Rockwell Automation

PlantPAx Modern DCS

Tomas Knobloch • Solution Consultant Process & SW • May•2022

expanding **human possibility**®

Application types

SKIDS or COMPLEX systems

LIFE SCIENCES

- ✓ Mixer
- ✓ Reactor
- ✓ Dosing
- ✓ Weighing
- ✓ Autoclave

OIL & GAS

- ✓ Well
- ✓ Injection Pump
- ✓ FWKO
- ✓ Treatment units
- ✓ LACT units

FOOD & BEVERAGE

- ✓ Water purification
- ✓ Boiler
- ✓ Compressor
- ✓ Fermenter
- ✓ Oven

CHEMICAL

- ✓ Reactor
- ✓ Boiler
- ✓ Compressor
- ✓ Distillation column

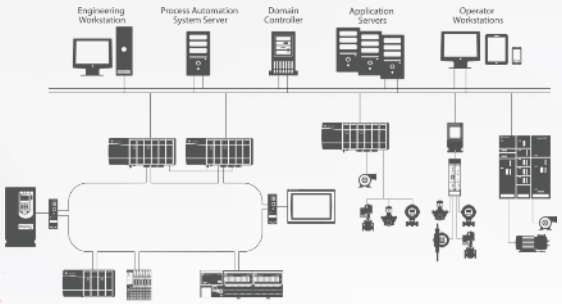
MINING, METALS & CEMENT

- ✓ Furnace
- ✓ Mill
- ✓ Flotation unit
- ✓ Water plant

THE CONNECTED ENTERPRISE

APPLICATION EXPERTISE

PlantPAx®
Distributed Control System



PLANT-WIDE
Control and Optimization

SCALABLE
and Modular

SECURED
Open and Information-enabled

FLEXIBLE
Delivery and Support

Rockwell Automation

Rockwell Automation

PlantPAx

Modern DCS

Tomas Knobloch • Solution Consultant Process & SW • May•2022

expanding **human possibility**®

PlantPAx® System

Tools and Solutions

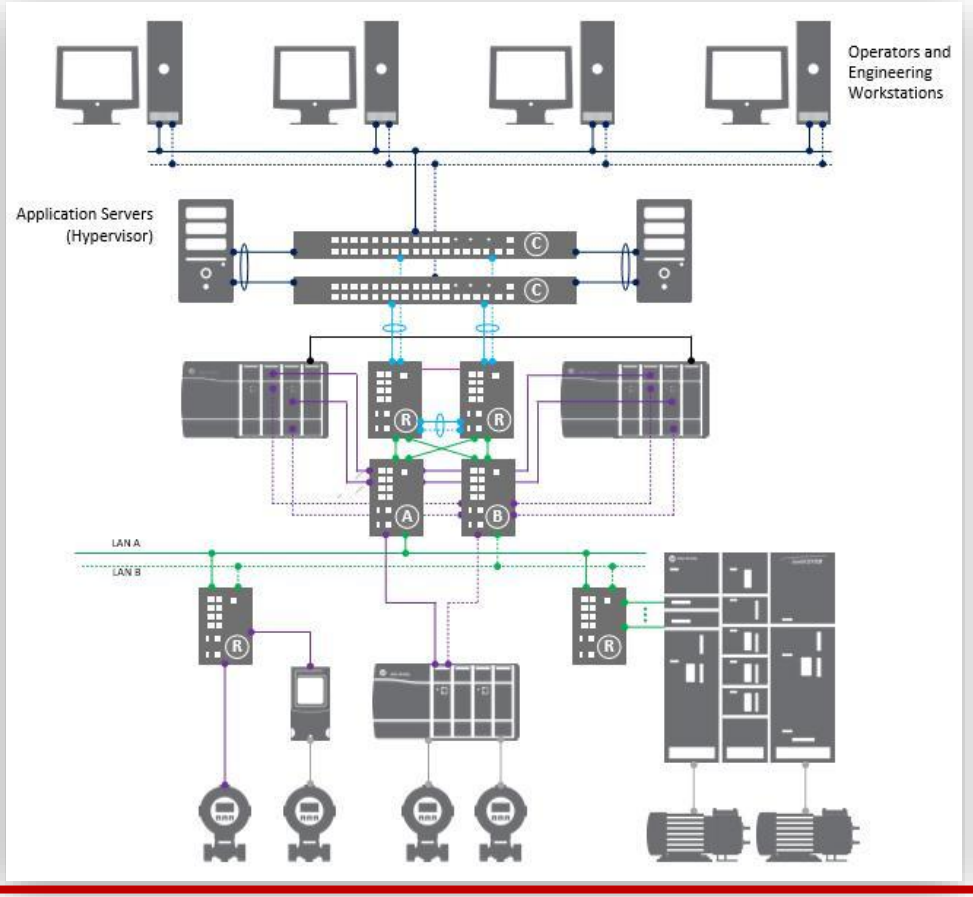
- Rapid Code development
- Process System Estimator
- Process Object Library Migration Tool
- Alarm Builder
- Competitive DCS Migration

Library of Objects

- Standard Objects reusable objects
- Class based solutions
- Known performance characterization
- Digital Device & Instrumentation Interface Objects

Reference Architecture

- Network Infrastructure
- Integration Skids
- Cybersecurity
- Platform Scale
- Known Performance



PlantPAx system utilizes trusted hardware and software from Rockwell Automation's Integrated Architecture and applies those products using a prescribed, characterized methodology. That methodology covers all aspects of the DCS; from the hardware, the network infrastructure, the visualization, security, and asset management.

Product Development

- Key Process Features
  - Controller
  - Power
  - HMI
  - Historian
  - Asset Management

Documentation

- System Guidelines
- System References
- User Manuals
- Selection Guides
- Infrastructure Manual
- Online Help

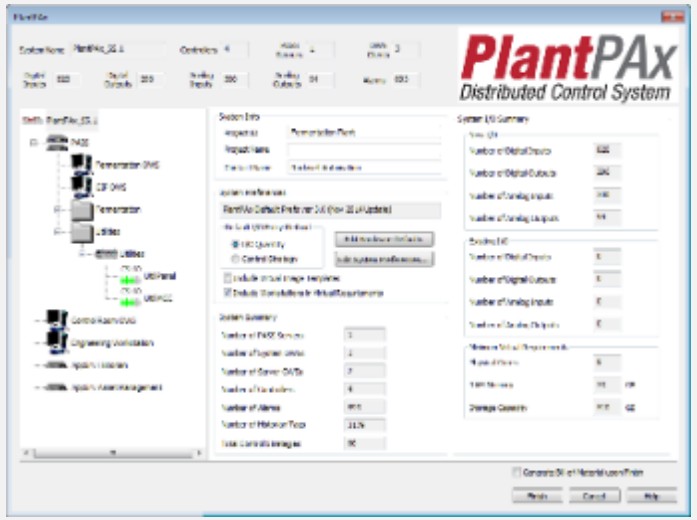
Bundling and Services

- Process System Lifecycle Support
- Asset Utilization
- Network Services
- Cybersecurity

Rockwell Automation

PlantPAx® Design → Deploy → Verify

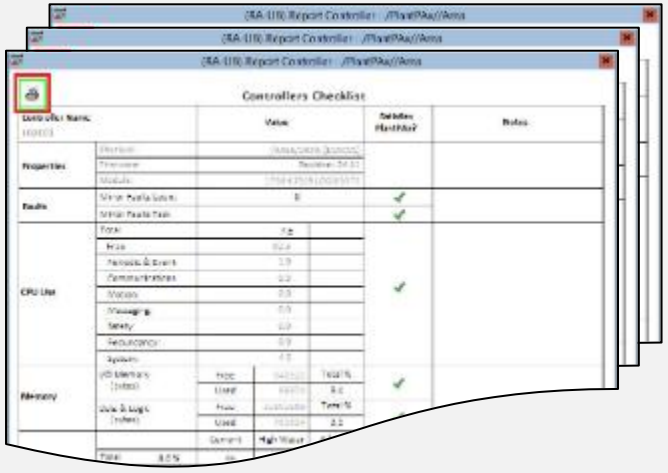
PlantPAx® System Estimator



Studio 5000® with PlantPAx® Libraries and Design Guides

Verification Tools

- PlantPAx® V5.0 Checklist
- Rockwell Automation Graphic Audit Tool
- Topology Worksheet



