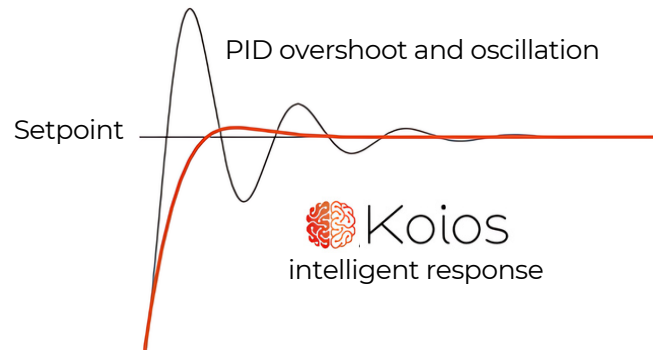


Better Inferencing for Industrial Controls

IMPROVE PROCESS EFFICIENCY

Multi-Site Energy Cost Savings ROI within 2 Months

Refrigeration involves cycling compressors on and off to maintain a set temperature. The goal is to minimize energy usage by running the compressors as little as possible while maintaining temperature. Ai-OPs deployed time series forecasting and Deep Reinforcement Learning (DRL) models that stabilize excessive compressor cycling.



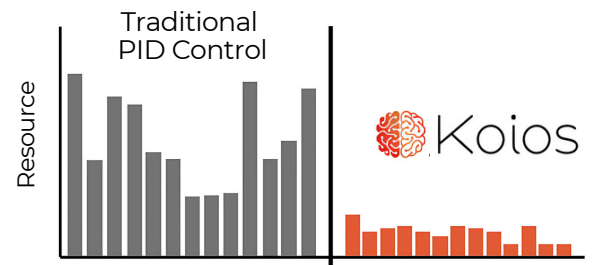
CONSERVE RESOURCES

346 tons of Carbon Saved Annually ROI in <6 months

Oil and gas refineries apply a process called Hydrotreating that reacts H₂ gas with fuels to remove sulfur. The amount of H₂ injected into the reaction vessel is directly affected by several downstream process variables through automated control loops.

Ai-OPs deployed time series forecasting and Deep Reinforcement Learning (DRL) models to stabilize and reduce H₂ consumption by adding predictive capability to the control loop.

Reduced Resource Consumption

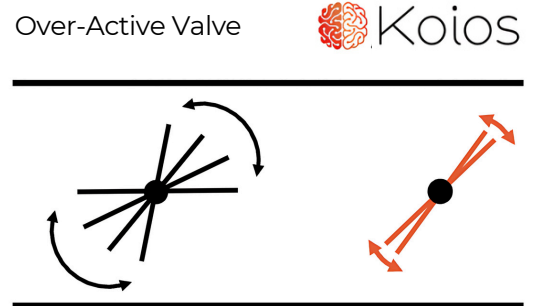


EXPAND EQUIPMENT LIFE

72% reduction in valve movement 44% reduction in controls settings errors

Surge drums collect excess liquids in processes where upstream production rate may exceed downstream usages, effectively normalizing liquid flows across complex multi-stage processes.

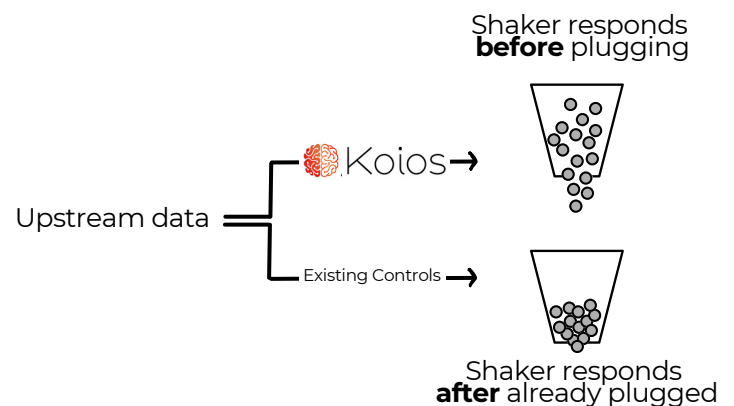
Ai-OPs deployed time series forecasting and Deep Reinforcement Learning (DRL) models to address instability and excessive cycling of a surge drum feed valve.

