

**REL**



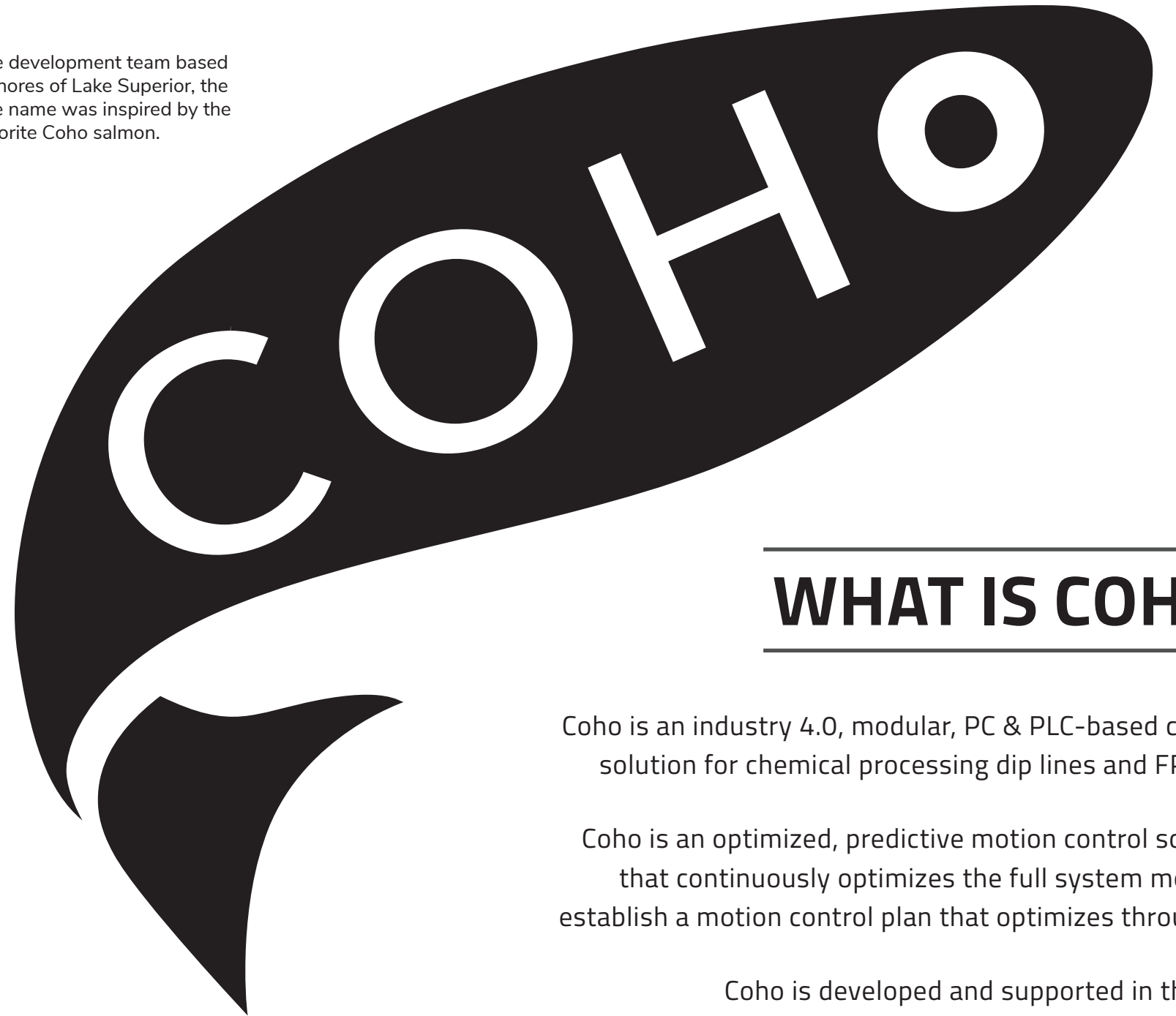
**PROCESS CONTROL**





#### Origin

With the development team based on the shores of Lake Superior, the software name was inspired by the local favorite Coho salmon.



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## WHAT IS COHO?

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Coho is an industry 4.0, modular, PC & PLC-based controls solution for chemical processing dip lines and FPI lines.

Coho is an optimized, predictive motion control software that continuously optimizes the full system model, to establish a motion control plan that optimizes throughput.

Coho is developed and supported in the USA.



## COHO SPECIAL SAUCE

**The sauce is the algorithm.** Each and every time a carrier/part is added to the line, Coho will consider millions of potential control plans, and downselect to execute the process based on constraints set up in the run recipe.

Coho is built with a Data First approach, providing unprecedented run history. Every input to the line is logged.

