

## € Furnace Monitoring System

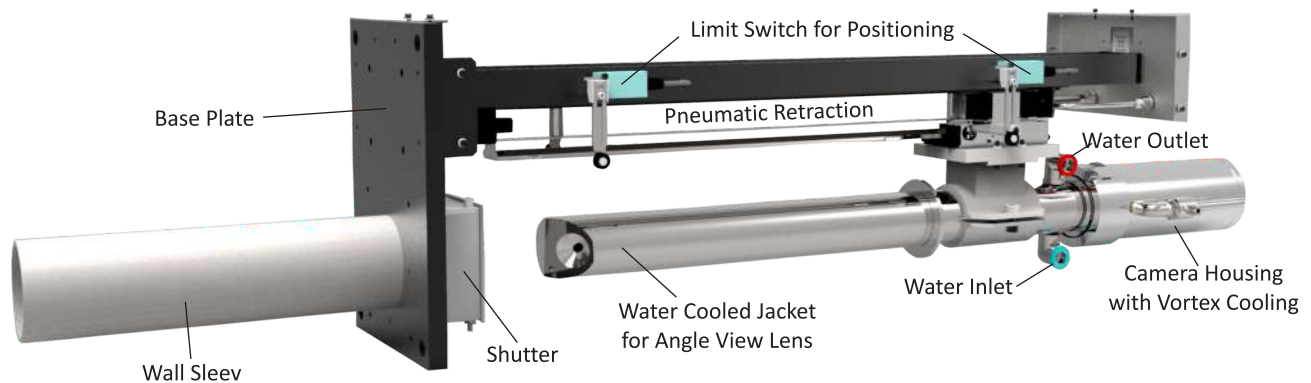
## TFV-750/1100 • TE-750/1100

High Temperature furnace monitoring system **AST TFV-750/1100, TE-750/1100** provides wide angle view of burner flames, material alignment & other process conditions in furnace, kiln, boiler, cooler, reheating furnace or other combustion chamber. The **AST TFV-750/1100, TE-750/1100** is mounted on wall of the furnace.

The system has auto-retraction & auto insertion which is regulated by control cabinet with PLC & pneumatic control system.

It uses special HD camera/thermal camera with high precision pin hole lens which is mounted inside stainless steel probe. The probe is equipped with vortex air & water cooling system that enables the system to work in high temperature environment & also continuous supply of air keeps the lens clean.

The camera is inserted through a spring-loaded shutter which opens with the force of camera probe & shuts the furnace opening when the probe retracts.



### Features

- Water cooled lens tube, Vortex cooled camera chamber
- Auto retraction and shutter
- Pneumatic cylinder
- Air Purge
- Control panel with pneumatic system
- Software Infraview & Input/Output module for Thermal camera
- Compatible with plant DCS(Thermal View)

### Control Panel with Pneumatic System

#### Components

- |                    |                         |
|--------------------|-------------------------|
| • PLC              | • Pressure Regulator    |
| • HMI              | • Solenoid valve        |
| • Air Filter       | • Flow Switch           |
| • Mist Separator   | • T/C to volt converter |
| • Pressure Switch  | • SMPS                  |
| • Speed Controller |                         |

#### PLC Logic Lock Points

The auto retraction system will work when any of the below conditions occur

- |                         |                            |
|-------------------------|----------------------------|
| • Temperature Increase  | • Water Flow rate Decrease |
| • Air Pressure Decrease | • Power Failure            |



## Technical Specifications

### Technical Data

Environment	Up to 1500°C
Cooling system	Vortex air cooling/water cooling
Transmission device	Pneumatic
Power AC	220V 100W /120W