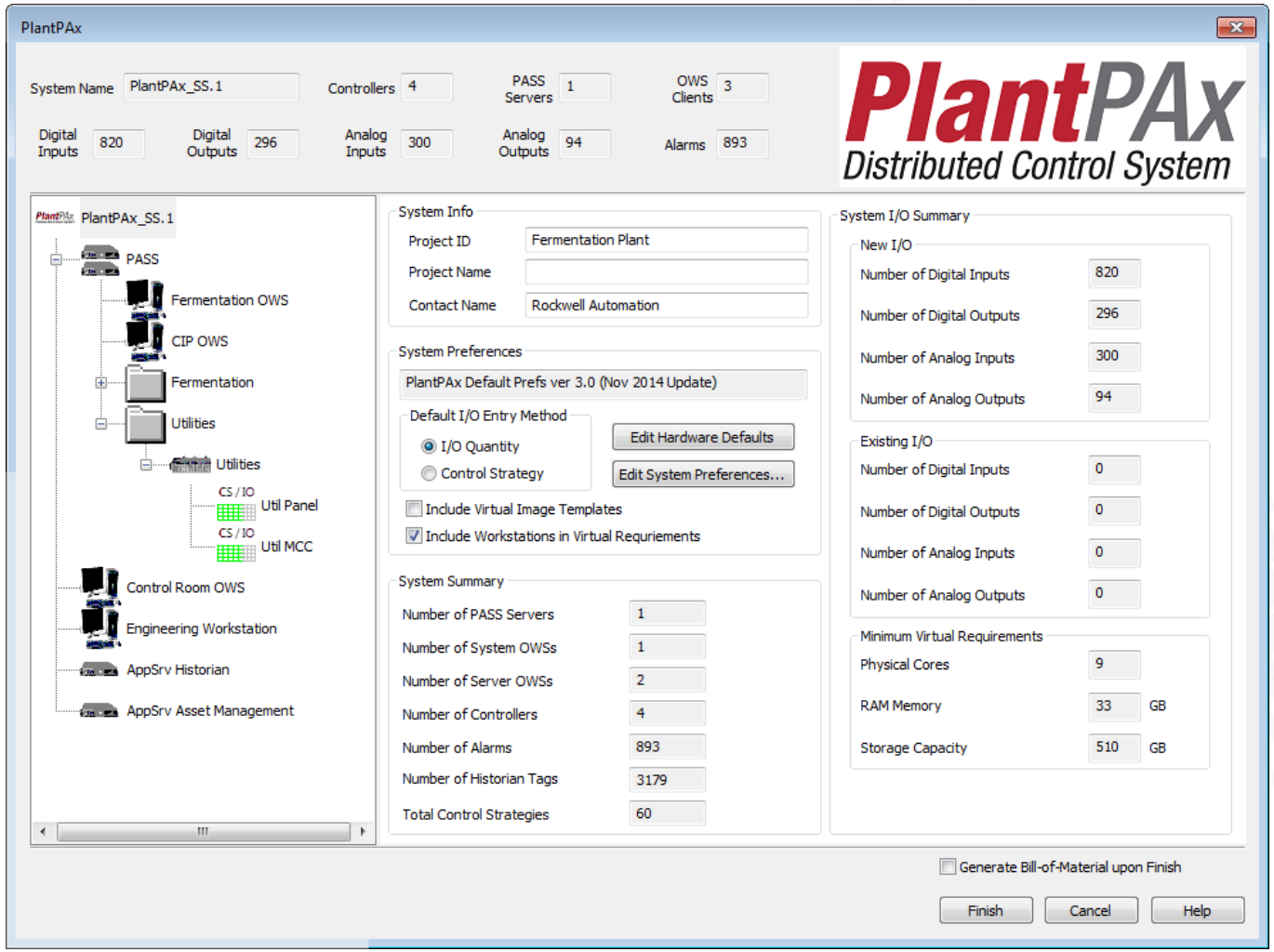
Size and Select → Implement → Verify

Well defined and closed-loop design **process based on system characterization**

Sizing PlantPAx® Systems

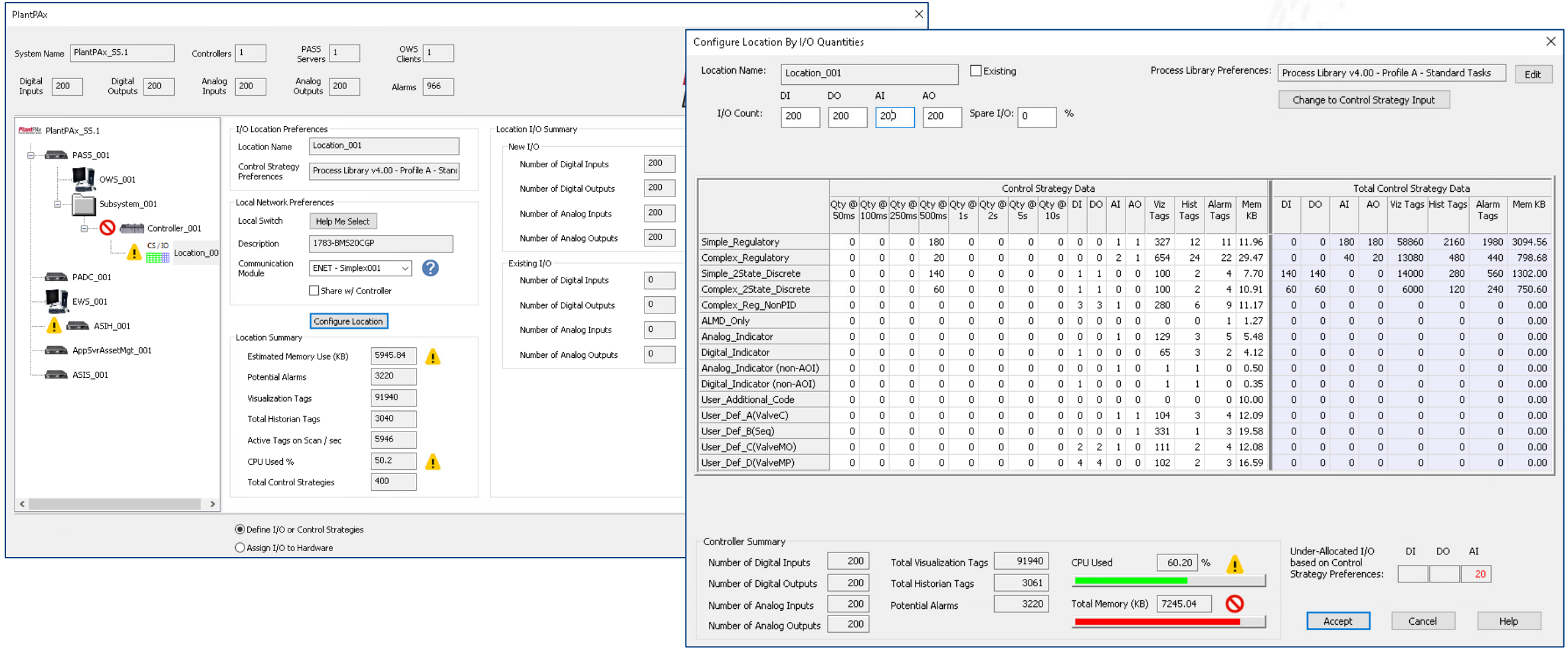
PlantPAx® System Estimator allows the user to perform a detailed sizing estimation based on the specific application requirements

- Wizard in Integrated Architecture® Builder (IAB is a free download)
- Define, size, and generate BOM for your system
- Performs the system loading calculations for the user (Controller CPU utilization and Total Memory)
- User can customize sizing rules based on the application
- **Application data entered must be accurate and representative of proposed system**
- **System commissioned must also be representative of data entered into Process System Estimator.**



