



# SLAG DETECTION SYSTEM

*Continuous Thermal Monitoring to Minimize Slag Carry-Over in Steel Production*



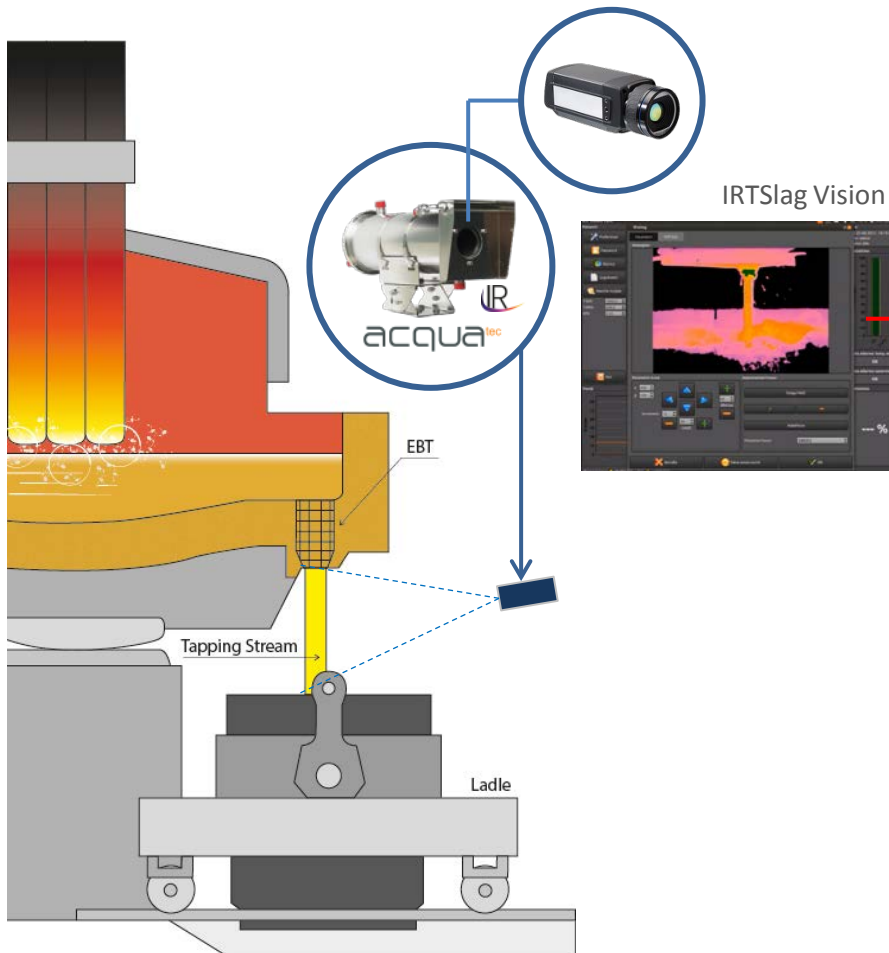
# SLAG DETECTION SYSTEM

When liquid steel is tapped from a basic oxygen furnace (BOF) or electric arc furnace (EAF), **it is essential to minimize the quantity of slag carried over into the ladle.**

The innovative slag detection system allows the **highest detection reliability** using thermal imaging cameras protected inside industrial cooled housings and a dedicated software.



## SLAG DETECTION SYSTEM'S COMPONENTS



Our basic system includes the following components:

- **IR camera** and lens inside **industrial cooled housing**;
- Industrial image processing unit;
- **Fiber optic signal transmission** for noise free images;
- **Basic display software**
- **I/O interface module**



## KEY FEATURES

- **Automatic stream identification and tracking** - accurately identifies the stream and reduces background interference
- **Alarms** generated by the system can be used **for directly stop the tap** before the slag is carried over or give alarm to operator
  - **Fully automatic operation**
  - **Reliable alarm** independent of the operator
  - **Improved connectivity** through the use of Ethernet





## KEY BENEFITS

- **Improved production yield**
- Lower slag content improving **steel quality**
- Lower maintenance on BOF/ EAF vessel
- **Reduced energy costs**



# IRT SLAG VISION

Dedicated Software for furnace/ladle casting management

The graphic user interface allows complete control of the process being displayed in real time