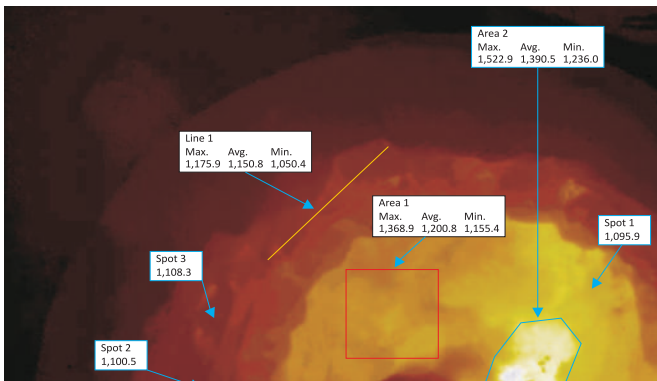
### Requirement of Cooling Water

Inlet pressure	1 ~ 7 Kg/cm <sup>2</sup>
Volume flow	0.2-1 m <sup>3</sup> /h

### Thermal Camera

#### Model

TE-750	Straight View Thermal Camera
TE-750/OV	Elbow View Thermal Camera
TE-1100	Straight View Thermal Camera



Temperature Range	700 to 1800 deg C
Optional Resolution	768 X 576 Pixels
Frame Rate	25 Hz
Detector	High dynamic CMOS
Spectral Range	0.85 to 1.1 micro meter
Thermal Sensitivity	<1K(700 deg C[<1292 deg F], <2k (1000 deg C)
Video Format for Saving	MPEG-4, AVI
Image Format for Saving	BMP/JPG
Analog Output	4 channel analog current output
Digital Input/Output	4 active-high, buffered input / 4 open source, Mosfet outputs
Interface	Ethernet/ USB
Protocol	GIGE for ethernet, Proprietary for USB
Shutter	Shutter less

### Requirement of Compressed Air

Pressure	2 ~ 7 Kg/cm <sup>2</sup>
Volume Flow	5 m <sup>3</sup> /h
Temperature	<35°C
Quality	Clean, Dust, Oil & Moisture free air

### Visual Camera

#### Model

TFV-750	Straight View Visual Camera
TFV-750/OV	Elbow View Visual Camera
TFV-1100	Straight View Visual Camera

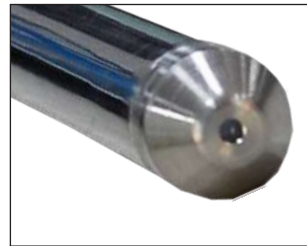


CCD sensor	Color SONY 1/3 " Super HAD CCD
TV Line	Black and white 650 lines
Lens	5 times manual/electric zoom lens
OSD	menu 5 buttons remote menu adjustable
Illumination	0.005Lux @F2.0
Image	Manual adjustable
Scanning System	2:1 Interlace
SNR	More than 48dB
Scanning Frequency(H)	PAL : 15.625 KHz / NTSC : 15.734KHz
Scanning Frequency(V)	PAL : 50Hz / NTSC : 59.94Hz
Synchronization	Inner synchronization
Gamma Coefficient	γ = 0.45
Electric Shutter	Electric shutter EI(1/50~1/100, 000sec)
Gain Control	Auto/manual adjustable
Color to Black	Manual adjustable
Video Output	Composite 1 [Vp-p] 75(Ω)
Power	DC12V (±10%)
Power Consumption	Less than 120mA
Working Temperature	-10°C ~ +70°C (Humidity : 10%RH ~ 60%RH)
Storage Temperature	-20°C ~ +60°C (Humidity : 10%RH ~ 60%RH)

## Technical Specifications

### Pinhole Lens

Lens Length	820 mm & 1100 mm
Angle of View	Straight view 0°, Elbow view 45° & 60°
Field of View	HxVxD 67°, 56°, 81°
Mount	CS
Focus	Manual Adjustable
Elbow Lens	Lens with 45° & 60°