UI can be run on traditional HMI, iPad, PC, allowing for wireless line control. This is useful for running or jogging the line.

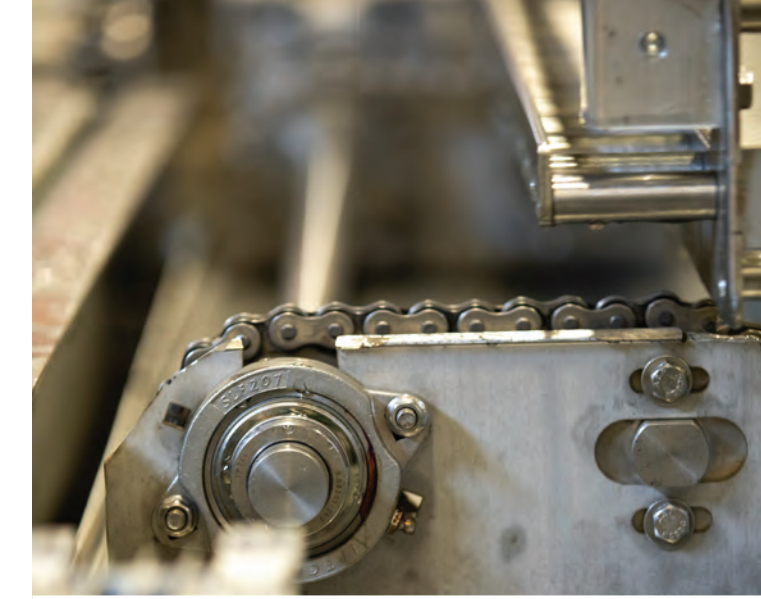


## COHO SYSTEM BENEFITS

- ▲ Increased throughput utilizing optimization without hardware changes
- ▲ Process customization flexibility (add new recipes in minutes with login authority)
- ▲ Intuitive UI with optional cloud connectivity
- ▲ UI can be updated easily without special software
- ▲ Start-stop robustness due to line state memory (E-stop events, power loss recovery are seamless)
- ▲ Able to process multiple recipes at maximum capacity
- ▲ Auto quality management
- ▲ Unique user logins with customizable access restriction
- ▲ Tested core software with continual updates (common for all equipment)
- ▲ Coho system can be migrated to updated hardware in the future

## COHO RELIABILITY

- ▲ All solid state computing with industrial grade server
- ▲ Easily upgraded as computer technology evolves
- ▲ Coho has a system model, eliminating physical collisions or controls “locking up”
- ▲ Start-stop robustness: system state is continuously updated
- ▲ Redundant safety checks by both Coho software and system PLC



## COHO RECIPE

The recipe is the set of process steps that each part has to follow through the system process. Each step has time, temperature and/or pressure constraints.

### HMI/PC/IPAD

- ▲ Display real-time tank & line data
- ▲ Display historical tank & line data
- ▲ Update recipes
- ▲ Add carrier to enter line
- ▲ Alarms/alerts/diagnostics
- ▲ Auto quality management

### COHO SERVER

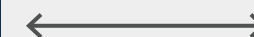
- ▲ Linux PC - datacenter
- ▲ Execution of algorithm
- ▲ Coho motion control & safety controls

### PLC

- ▲ Interfaces with drives & sensors
- ▲ Interfaces with safety devices
- ▲ Redundant safety controls

### LINE SENSORS/ACTUATORS

- ▲ Transporter sensors & drives
- ▲ Safety devices
- ▲ Temperature, flow rates, etc.







## COHO VS. LEGACY CONTROL

Control Type	COHO	Legacy Control
Simultaneously Run Multiple Recipes	Yes	Limited
Optimized Motion Control	Yes	No
Add Recipe through HMI	Yes	Parameters only
Time to Add a Completely New Recipe	Seconds	Hours
Time to Update UI	1 Day	>1 Day
Line Throughput	Continuous Optimization	Standard
Data Logging	Built In	External Software
Data Trending	Available in UI	External Software
Predictive Throughput & Motion Control	Yes	No
Auto Quality Management	Yes	Possible
Start/Stop Robustness	System Memory	Sensor-based
Predictive Maintenance	Data Trending Visibility	External Software

## COHO FLEXIBILITY

- ▲ Recipes for parts can be updated 'on the fly'
- ▲ Algorithm is executed for each carrier placed into the line
- ▲ UI is very flexible
- ▲ Physical line changes (due to chemical changeouts, etc.) can be adapted into Coho by changing the run recipe for a carrier/part

