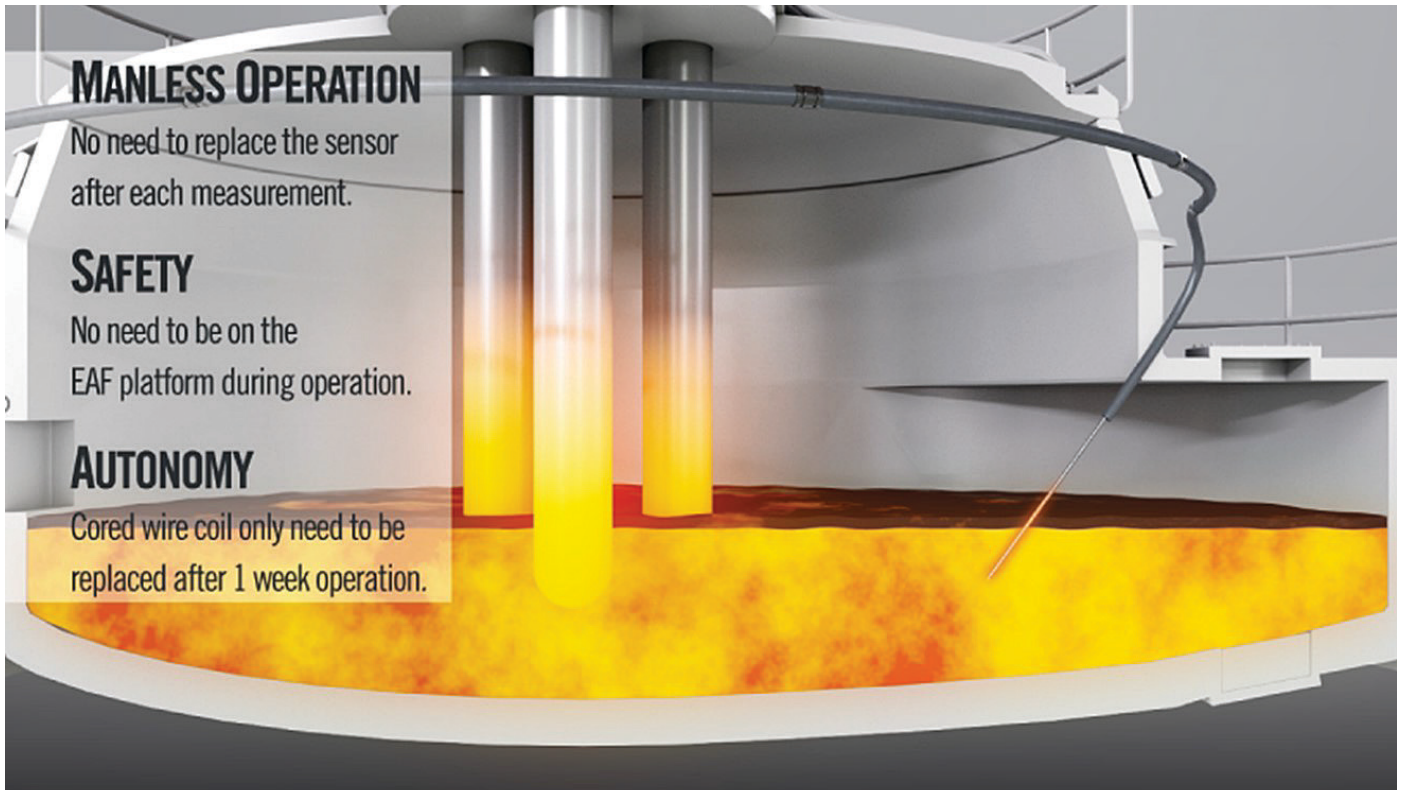
## CoreTemp

MAN-LESS, ON-DEMAND  
MEASUREMENT SYSTEM FOR THE  
ELECTRIC FURNACE



**Electro-Nite**

# CoreTemp



## Why use CoreTemp?

CoreTemp was developed to assist the electric furnace steelmaker to solve some fundamental safety and operations challenges:

- Reduce operator (people) exposure to molten metal by keeping personnel off the operating floor during temperature and level measurements
- Improve process management with more data available more rapidly than traditional measurement methods
- Save energy by keeping slag door closed, improving foamy slag retention
- Determine if and when all scrap is melted
- Detect un-melted scrap in sump area, avoiding delays from tap hole freezes
- Safely measure level and temperature of residual heel