- Thermal image in real time



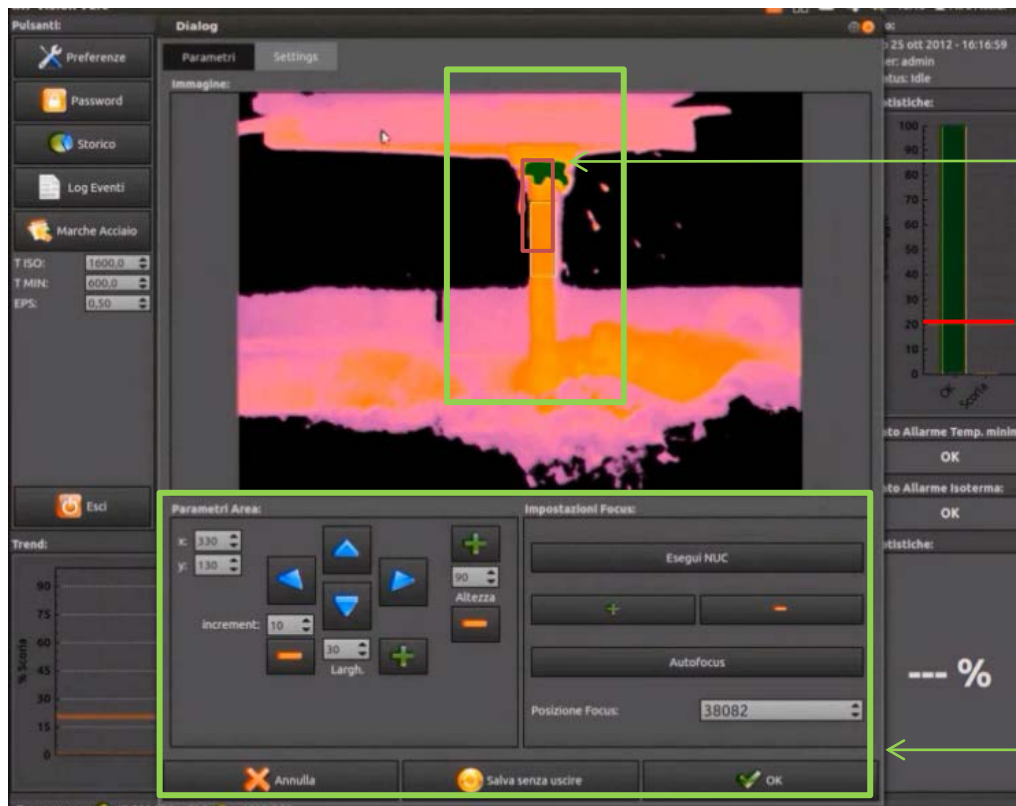
- Alarm level window:

- Steel and slag percentages
- Alarm level
- Alarm status

- Display Graphs:

A bar or line graph displays the steel and slag percentage versus time.

# IRT SLAG VISION: INTERFACE

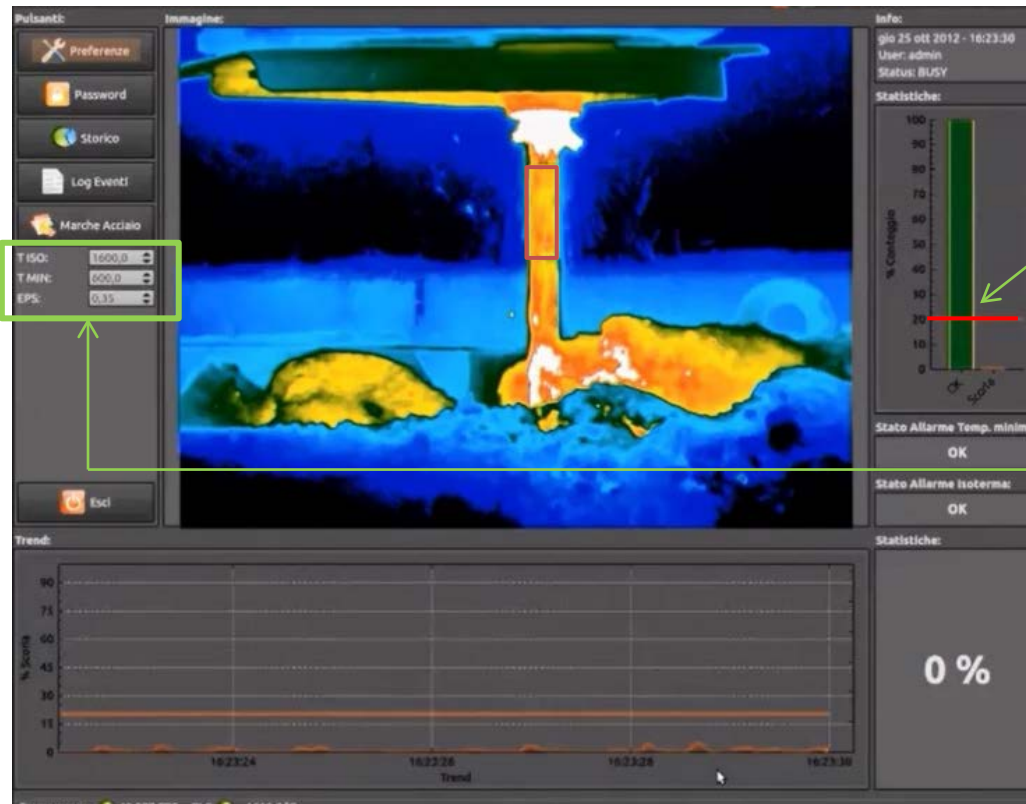


- Automatic Stream Tracking:

Automatically identifies and tracks the stream position within the thermal scene to reduce the effect of background interference.