Straight View

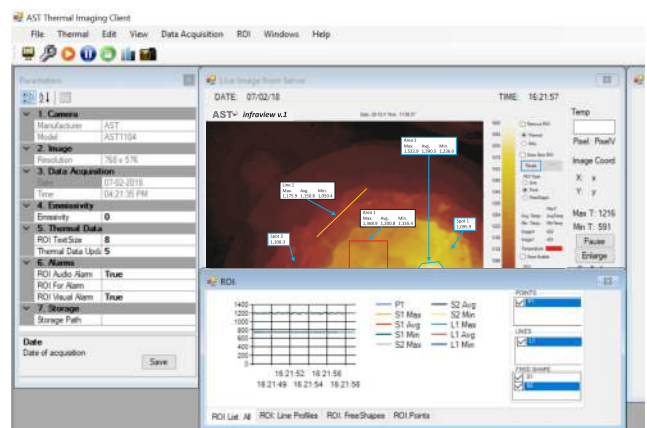
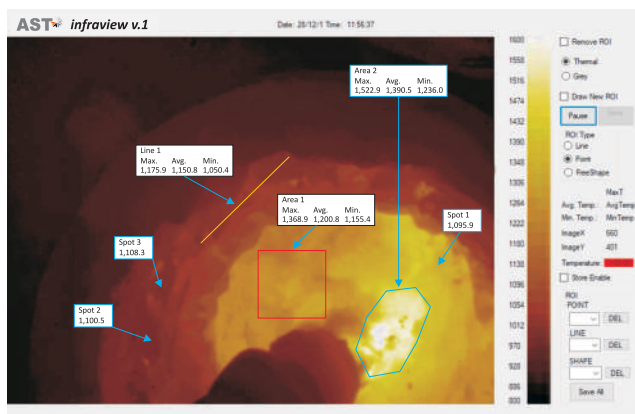


Angle View



## InfraView (For Thermal View System)

AST INFRAVIEW Software allows you to control the camera and record, view, manipulate and store the captured video / image as well as measured temperature data. This real time software allows simple and fast parameterization for documentation of the temperature data optimizing process control. The modular Windows software INFRAVIEW is customizable as per requirement.



### Special Features

- Configurable ROI's : point, line, free shape
- Histogram and isotherm visualization
- Hot and cold spot detection
- Color pallet scaling
- Trend charts
- Alarm output
- Video and Image export
- Server client configuration



## I/O Module (For Thermal View System)

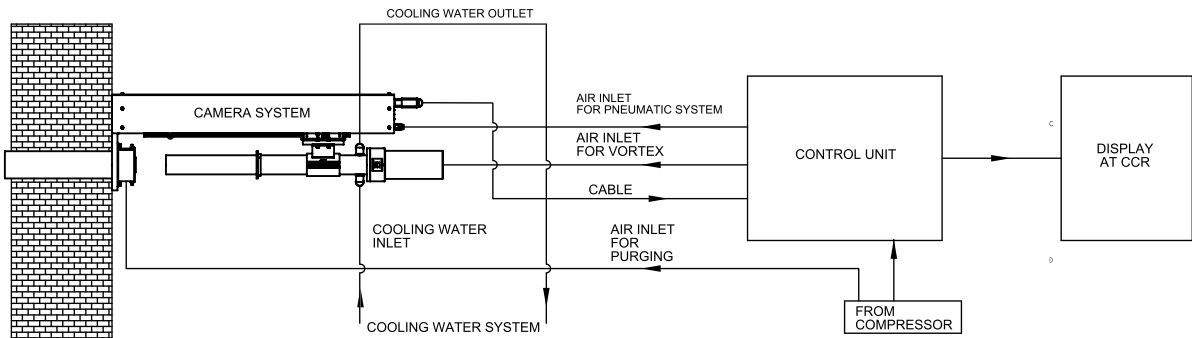
- Multi Function, Multi-channel module
- Dual ethernet 10/100 ports with built-int switch enables daisy-chain networking
- Four analog output (4-20mA) channels (16 bit DACs) to drive remote instruments, controllers, recorders
- Four discrete Input/Output Channels
- Slim 22.5 mm housing with pluggable terminals
- Din-rail mounting



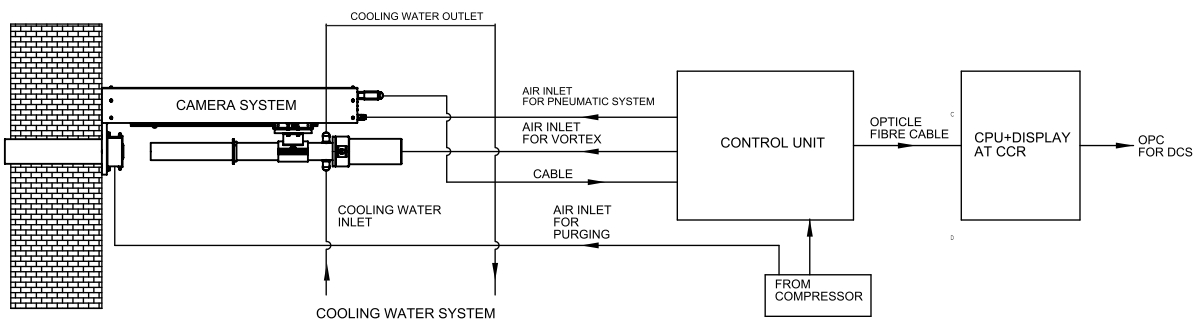
We measure accurate temperature in extreme conditions