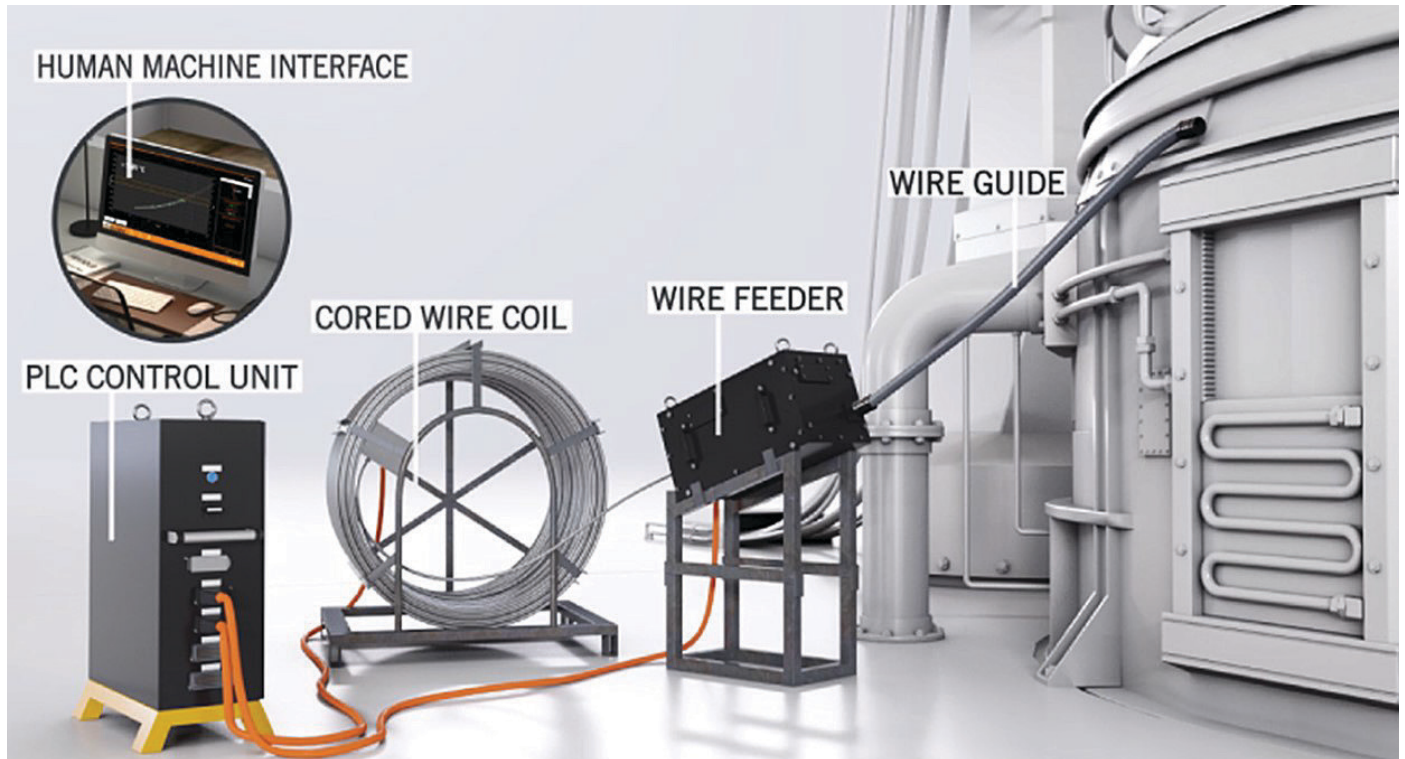
## Who can use CoreTemp?

CoreTemp has been implemented in AC and DC furnaces, in Consteel and bucket-charge EBT furnace systems. It is used by customers who strive to reduce exposure of personnel to molten metal and reduce operational costs through energy savings, refractory life improvements, and reduction of graphite electrode consumption. Additionally, it is capable of measuring metal temperature and level of steel in the furnace more safely than ever before, more frequently and at times in the process not previously possible.



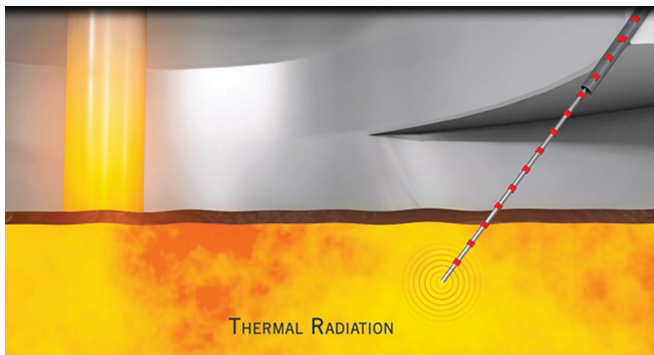
# CoreTemp

Man-less, On-demand measurement system for the electric furnace



## What is CoreTemp?

CoreTemp is a system that allows the electric furnace operator to measure temperature along with other valuable attributes of the furnace throughout the melting process. The innovative approach employs optical fiber technologies to measure thermal radiation along with wire-feeding technologies. Heraeus Electro-Nite, with their vast experience as the leader in highly accurate immersion temperature thermocouple technologies, has developed a strategy to obtain representative temperature that is more nimble, safer to use, and predictive in nature, integrating other furnace information the typical skilled operator uses in their furnace management strategy.