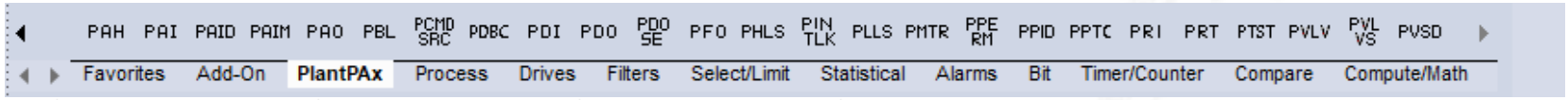
PlantPAx® System Estimator

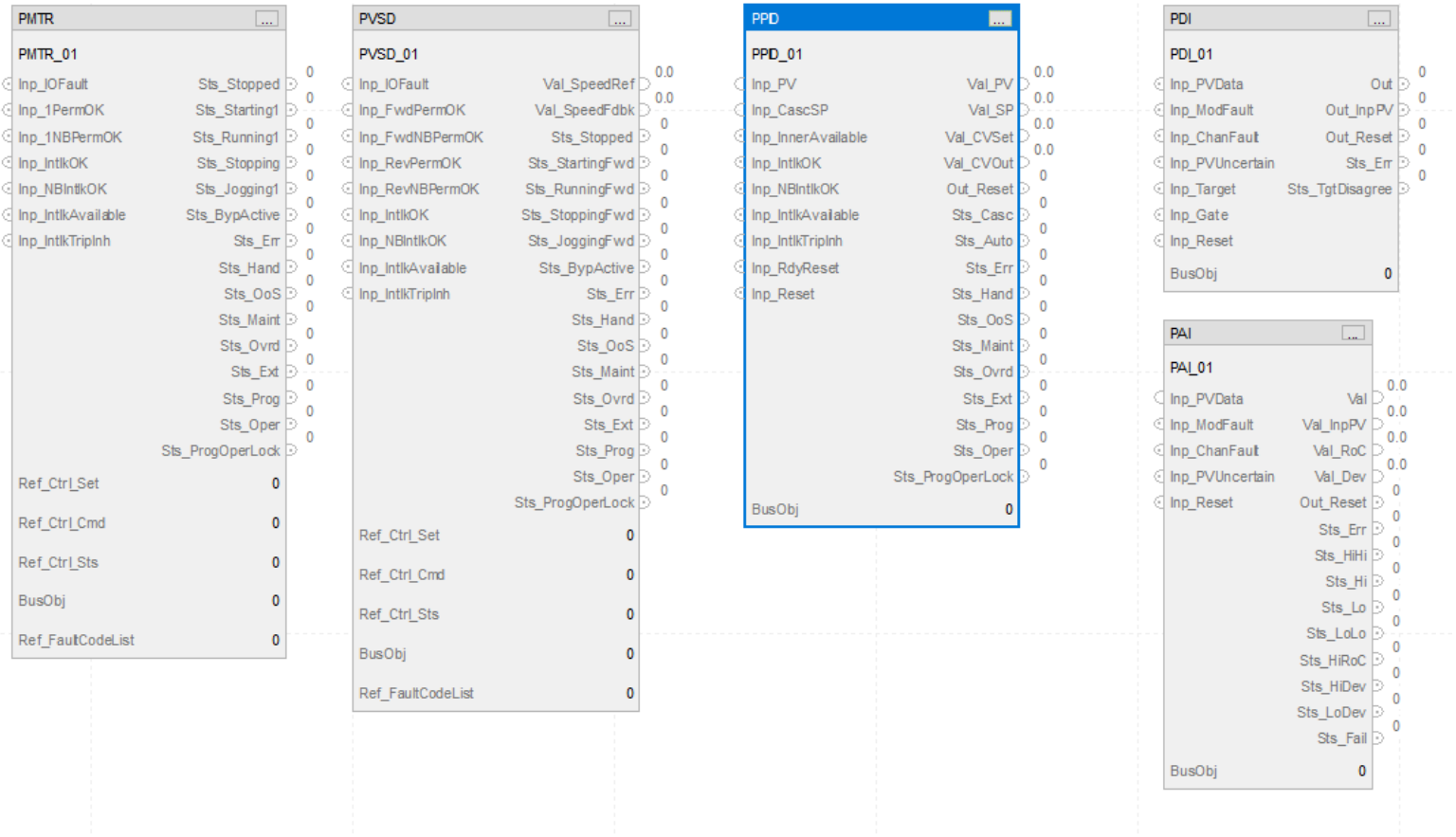
How does the PlantPAx® System Estimator show sizing problems?



What's in the Library of Process Objects?

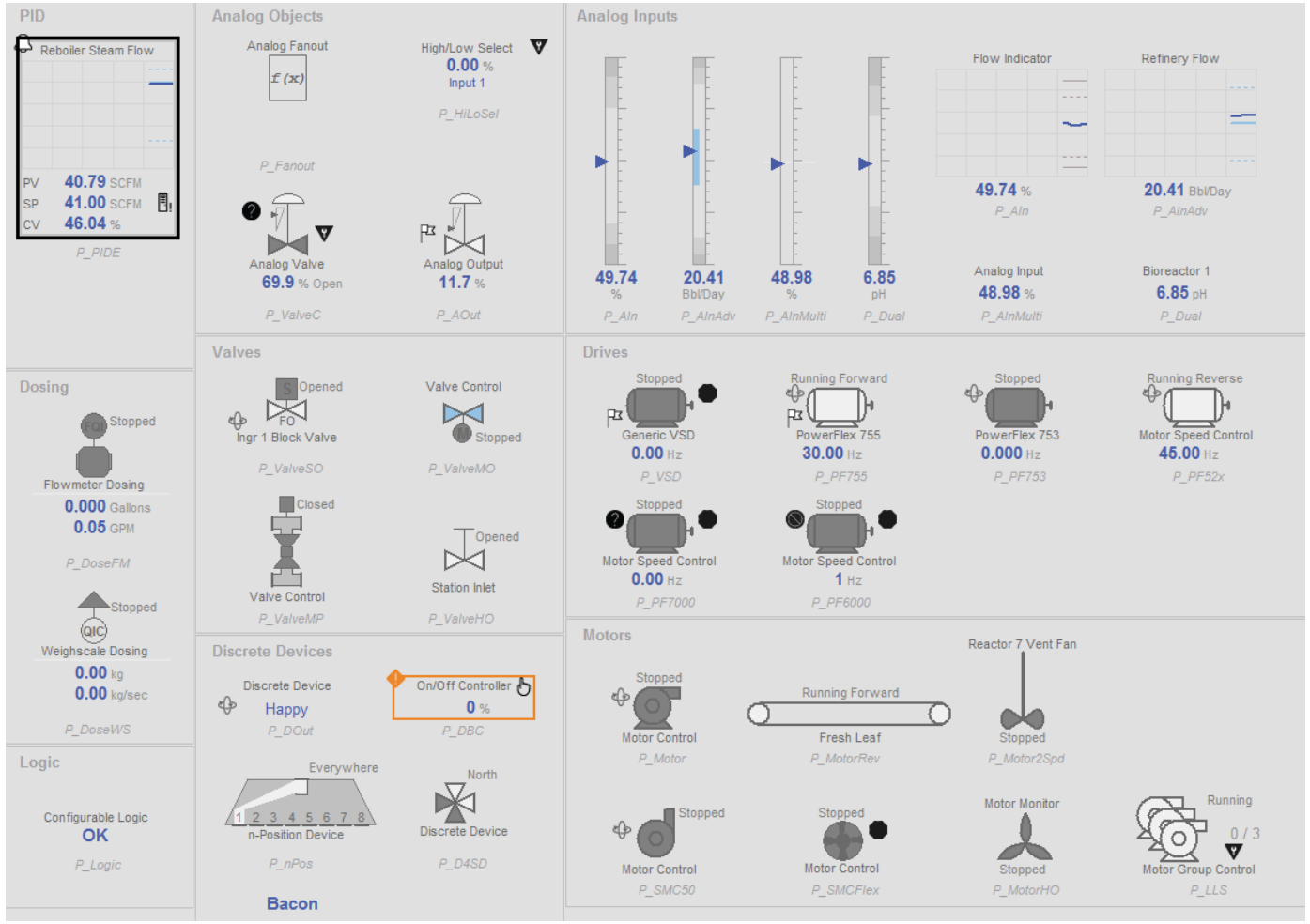
- Logix Objects in the Controller

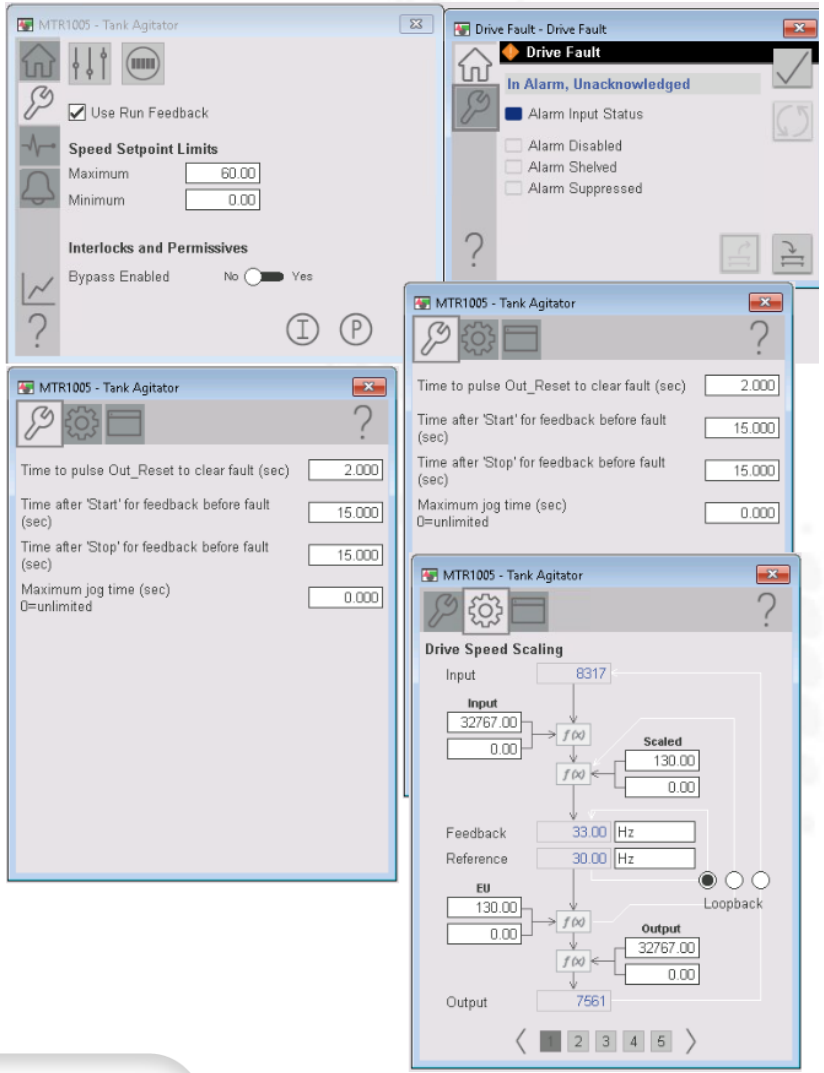




What's in the Library of Process Objects?

