CokerX360

Predictive decision support for the delayed coking unit

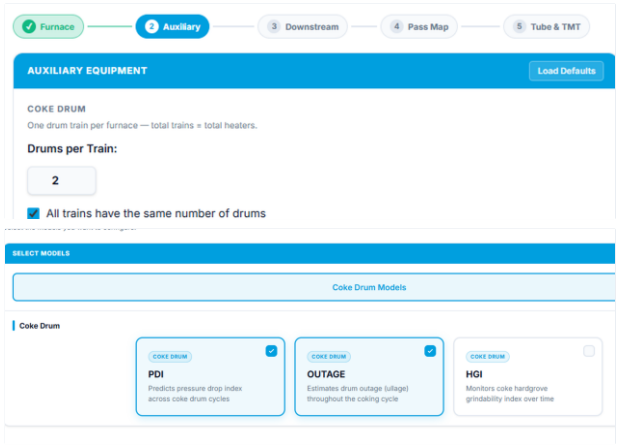
MODULE OF THE INGENEROX360 AI SUITE

PRODUCT OVERVIEW

CokerX360 is a decision-support application for the delayed coking unit. Domain and ML agents are configured on the unit's own historian and DCS tag data, covering heater fouling, coke drum cycle behaviour, rotating equipment health, light ends fractionation and unit energy. Outputs reach 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 geometry, crude slate and operating envelope.

01 Unit Configuration

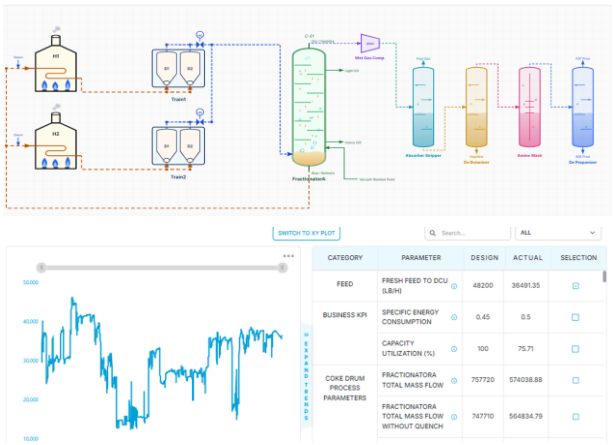
Shown: equipment configuration, then model selection against the assets.



Asset hierarchy	*furnace, auxiliary, downstream units, pass map, tube and TMT*
Coke drum train	*drums per train, uniformity, fractionator and reboiler count*
Heater geometry	*tube grouping, arrangement and burner type, for each heater*
Operating modes	*normal, decoking and hot standby; KPIs re-evaluated per asset*

02 Plant Data and Model Execution

Shown: the configured unit as a process flow, and tag trends vs design.



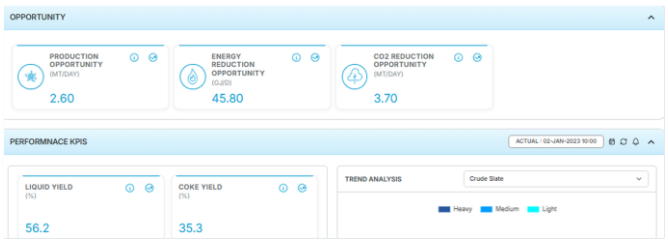
Inputs	*TMT and pass flows, COT, feed rate and API, slate, drum, quench*
Processing	*tag validation, steady state framing and cycle segmentation*
Outputs	*predicted KPIs, ranked actionables with cause, trends, alerts*

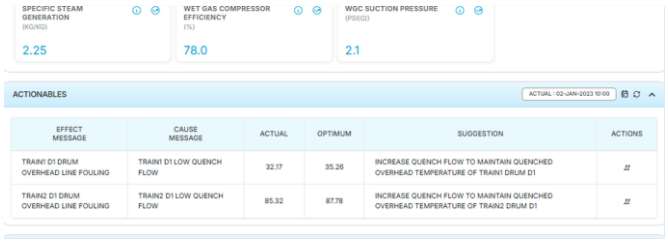
03 AI-Powered Model Agent Suite

A site enables only those its assets and available data support.

Clean TMT	*Predicts clean TMT baseline and tracks extent of coke deposition*
Run Length	*Extends run length through early feed and COT adjustments.*
Spalling Efficiency	*Provide efficient spalling tracking and suggests for improvement*
Drum Outage	*Estimates coke height and warns early of foam over/coke carryover.*
Overhead Line Fouling	*Predicts fouling and suggests optimized quench rate improving yield*
Coke HGI	*Predicts HGI based on crude slate, feed API and operating conditions.*
Coke Drum Reliability	*Outlier detection identifies process anomalies and flags potential failures.*
Compressor Reliability	*Outlier detection for tracking of compressor reliability.*
Light Ends Fractionation	*Benchmarks column performance against design and historical best.*
Controller Monitoring	*Tracks control performance and ranks tuning gaps.*
Pre-Heat Train Fouling	*Monitors exchanger fouling and suggests action*
Energy Optimization	*Targets unit energy use against throughput and yield.*

04 Opportunity and Operator Actions





+3%	**Potential production increase** from optimized run length & efficient spalling	**+8%**	**Furnace run length** optimum feed and COT adjustment	**5–8%**	**Spalling effectiveness** spall timing on bottom TMT recovery

Basis: liquid yield, coke yield, fractionator recovery efficiency, specific steam generation and wet gas compressor efficiency.

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 assemble 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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