## COHO DATA TRACEABILITY

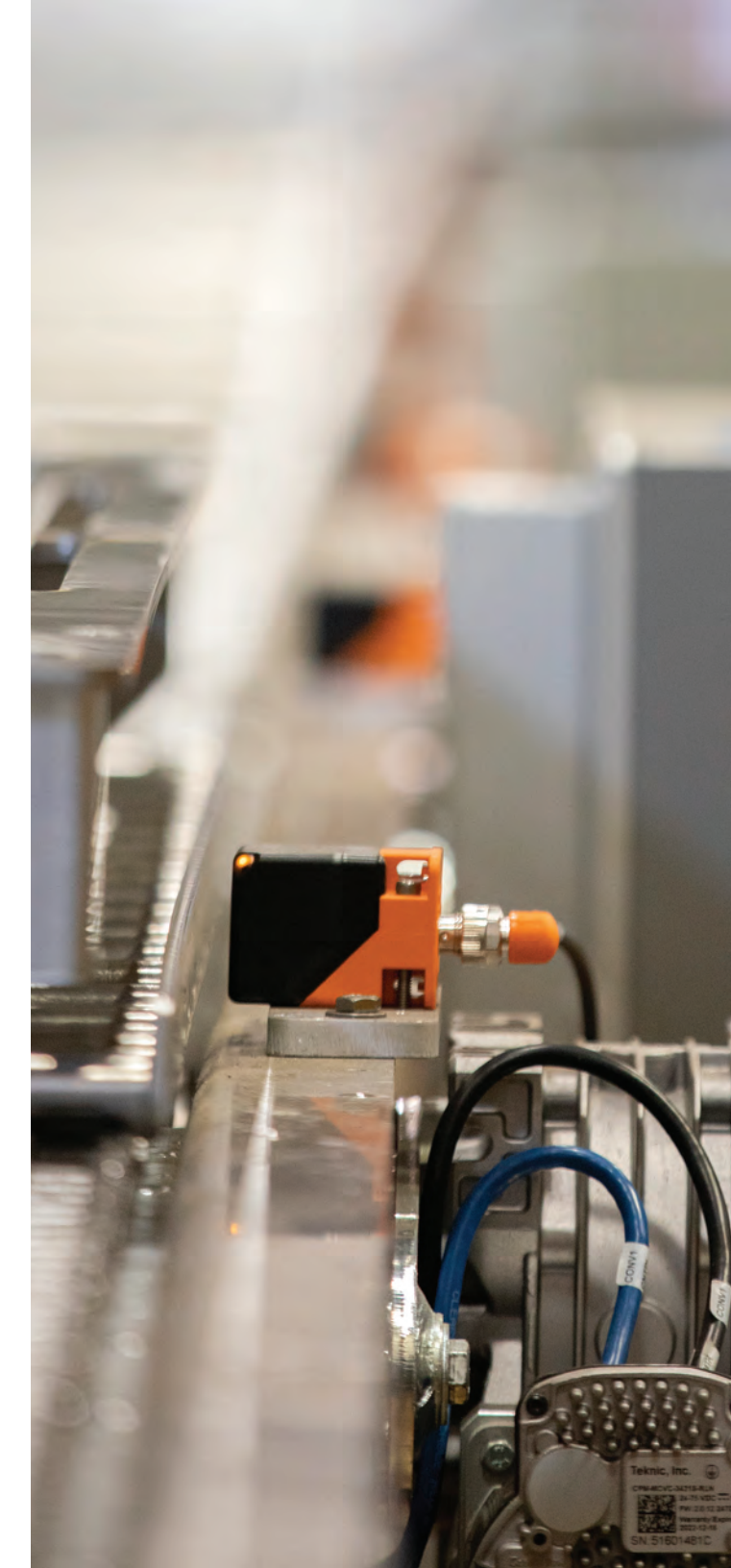
- ▲ The PC has excellent data tracking features for each part that goes through the dip line
- ▲ Barcode scan in parts, track operator inputs during the process, and process trace the carrier/part through the entire process
- ▲ Operating parameters can be tracked, stored, trended, and reported in customizable statistical displays on the UI
- ▲ Carrier throughput and tank information is stored for predictive maintenance purposes

## COHO INSTALLATION

- ▲ Coho software is installed on a Linux datacenter in the control panel
- ▲ All motion control instructions are communicated through the PLC in the control panel to ensure all designed safety interfaces are clear before processing
- ▲ A UI will be installed on the control panel and a webserver is included for qualified and approved personnel to update recipes/add carriers in seconds
- ▲ Down time can be very minimal, if current line has modern controls hardware

## COHO EQUALS PC COMPUTING POWER

- ▲ Databased technology
- ▲ Algorithm predictive process modeling and control
- ▲ Enable flexible UI, connectivity
- ▲ Computing power is limitless







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