- **Graphic Symbols and faceplates**



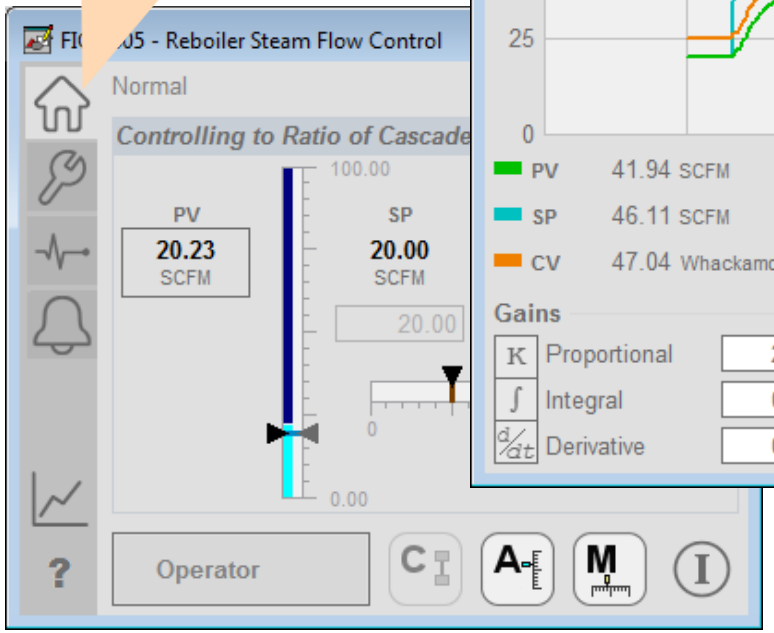


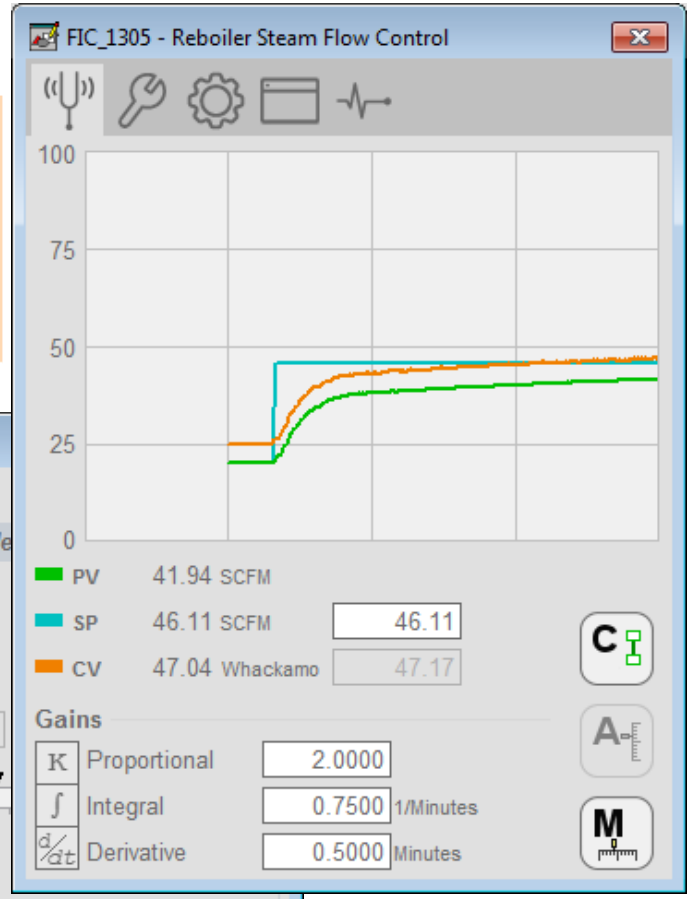
ISA 101 standards-based look and feel

Strategy: Basic operating display plus advanced configuration display

Basic Display

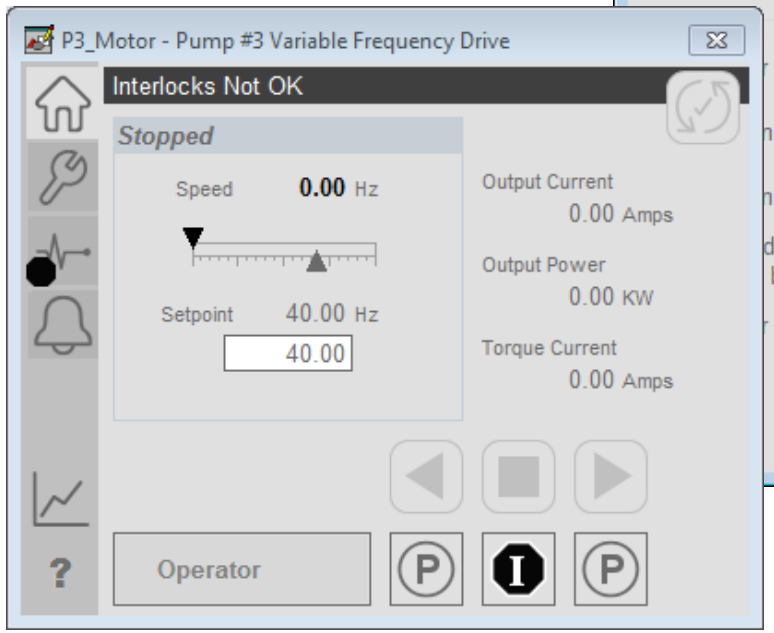
- Operation
- Basic Maintenance
- Basic Diagnostics
- Alarms
- Help

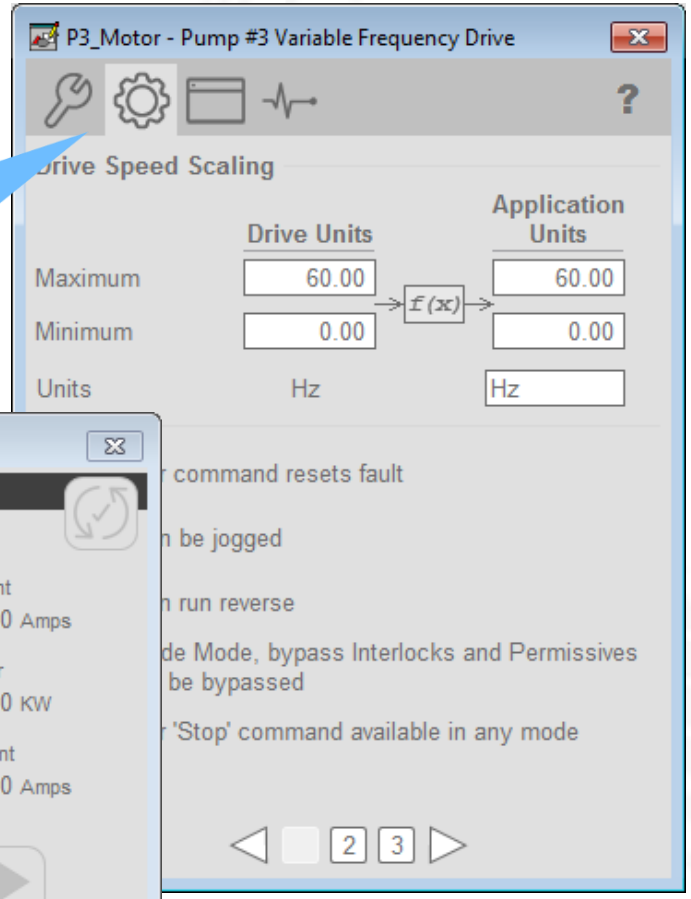




Advanced Configuration Display

- Advanced Maintenance
- Advanced Diagnostics
- Engineering / Configuration





- Reduced Footprint
- Drives Consistent Delivery
- Streamlined Workflows
- Cybersecurity Enabled

Expanding the Logix Family for Process

Reduce deployment time and variability for process applications in the ControlLogix® and CompactLogix™ families.

Overview

Leverage native features like embedded instructions and task modeling to minimize project design time.

Available in three ControlLogix® catalogs and two CompactLogix™ catalogs.

8-series Logix controller performance profile

- 2 in CompactLogix – 2 Mb, 4 Mb
- 3 in ControlLogix - 3 Mb, 10, Mb, 40 Mb

Benefit

- Out-of-the-box settings and instructions that follow PlantPAx® guidelines
- Intuitive workflows eliminate unnecessary rework, simplify design and deploy effort

Expanding our plant-wide infrastructure

Process controller

Process Skids

CompactLogix™ controllers

5370	5380	5480
Armor™	NEW Process	5480
L3		
Armor™ GuardLogix®	5380	
L2		
L1	GuardLogix®	

Plant-wide

Integrated

Scalable

Information-enabled

PlantPAx® System

ControlLogix® controllers

5570	5580
Armor™	NEW Process
5570	
Armor™ GuardLogix®	GuardLogix®
	5580
XT	GuardLogix® XT
	GuardLogix®

Rockwell Automation

Embedded Process Instructions

Simplifying Lifecycle Management

Reduced footprint (Simplification & Strings)

Many strings moved from instructions to extended tag properties

Instructions in firmware (No overhead memory consumed)