## Standard Features

### Rugged, Shop-Floor Construction

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

### Shop Floor Safety Designed In

- High capacity, individually calibrated, fiber optic coils capable of hundreds of measurements
- Coils will last for days contingent on furnace throughput, limiting reloading and on floor requirement

### Control Pulpit, High Visibility Controls and Display

- The remote human machine interface (HMI) connects the operator with the system to take measurements on-demand with an unmatched cycle time over existing measurement solutions at the electric furnace

### Reliable Measurement Technology

- As a leader in temperature measurement technology for molten metal, Heraeus Electro-Nite calibrates and tracks each coil system for consistent accuracy from one coil to the next every time
- Advanced algorithms for modeling electric furnace temperature and steel bath level



## Why is it important to increase measurement frequency?

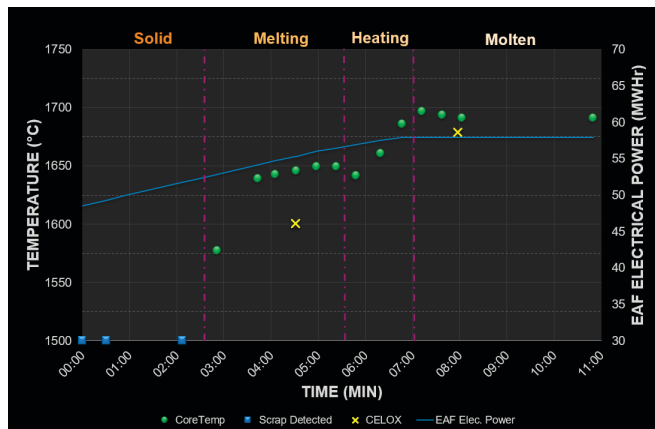
The cycle time for CoreTemp is 20 seconds while a typical manipulator is 60 to 120 seconds

Avoid super heated production cycles with rapid information for rapid decision making.

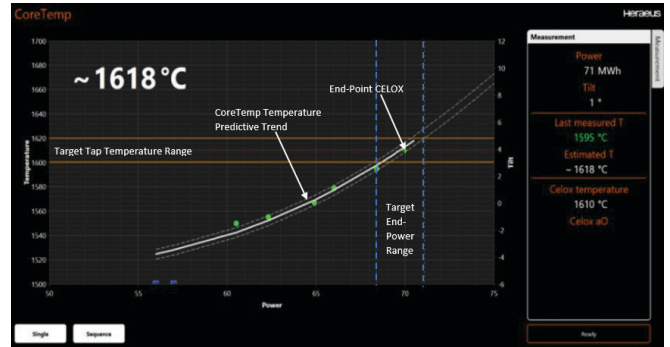
- Decrease energy consumption through lowering tap temperatures due to better control.
- CoreTemp's rapid measurement cycle enables the detection of melting/heating/molten phase transitions which can occur very rapidly and are easily missed with traditional temperature systems.

## How can CoreTemp influence electrode cost per ton?

Graphite electrodes are a considerable cost per ton of steel, produced in all electric furnace processes. CoreTemp provides additional information to the furnace operator who can incorporate into their decisions. The power-on time can be more closely managed and ideally reduced in-turn reducing the graphite electrode consumption per heat of steel produces in an electric furnace.

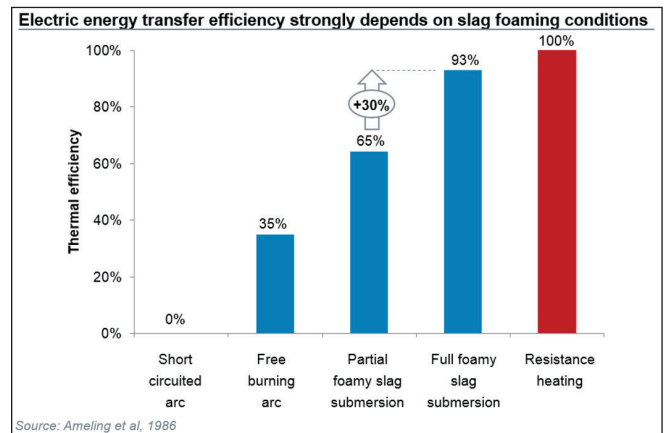


## Multiple measurement types for multiple benefits



Single measurements are to check if the bath is molten to begin the refinement phases of the process.

Sequence measurements are to establish heating rate, enabling the feature to determine target power off time and target tap temperature.



## Improving Foamy Slag Practice

The advantages of good foamy slag practices are well known and widely published. The implementation of CoreTemp allows the steelmaker to realize these benefits and decrease energy costs. In addition to reduced energy consumption, there can be additional resulting savings in refractory life and graphite electrode consumption.

