T30 - Smart Devices
How many of you have had a Situation Like This?

3:00 AM

??

$$$

??$

3:00 AM

$$$

?
Dashboard Generated in Explorer View

ALL DONE AUTOMATICALLY!

DASHBOARDS

IDENTIFIES THE DEVICE

PERFORMS DIAGNOSTIC ASSESSMENT

IMPORTANT SUPPORTING DATA

SIGNIFICANT DIAGNOSTICS

FactoryTalk Analytics
The Connected Enterprise

THE CONNECTED ENTERPRISE
ROCKWELL AUTOMATION's VISION FOR SMART MANUFACTURING

SMART PLANTS

SMART MACHINES

SMART DEVICES

Sensors
Actuators
Intelligent Motor Control
Automation Control
Terminals
Smart Machines and Equipment

SMART
Machines & Equipment

Real-time Data
Voltage, Kwh, Running Time, Temperature, Safety

Information
CONTEXTUALIZATION
Energy/Product, OEE, Safety

Knowledge
ANALYTICS
Predict bearing will fail in 10 hours

Optimize
ACTION
More efficient process workflows

TECHNOLOGY

PROCESS

PEOPLE
Smart Devices

Variable Frequency Drives
- PowerFlex® AC Drives

Servo Drives
- Kinetix®

Smart Motor Starters
- SMC™

Smart Motor Protection
- E300™ Electronic Overload Relays

Smart Power Monitoring
- Power Monitor

Condition Monitoring
- Dynamix™ 1444

Smart Safety Devices
- Guardmaster®

Smart Sensors
- Photo, Pressure & Proximity Sensors
Premier Integration

It's the COMBINATION of

- Studio 5000® software
- Logix Controllers
- Sensors
- Motor Control
- Safety
The Connected Enterprise
Smart Motor Control
Conventional Versus Smart Motor Control

The conventional approach
Many devices are still hard wired and unable to communicate with higher level control systems and are therefore unable to provide access to real time data
• No access to real time data
• ON, OFF and Tripped – no pre-warnings possible
• User manual fault finding process – no diagnostics data
• Unnecessary downtime periods
• Higher maintenance costs possible
• Changing parameters requires a specialist engineer
• Hard to track and record energy costs

SMART Motor Control provides key diagnostic information that enables you to optimize performance with real time access to operation and performance trends.
Access to production and machine data helps you to make informed decisions that improve production and mitigate downtime, increase productivity and boost profitability, offering substantial benefits over conventional approaches.

The Today's Smart Motor Control approach
• Seamless communication and system visibility for increased performance and flexibility
• Operate and maintain motor performance through intelligent equipment and networks
• Reduce unplanned downtime with alarms and advanced diagnostic information
• Monitor energy consumption
• Remote monitoring helps keep personnel away from potential hazards
• Simplified troubleshooting and reduced startup times

Current
% Thermal Capacity Utilization
Trip/Warning Histories
Time to Trip
Time to Reset
Operational Hours
Number of Starts
Voltage
Energy & Power
Time to trip
Warning.. Starts per hour exceeded

FLC – 47.5 Amps Motor 6
Warning.. Vibration alert Pump 7

Access to production and machine data helps you to make informed decisions that improve production and mitigate downtime, increase productivity and boost profitability, offering substantial benefits over conventional approaches.
Smart Overload Relay

- Traditional Overload Relay
  - Over current condition trips relay, protecting the motor from damage
  - Production is down – purely reactive maintenance

- Smart Overload Relay
  - Primary function is the same
  - Network connection allows enhanced diagnostics

Shift from reactive maintenance to predictive maintenance
FactoryTalk® View Faceplates

- FactoryTalk® View faceplates are available for the E300
  - FactoryTalk® View (ME or SE)
  - PlantPAx®
- Pre-written and tested human machine interface graphics
  - Import into FactoryTalk® View Studio projects to minimize engineering time
  - One faceplate represents the entire E300 family
How many of you have had a Situation Like This?

3:00 AM

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Automatic Device Configuration

Field Device + Controller + EtherNet/IP™

LOWER TIME TO REPAIR

Configuration

IP Address

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Smart Sensors

The Connected Enterprise/Industry 4.0

Benefits of
Smart Sensors

Mobility

Visualization

Design Environment

Information Software

Logic Programmable
Automation Controller

Proximity Sensors

Photoelectric Sensors

Temperature Sensors

Pressure Sensors

RFID

Code Readers

Encoders
Sensors are the Eyes and Ears of Your Machine

With Smart Sensors available for pressure, temperature, distance, motion, level and flow - it is possible to get a comprehensive view of your process. Knowledge of current sensor situation and status also ensures timely identification of any type of potential sensor issue.
Future Ready System

- No sensor change
- No cable change
- Terminate one wire

Point I/O™

EtherNet/IP™

Standard Digital Inputs

IO-Link

IO-Link

IO-Link
Which bit is what data?

Meaningfully named tags
Smart Safety Devices
GuardLink™ enables series connections and diagnostics

- Safety rated series wiring with enhanced diagnostics
- Support Safety, Diagnostics, Remote Reset, and Lock Command over one cable
- System knows which device is tripped
  - Also differentiates tripped versus faulted
- TÜV certified PLe
- Trunk and drop topology
- Plug and play, no configuration required
Diagnostics are critical for quickly identifying the reason for the demand on the safety system as well as guiding operators through a quick and effective recovery.
GuardLink™
Use Case – Improved Asset Utilization

Seeing the details of why a system is stopped versus normal operation can provide critical insight into problems

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<thead>
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<th>Anticipated Exposure</th>
<th>Current Month Exposure</th>
<th>6 Month Average</th>
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<tr>
<td>Access Point 1</td>
<td>&lt; 1 per month</td>
<td>2</td>
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<td>Access Point 10</td>
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</table>
FactoryTalk® Analytics for Devices
What Does it Do?

- Monitors and improves MTTR (Mean Time to Repair)
- Performs analysis on device data
- Provides device issue notifications
- Provides simple and immediate instructions for corrective measures
- Learns what devices are most important/critical
- Performs system level health & diagnostics to solve hard-to-discover issues
WHAT DEVICES WILL BE SUPPORTED

- Any Ethernet/IP™ device responds with a default diagnostic status
- Over 2,000 devices have specific diagnostics built in
- Capable of complex analysis based on the data from the devices
- Example: PowerFlex® 755 has over 80 points of data and then an extra 30 created by our analyzers
- Our most popular families will have coverage (Logix, PowerFlex®, Kinetix®)
- This is an area for future expansion, both in devices supported, third-party devices supported and customizability
FactoryTalk® Analytics for Devices
Thank You!