Less Servers, higher data volumes

Drives consistent delivery

Library native to controller and design pallet

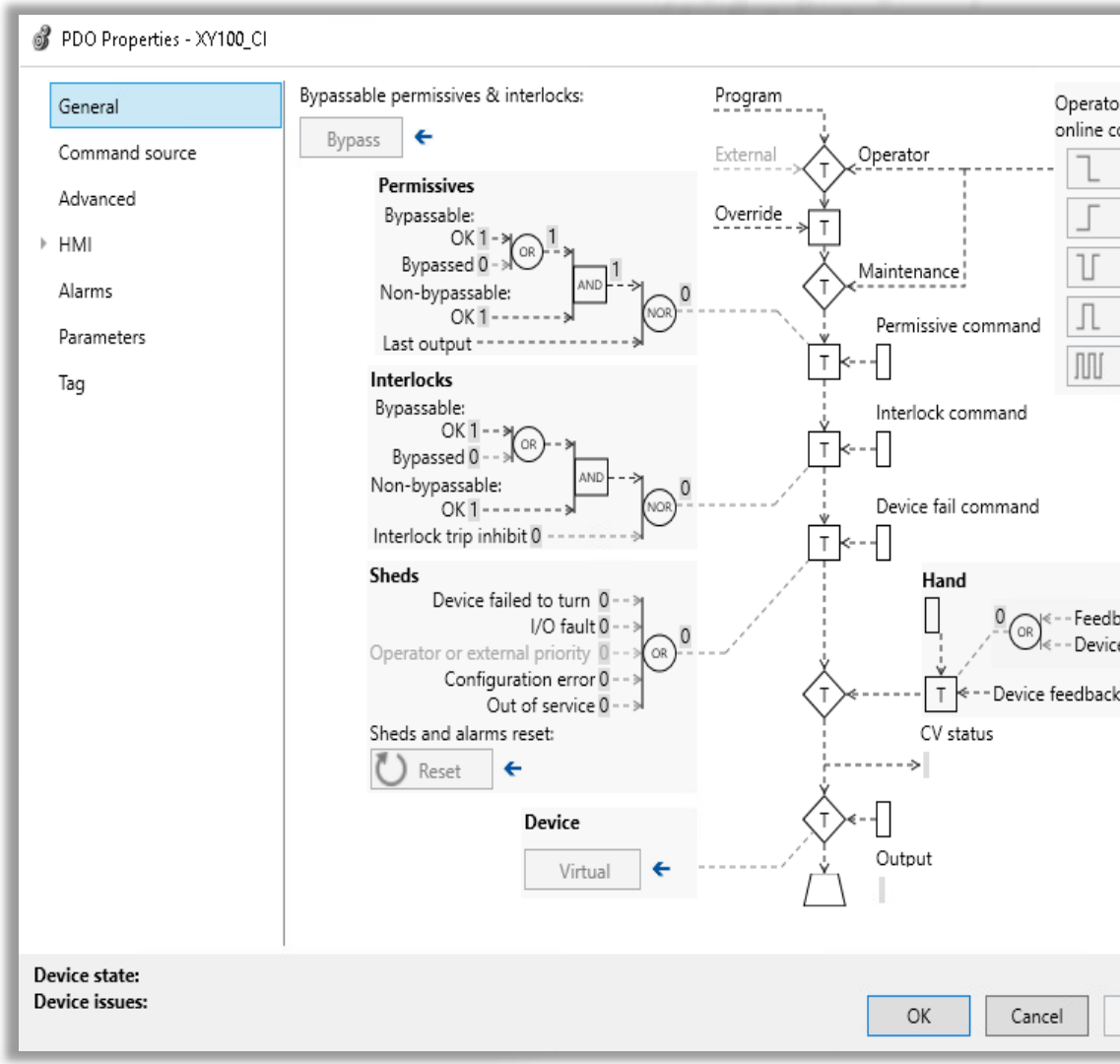
Simplifies lifecycle management

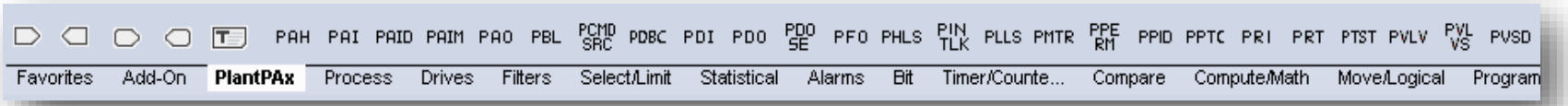
Streamlined workflow

Controller based alarming

Instructions native to controller (no importing of AOIs)

Supports multiple library versions on one system





Process Controller Exclusive

Rockwell Automation

PlantPAx® System 5.0

Process Objects – NG Integrated Configuration

Overview

New SAMA diagram interface

SAMA is an acronym standing for Scientific Apparatus Makers Association, referring to a unique form of diagram used primary in the power generation industry to document control strategies