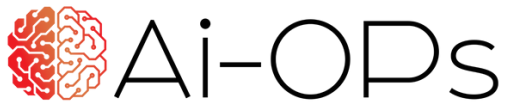


IMPACT HEALTH AND SAFETY

Preventing costly bin plugging events

Air Classifying Mills grind hard materials and classify the products according to granule size. Depending on diversity of feed material, feed rate, and moisture content the mills are subject to plugging. Ai-OPs deployed anomaly detection models that use upstream data to direct closed-loop controls to predict and prevent impending plugging events.





What is Ai-OPs?

Ai-OPs is a software solutions provider founded by process controls experts that integrates AI into existing control systems, delivering performance optimization, efficiency gains, and cost savings. Ai-OPs provides the Koios software enabling the integration and management of AI models completely on-premises and without vendor constraints. Key AI capabilities include anomaly detection, time series forecasting, soft sensors, and autonomous control loops powered by Deep Reinforcement Learning (DRL).

Control Strategies Comparison

The Koios software aims to empower your control systems using AI without the need to modify or replace your existing approach. Koios software runs alongside your existing controls and allows you to seamlessly transfer between AI control and existing controls without disruption.

AI vs Traditional Controls (PID)

Traditional control loops are reactive, limited to a single input/output, and can only chase a setpoint. Koios software models are predictive, can consider multiple inputs/outputs, can capture complex non-linear relationships between controls settings and process parameters, and can achieve optimized process maintenance rather than just setpoint maintenance.

AI vs Advanced Controls (APC)

While advanced controls are well suited for structured and predictable environments, they most often require significant up-front process modeling efforts and retuning when conditions change. Koios software strategies are developed without the requirement for complex process models and are robust to changing conditions without disruptive retuning procedures, all at a fraction of the cost.

Why use AI for Process Control?

AI is for those who have sub-optimal processes and want to increase process efficiency, save energy, minimize upsets, decrease downtime, save on maintenance costs, increase safety, decrease resource waste, boost throughput and margins, and/or future proof your process controls.

Koios Deployment

Koios software is installed adjacent to your existing controls system on hardware of your choosing. It is lightweight and requires very little processing power and memory. Koios software ideally communicates with controls systems via OPC-UA or Ethernet IP but can be adapted to a wide variety of protocols.

FAQs

IS KOIOS SOFTWARE LIKE CHATGPT?

No, Koios software enables AI that is in a different category than ChatGPT. The AI models we use for process control consist of neural networks trained through Deep Reinforcement Learning (DRL) that can observe process data and make optimized controls decisions. It is not a Large Language Model (LLM).

HOW DO I ENABLE AI IN MY PROCESS?

Koios software is integrated into controls systems as another option alongside manual control and existing automatic controls. A button to toggle AI mode on and off can be added to your existing graphics and/or faceplates.

MANUAL

AUTO

AIOP

HOW DOES AI HANDLE SUDDEN, UNPLANNED EVENTS?

Koios software anticipates and adapts to process changes. If conditions fall outside a model's scope, your existing controls will seamlessly take over. Safety and uptime are our top priorities.

IS THE AI INTENDED TO REPLACE ENGINEERS OR OPERATORS?

No, it is designed to assist engineers and operators, not replace them. Our goal is to enhance their ability to apply their expertise.

ARE KOIOS MODELS PROPRIETARY?

The customer is the sole owner of all AI models that we deliver. The Koios platform is even designed to enable customers to create and deploy models of their own.

DO I NEED TO BE AN AI EXPERT?

No, we offer model-building services and training on how to use the models. If you have experience with AI we have extensive documentation and offer many levels of training on how to build and deploy your own models.

HOW LONG WILL AN INITIAL PILOT TAKE?

Depending on the specific use case, an end-to-end pilot can be completed in as little as three months.

On-Premises, closed-loop control enhanced by Koios Software