## Furnace Camera System With Retraction Device

**Pneumatic Retraction Mechanism** : - This includes guide rail, pneumatic rod less cylinder, mounting block. This system inserts / retracts the camera system as per the logic input from the PLC. It also has rugged 10 pin two part connector for connection between control unit and camera system

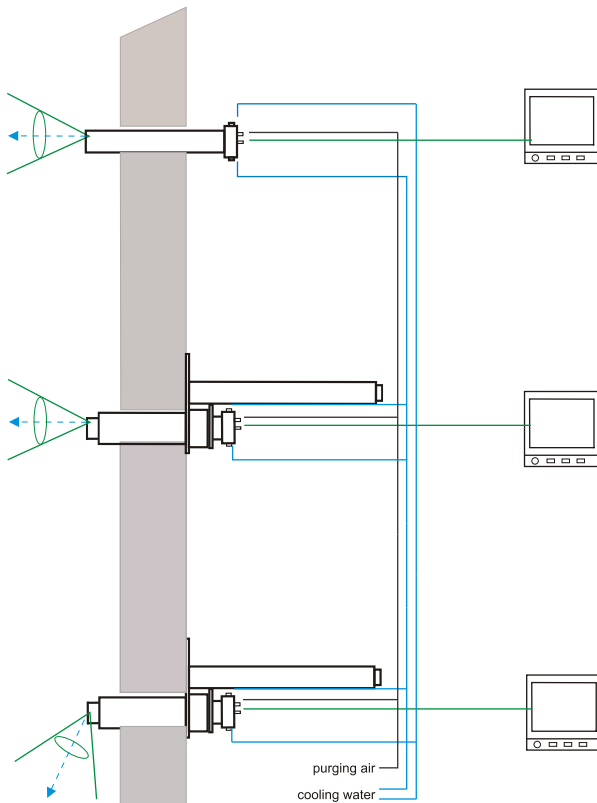


**Normal Camera System**



**Thermal Camera System**

## Different Methods, Designs & System Performance of Water Cooled Camera



### Furnace and Combustion Surveillance

Different methods, design of water cooled camera housing and system performance

#### Type : Probe camera, fix installation/straight view

- Water cooled furnace probe camera with pin hole view
- Fix installation mode of probe camera
- Viewing aperture of probe appr. 1, 5mm diameter
- Color camera with special furnace lenses
- Various lenses with different angle of view
- Temperature inside furnace up-to appr. 800°C