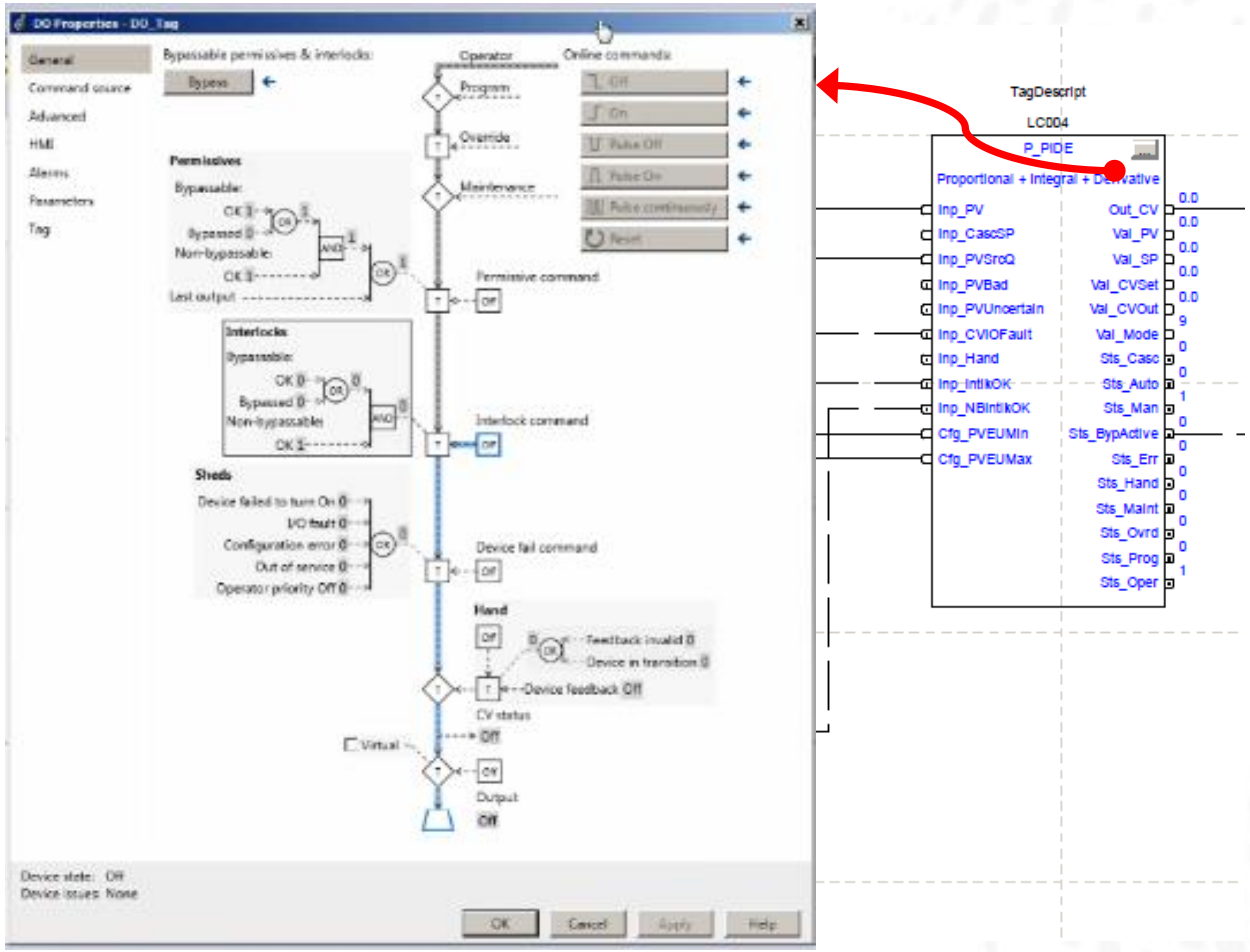
Benefits

Intuitive design-time configuration interface

Consistent experience w/ objects and firmware instructions

Eliminate need for disparate tools

Greatly reduce # of steps to configure new object



Rockwell Software Studio 5000

Process Controller Exclusive

Rockwell Automation

PlantPAx® System 5.0

Select and Go Alarms within the Instructions

Simple alarm setup and configuration

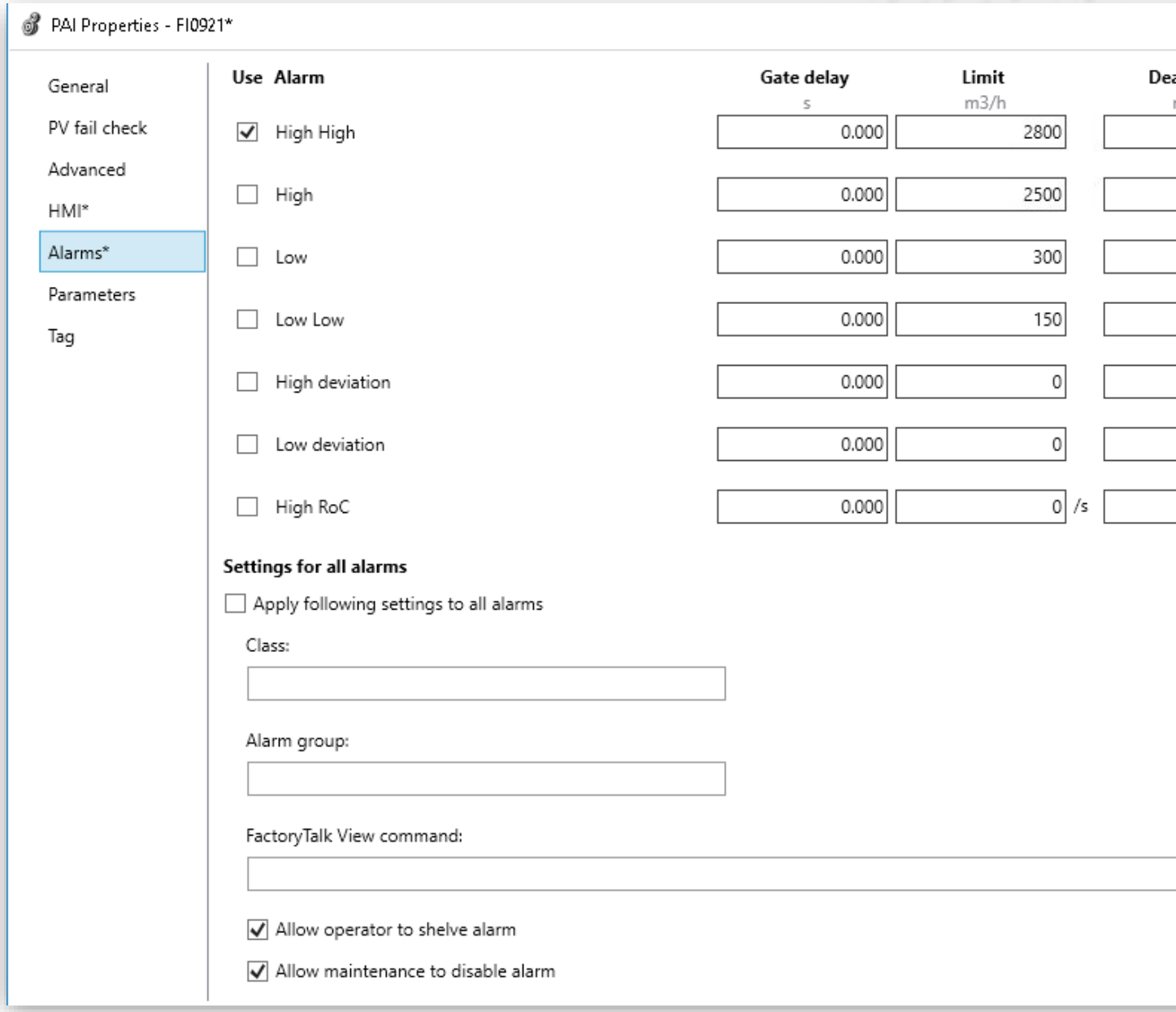
Single environment – **deploy alarms when creating control elements** in Logix Designer

One place to go to add and configure alarms

One click to add alarms from the object's definition

Predefined alarms on every object

Allow users to enable alarms for each instance.



Process Controller Exclusive

Instruction Usage

See PlantPAx® and Process instruction usage per task for optimal task balancing and visibility

Overview

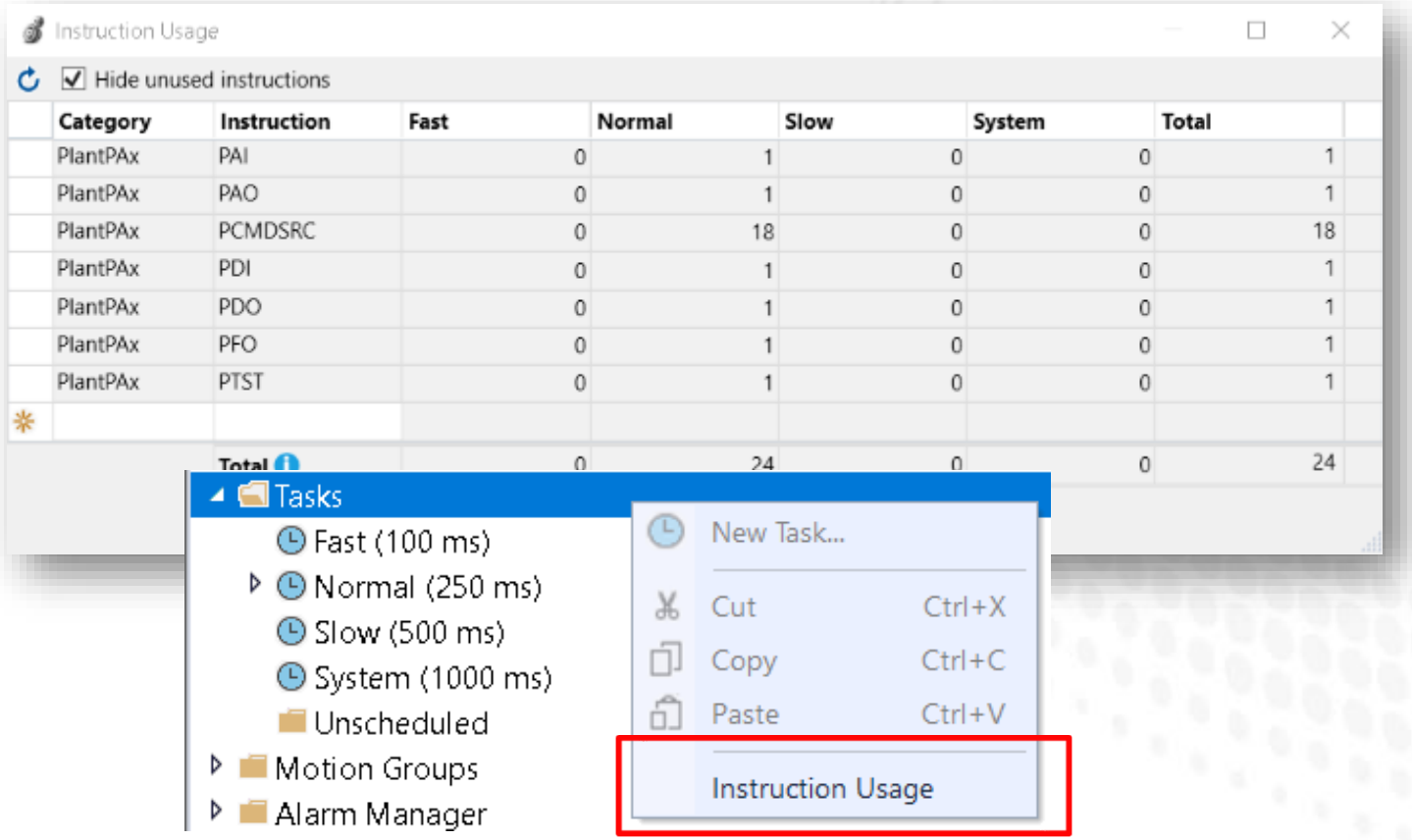
See a dashboard of each task and the instructions used.

Use with embedded webpage to see CPU utilization and avoid task overlap.

Benefit

Consistent performance and visibility into task loading during project creation.