Settings window for control of camera focus, size and location area for calculating the percentage of steel/slag.

# IRT SLAG VISION: INTERFACE

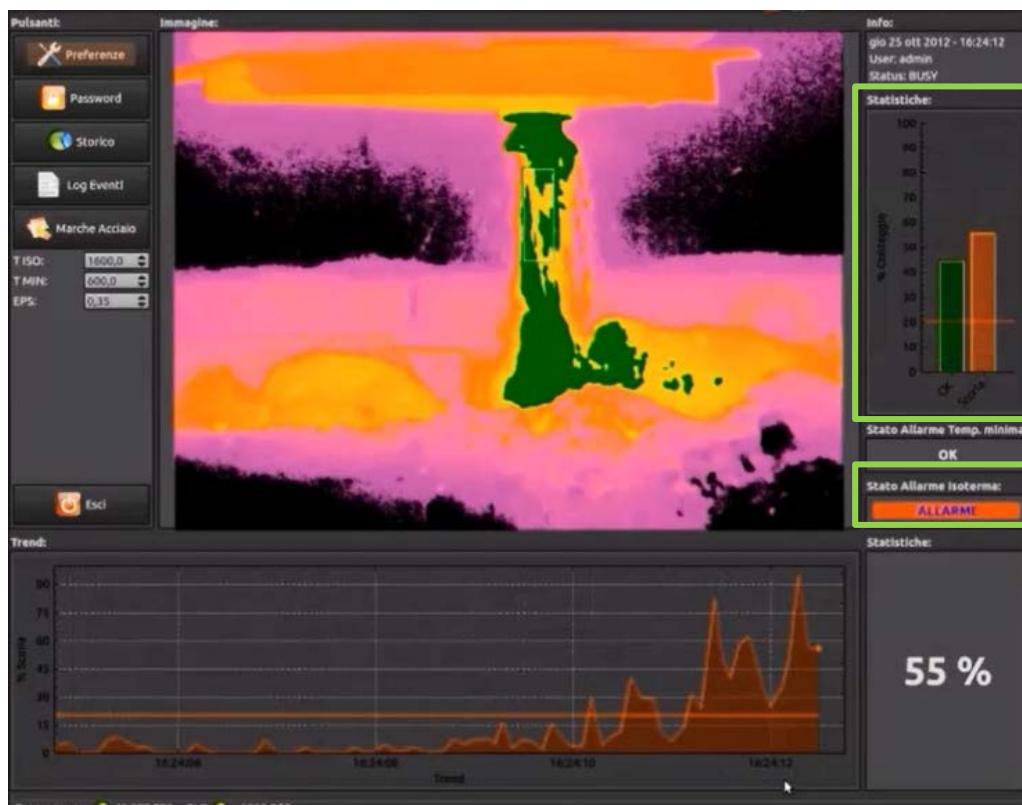


The red line set the alarm threshold in percentage

“T ISO” indicates alarm threshold in temperature, which is set manually or automatically loaded by selecting “Type of Steel”



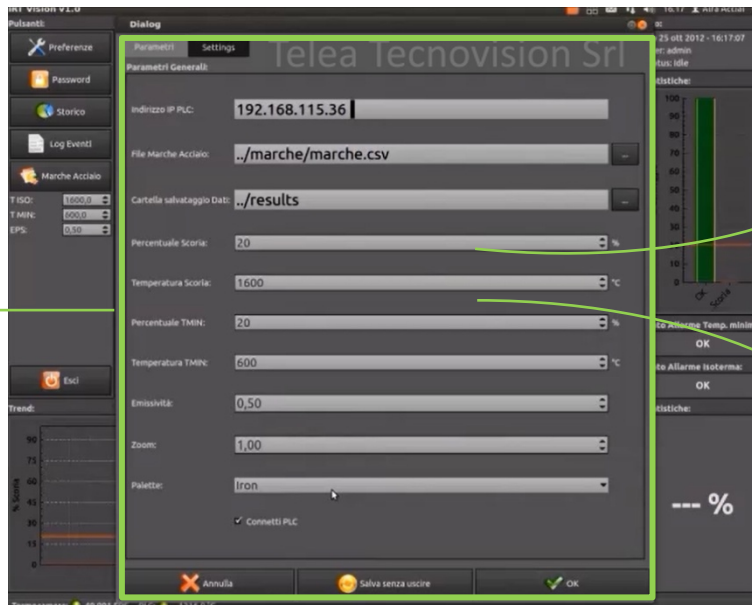
## IRT SLAG VISION: INTERFACE



Two bars show constantly the level of steel (green) and slag (orange)

Alarm signal activated if the preset threshold is exceeded

# IRT SLAG VISION: INTERFACE



Overlay virtual keyboard

- Setting pages:

You can load the “Type of Steel”, set the temperature alarm, the percentage slag, the saving folder, emissivity, zoom and type palette colours, variables that can be provided directly by the PLC.