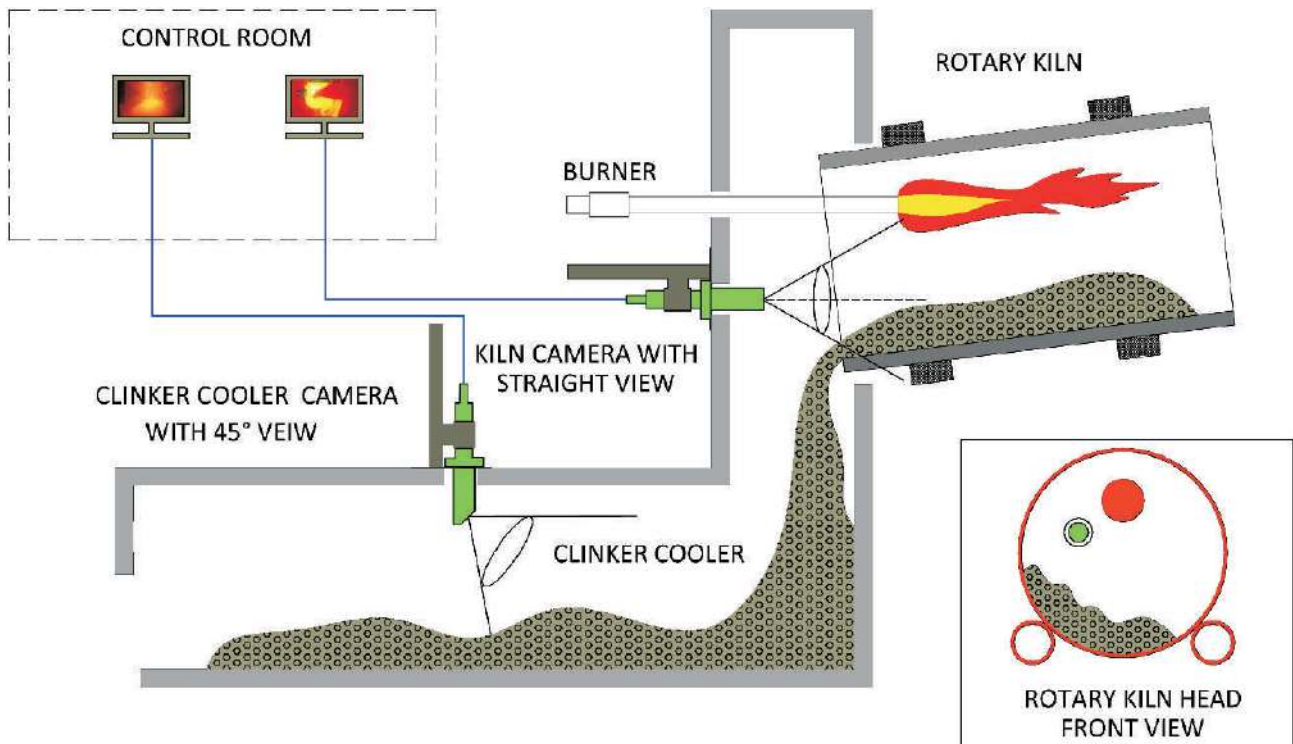
#### Type : Camera System, Straight View Direction with Auto Retraction

- Furnace camera system with water cooled probe camera, straight view
- With retraction device for motion of the probe camera to furnace chamber
- Viewing aperture of probe appr. 1, 5mm diameter
- Color camera with special furnace lenses
- Various lenses with different angle of view available
- Temperature inside furnace up-to appr. 2000°C

#### Type : Camera System, Elbow view Direction

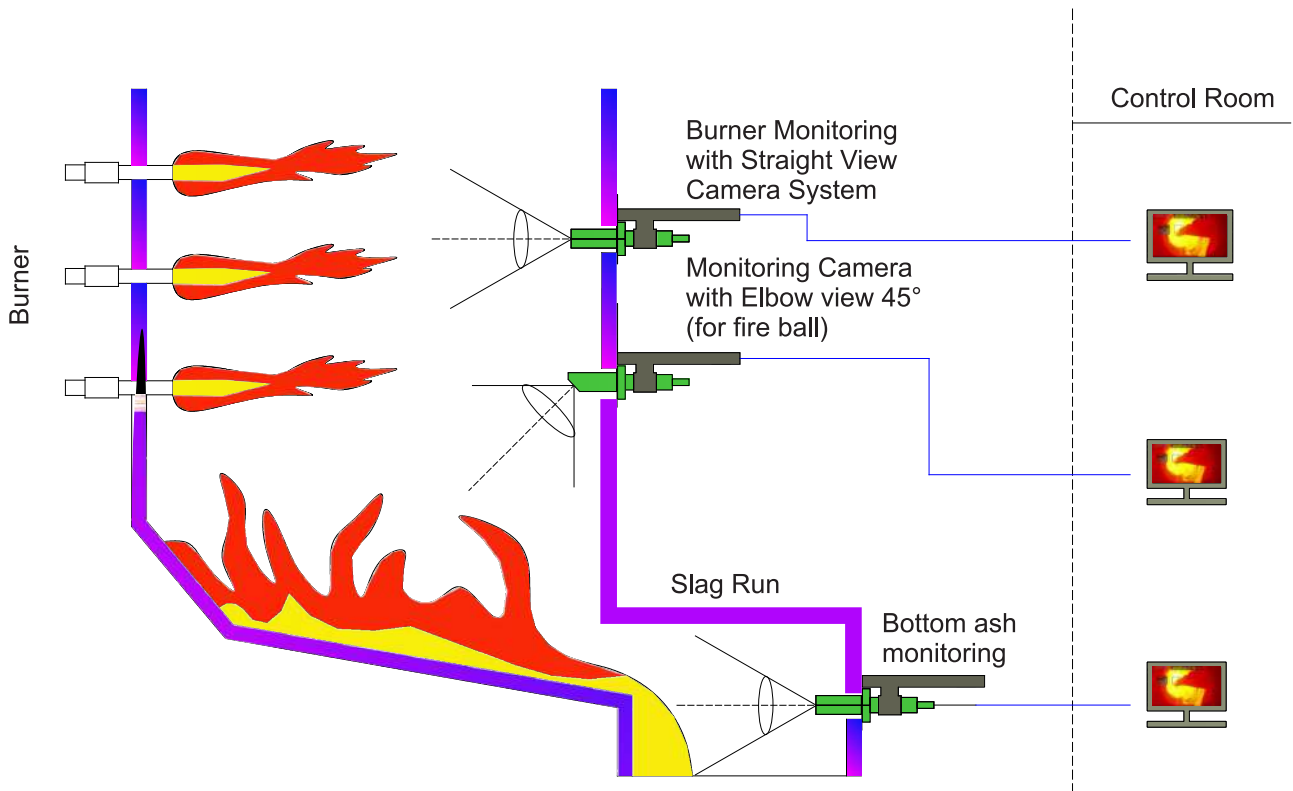
- Furnace camera system with water cooled probe camera with elbow view
- With retraction device for motion of the probe camera to furnace chamber
- Viewing aperture of probe, appr. 1, 5mm diameter
- Color camera with special furnace lens
- Lense with 45° elbow view
- Temperature inside furnace up-to appr. 2000°C