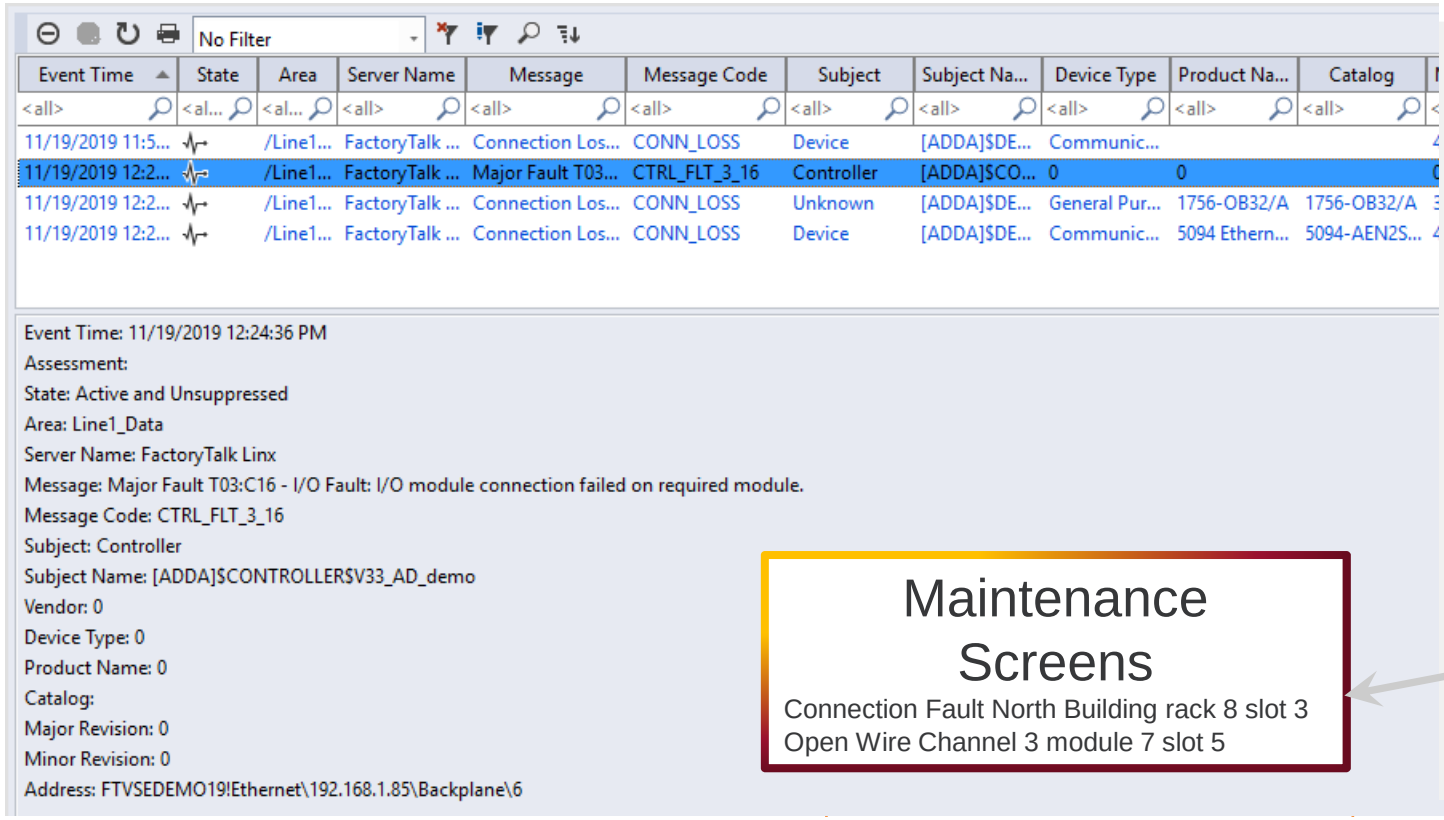
Easier identification of number of control strategies.

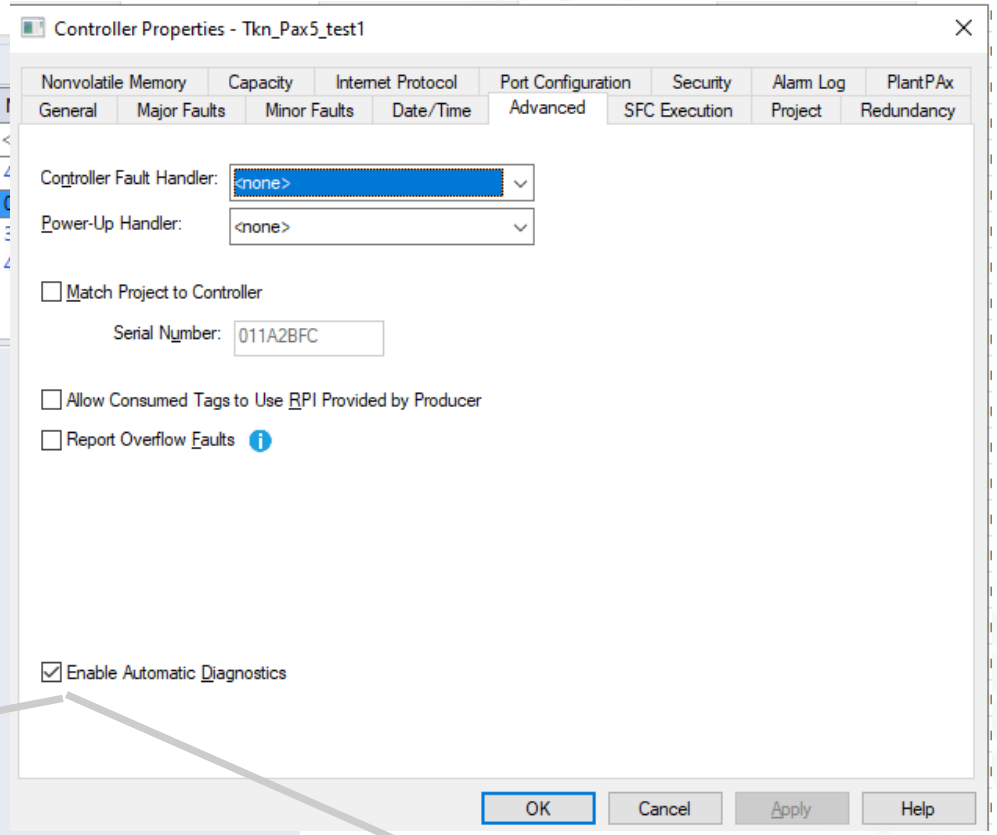


Process Controller Exclusive

Automatic Diagnostics

Access and display diagnostic information without additional programming





Maintenance Screens

Connection Fault North Building rack 8 slot 3
Open Wire Channel 3 module 7 slot 5

Alarms and Events Database

Rockwell Automation

Highly Integrated HART

Features

Add and replace HART devices online

HART signals & connection status indicated Logix Designer I/O tree

Integrated device diagnostics via profile

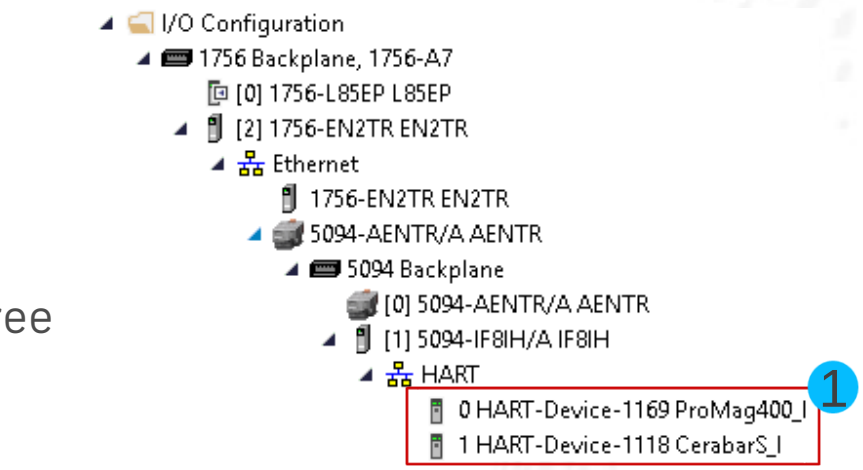
PlantPAx® connection type selection

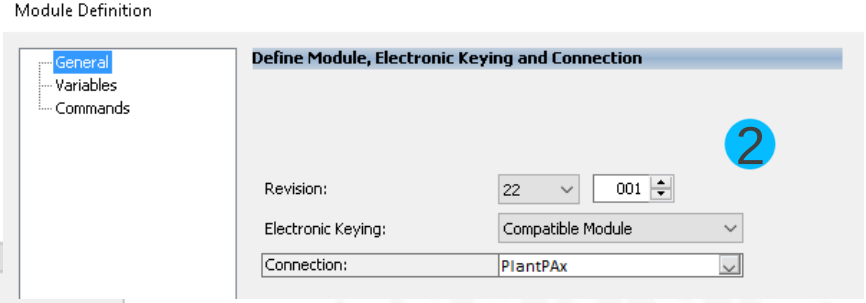
Benefits

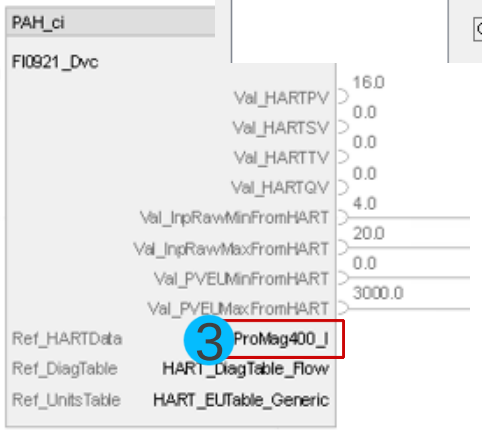
Intuitive Integration
Visible access to HART reference name
PlantPAx data type (connection) pre-defined for PAH (HART interface) instruction

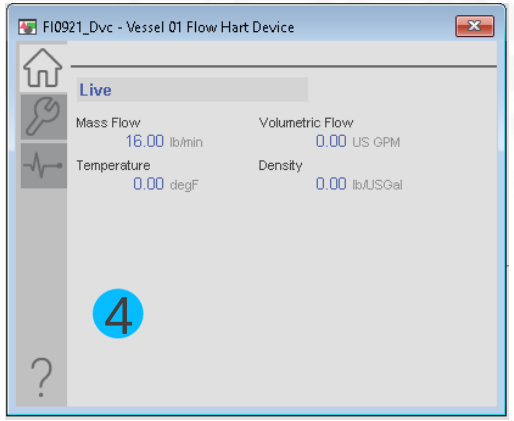
Device diagnostics included in PlantPAx data type connection

Out of the box Faceplate renders HART content









Process Controller High Availability

Available at Launch of PlantPAx® 5.0!

