ingenero 360AI

furnaceX360

Predictive decision support for the olefin furnace unit

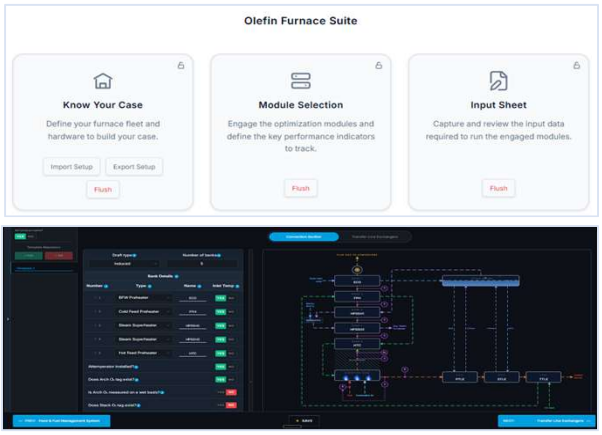
MODULE OF THE INGENEROX360 AI SUITE

PRODUCT OVERVIEW

FurnaceX360 is a decision-support application for the Olefin Unit. Domain and ML agents are configured on the unit's own historian and Sensor tag data, covering the Optimization – Overall yield maximization and furnace run length optimization along with the forecast, Furnace critical KPIs calculation, Draft & Damper Optimization, Burner performance optimization, Tube Plugging probability, TLE & convection bank performances and Decoke effectiveness improvement. Output reaches the process engineer as ranked, quantified actions, each reported against the parameter that caused it. Every model agent is configured, validated and commissioned per site by Ingenero process engineers, so the deployment reflects that unit's configuration and operating envelope.

01 Unit Configuration

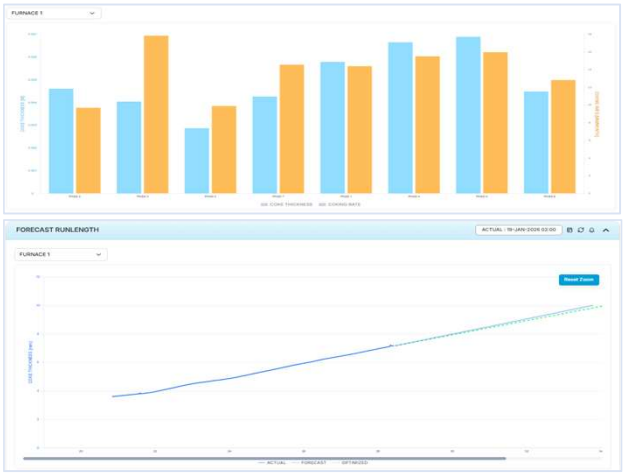
Shown: Olefin furnace suite – interactive configuration, modules and sensor entry



Know Your Case	*Configure your furnaces from feed type, radiation, convection, burner and coils*
Module Selection	*After configuring all furnaces, select the modules – Domain & AI agents*
Input Sheet	*Based on configuration & Module selection – relevant sensor info needs to be filled*
Interactive Config	*Radiation, Convection, Feed header and Saturator interactive PFD available*

02 Plant Data and Model Execution

Shown: coke thickness & coking model, run length forecast current vs optimum.

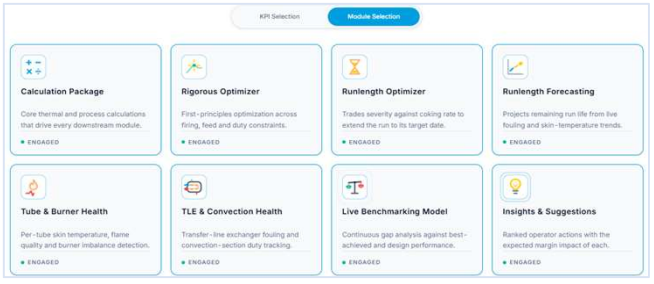


Inputs	*Sensor tag entry along with design tag values with configuration details*
Processing	*tag validation, steady state framing and furnace run identification*
Outputs	*predicted KPIs, ranked actionable with cause, trends, alerts*

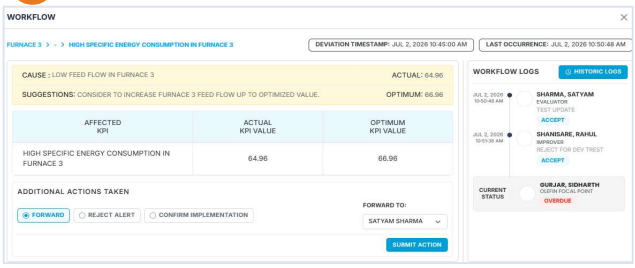
03 AI-Powered Model Agent Suite

Agent/Module selection shared along with detailing of the olefin specific details

Thermal & Fuel Efficiency	*Helps to compare the energy efficiency among the furnaces.*
Environment KPIs	*Estimate thermal and fuel NOx and warns for higher limit breach.*
Decoke Efficiency	*Provide efficient decoke tracking and suggestions for improvement*
Tube Plugging	*Estimates plugged tubes and warns early for the corrective action.*
Run Length Forecasting	*Forecasted value helps to do decoke scheduling along with biasing option*
Feed Planner	*Helps to plan feed based on future feed availability*
Fouling Precursor	*Soft sensor estimates precursors that cause fouling in CGC/Quench loops*



04 Opportunity and Operator Actions





+1-2%	**Overall Ethylene Yield** from overall furnace system optimization	**+10%**	**Furnace run length** optimum feed and COT adjustment	**5–8%**	**Decoke effectiveness** pass level decoke optimization wrt burning

Basis: optimization takes care of constraint/limitation of not only at furnace level but also downstream section, suggestions take care of step change which ensures smooth implementation.

05 Platform

Historian connectivity plug and play with leading plant historians	**Simulation integration** third party simulators integrate without custom work	**Daily reporting** downloadable daily reports with interactive trends	**Gen AI assistant** answers plant questions in the operating workflow	**Build your own dashboard** engineers build the views their unit needs

DELIVERY
Configured, validated and commissioned by Ingenero process engineers.

FLEXIBILITY
Any crude slate; selectable KPI set; selectable Virtual analyzers

SCALE
Repeat sites reuse the configuration, with no/minimal rework per plant.

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