Cement Industry



Power Industry

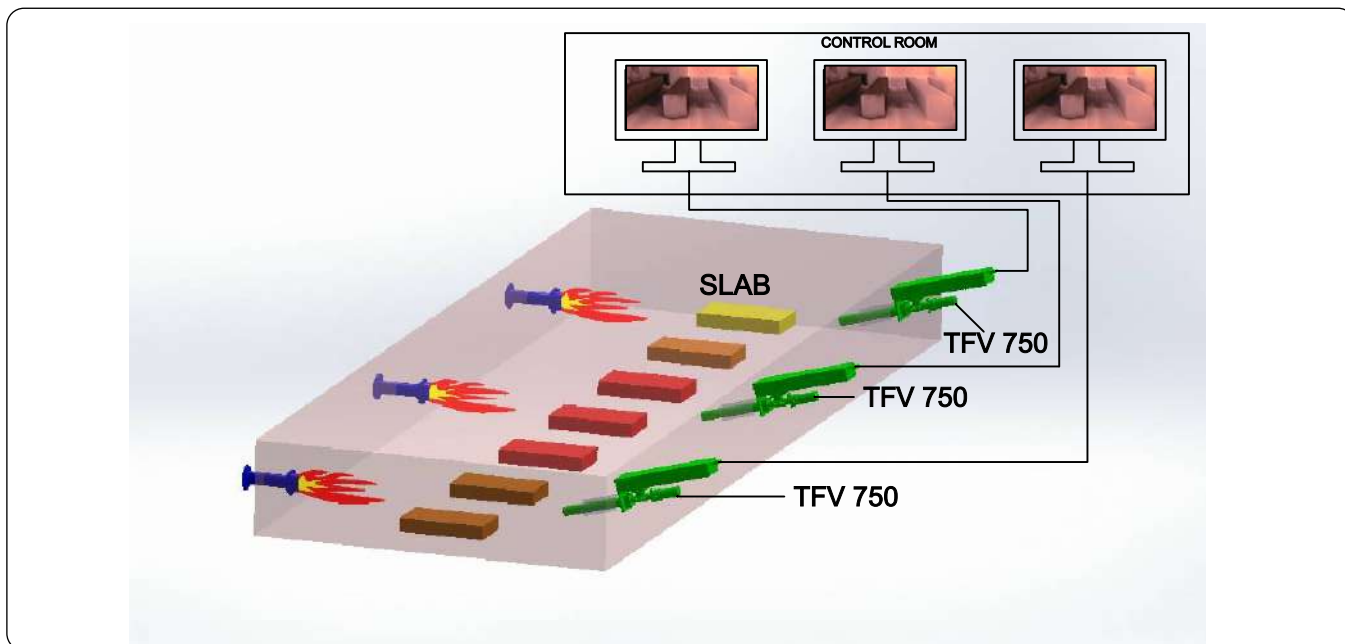
Monitoring of Burner, Grante Firing and Slag Run