- Intended as an addition to the 5570 redundancy solution (also available in V33)
- Leverages the 1756-RM2 modules

Cybersecurity Certifications

ISA99/IEC 62443

IEC 62443-4-1 – Rockwell Automation has a certified secure development lifecycle.

Done

IEC 62443-4-2 – Select products in the Rockwell Automation portfolio are certified against this standard as an enabler to system cybersecurity

Done

IEC 62443-3-3 – A Rockwell Automation system reference architecture will have certification that provides the basis for all customer systems to get certified.

IEC 62443-2-4 – Rockwell Automation delivery arm (SSB) have processes and certification to deliver customer system that are cyber secure

Done

Securing your PlantPAx® system in The Connected Enterprise White Paper
Published with the PlantPAx 4.6 Launch, Summer 2019

It's 10:00 p.m. Do You Know Where You Data Is?
Blog Post for Life Sciences Cybersecurity

PlantPAx 5.0 Documentation Restructure

Focus: Cor

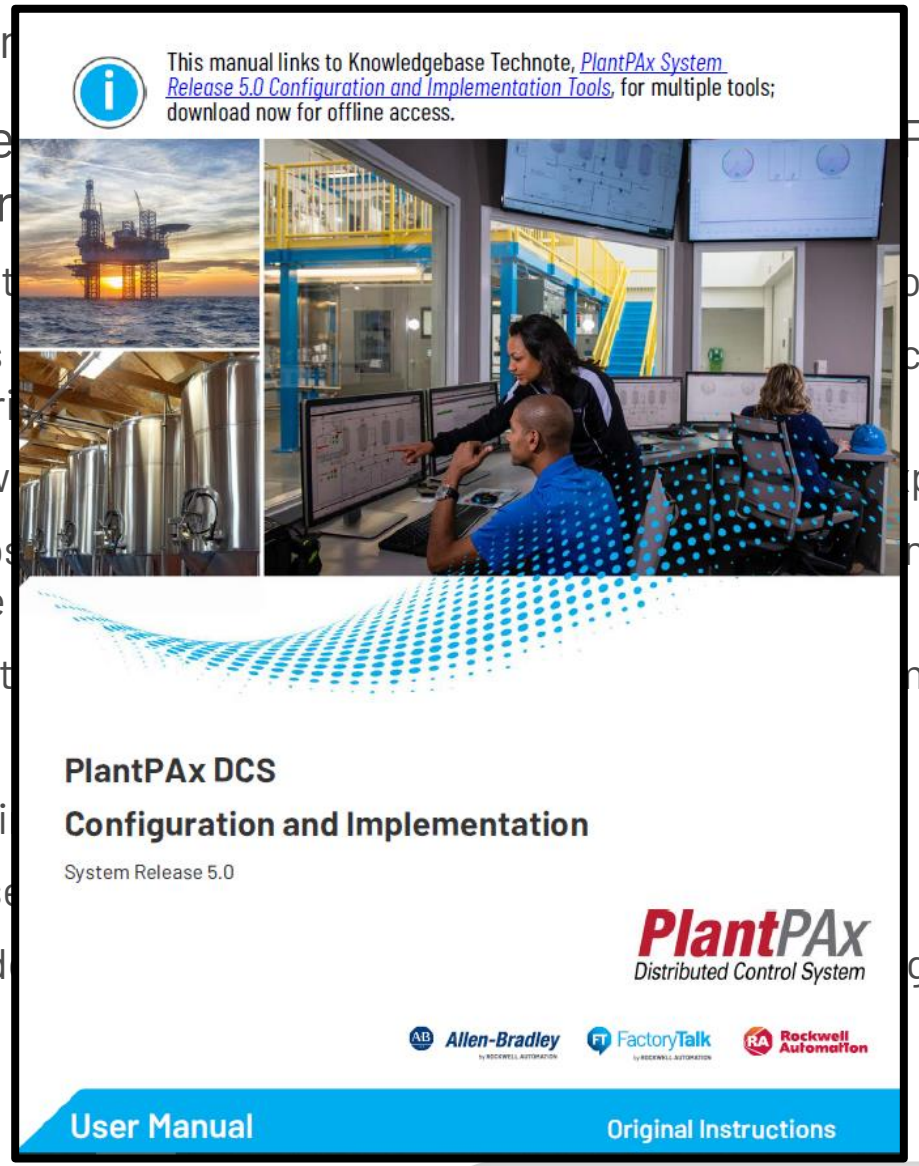
Combine
one User

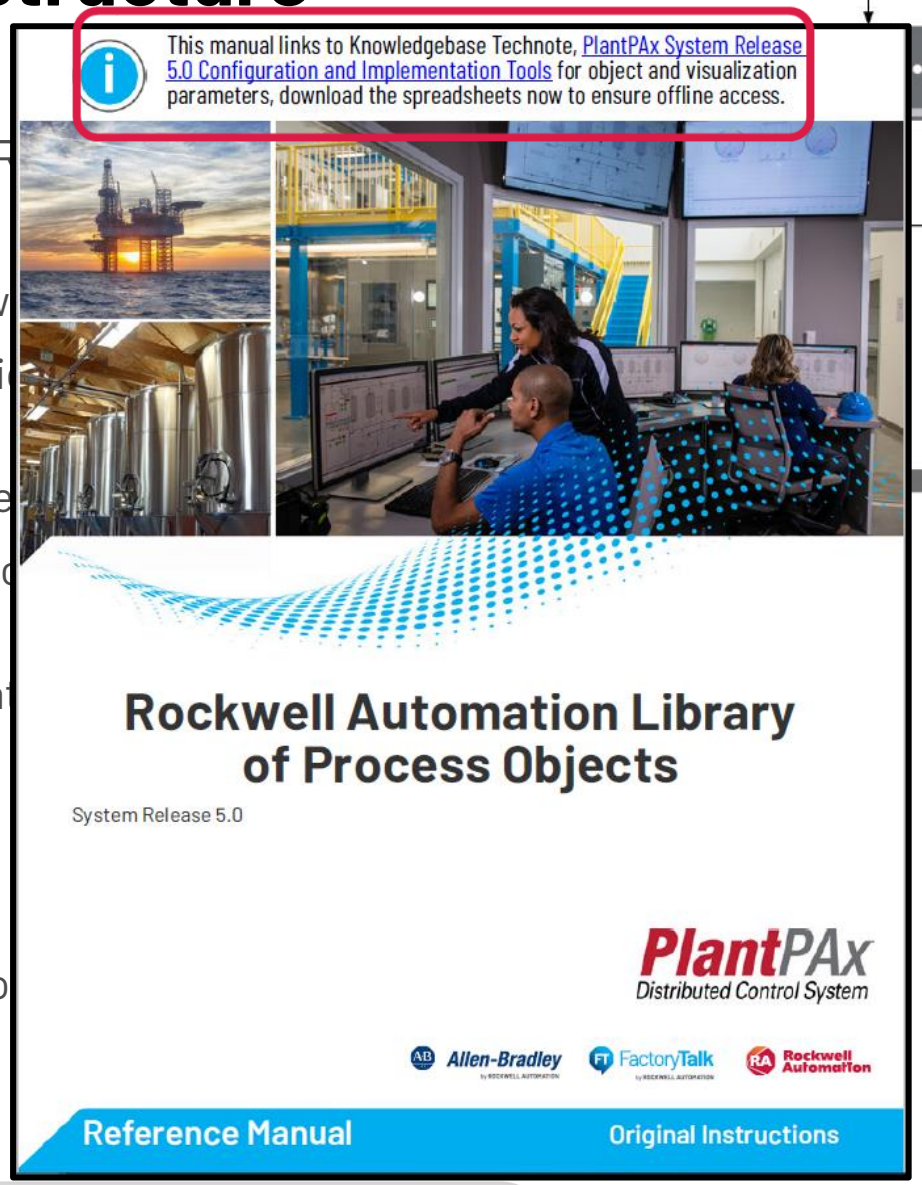
Each chapt

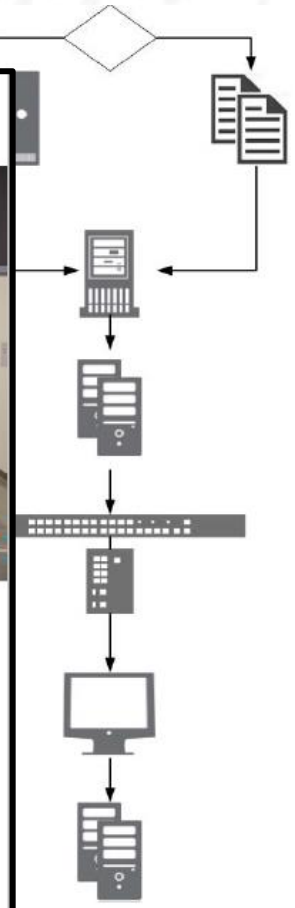
- Starts
(experi
- Follow
- Collaps
on the
- Links t

Benefits

- Combi
- Focuse
- Provid







Rockwell Automation

PlantPAx

Modern DCS

Tomas Knobloch • Solution Consultant Process & SW • May•2022

expanding **human possibility**®