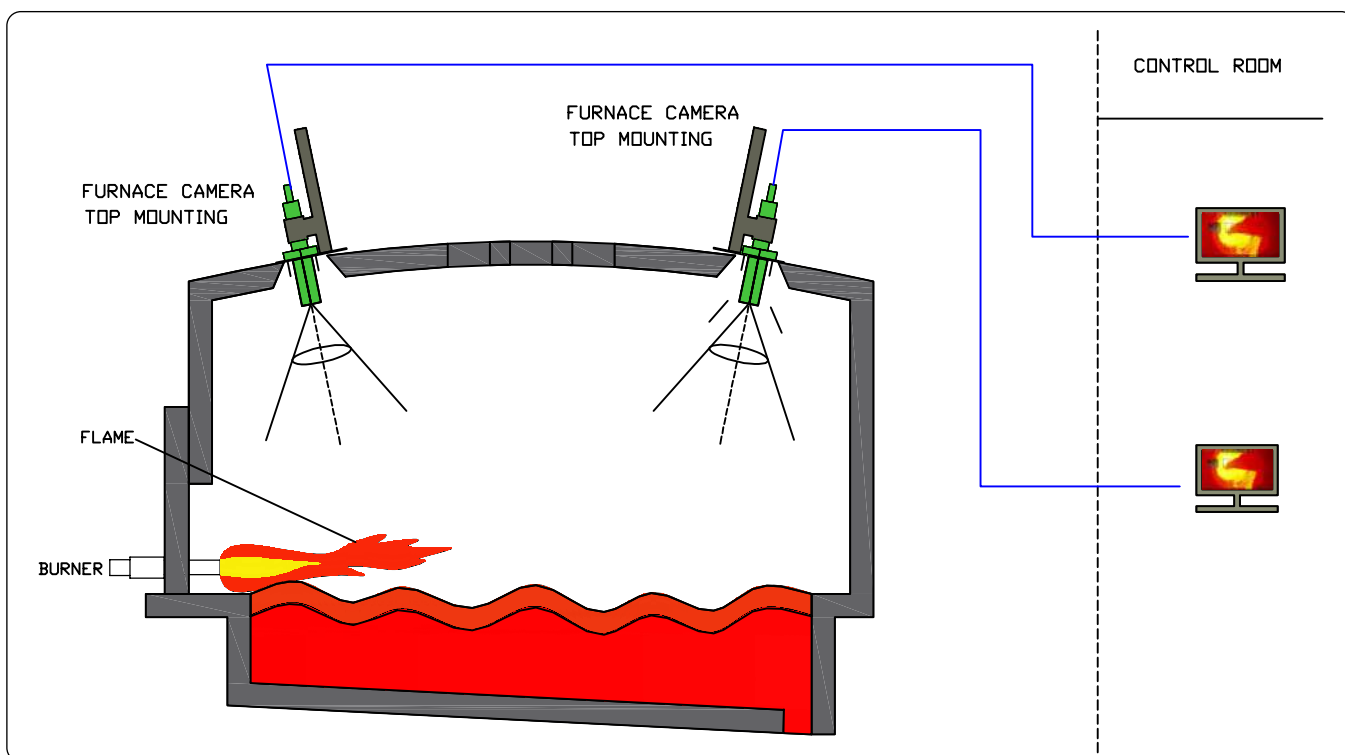


Steel Industry

Steel Reheating Furnace



Glass Industry



188A, B-169 (Part), B-188 & B-189 (A),  
Road No.-5, M.I.A., Madri, Udaipur  
(Rajasthan.) INDIA 313 003  
Ph.: +91-294-3057795, +91-294-3057796  
E-mail: sales@accuratesensors.com

