Benefiting from the IIoT thanks to Process Drives

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EcoStruxure Platform

Apps, Analytics & Services
- Process Engineering
- Planning & Scheduling
- Operations Management
- Information Management
- Asset Management
- Operations Control
- Line & Unit Performance Optimization
- Supply, Demand, Sustainability

Edge Control

Connected Products
- Touch-screen Panel
- Valve Positioners
- Motor Starters
- Industrial Sensors
- Variable Speed Drives
- MCC/PCC Electrical Panel

End-to-end Cybersecurity

Cloud and/or On Premise

IloT in Industrial Process Control

Food & Beverage
- Process Engineering

Water & Wastewater
- Operations Management

Mining, Metals & Minerals
- Information Management
- Asset Management
- Operations Control

Oil & Gas
- Planning & Scheduling
- Line & Unit Performance Optimization

Discrete Process
- PlantStruxure Modicon

Continuous Process
- PlantStruxure Modicon, Foxboro, Triconex

Enterprises
- PowerStruxure

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Intelligent Connected Drives: measurable benefits

A services oriented drive delivering…

Reduce Downtime  Optimize energy usage  Enhancing Safety

Altivar Process innovations:
- embedded sensing capabilities
- asset protection
- Improved energy efficiency
- maintenance cost reduction.
A ‘Services Oriented Device’ enabling key services

**Process optimization**
- Optimize production & utilization of assets
- Increased performance with decentralized application expertise.
- Autonomous decision making

**Energy management**
- Optimize consumption & usage of energy
- Optimized consumption
- Smart metering
- Lower impact on electrical grid

**Asset management**
- Reduce downtime & maintain performance
- Condition-based maintenance
- Asset protection functions
- Smarter maintenance
- Empowered operators

Comprehensive data Available Anytime, Anywhere
Process Optimization

How Altivar Process contributes to the process performance improvement.
Real Time Data

Monitoring with real information:

- Information dashboards on the keypad and webserver to monitor their process performance and energy consumed.
- Provide data for predictive maintenance, asset management, energy monitoring

Advantages:

- Data collection for application control functions
- Data collection for system integration and analytics
- Application performance monitoring and optimization
Seamless integration:

- Easier integration of the full range of drive capabilities within the platform.
- ATV600 DTM Library and function block provide full programming and diagnostic functions

Advantages:

- Saving money because of the reduction of the programming and configuration time
- Digital integration - saves asset investment and maintenance costs.
Multi Drive Link Architecture

Principles of the architecture:

• Ethernet-based real-time communication between drives
• Possibility of 1 Master and upto 5 Slaves / Secondary Masters with the architecture

Advantages:

• Easy cabling: Connection through daisy chain with Standard Ethernet Cables
• Cost reduction: Advanced management of complete installations inside the drive
• Service continuity: Redundant masters and resilience to equipment failures
Decentralized Application Expertise:

• Maintains the desired pressure or flow at the system outlet
• Multi Drive architectures with Multidrive Link allows staging/destaging and speed control mechanisms

Advantages:

• Decrease installation cost: Control inside the drive – no separate controller required
• Reduce energy consumption: Optimize energy usage at all outputs
• Manage mechanical wear: Monitor pump operation time and stage/destage by runtime
Monitor pump operation state and efficiency

Pump characteristic curves input:
- Easy to set
- Embed 5 points from pump curve

Advantages:
- Monitor [Head vs Flow], [Power vs Flow], [Efficiency vs Flow] and [Power vs speed]
- Sensor-less Flow Estimation
- Monitor application performance
- Raise alarms according to actual status
Energy Management

What Altivar Process brings to You:
Energy Monitoring

Smart Metering:

- Energy consumption information with accuracy >95%
- Energy dashboard from keypad or remote
- Cumulative consumed energy & estimated energy bill over different periods of time

Benefit from:

- Monitor energy consumption, detect trend changes
- Monitor typical KPI: (kWh/m3) or kWh/mWc/m3
- Anticipate maintenance, optimize operation process and save operation cost
- Exportable energy report for external analysis
Stop&Go Function

Saving More Energy when not in ‘RUN’

• Switch off unnecessary loads:
  • DC bus maintenance
  • Cooling fans
  • Backlight

• Maintain:
  • Control functions
  • Diagnostics

Advantages:

• Up to 60% of energy saving at stop
Friction loss compensation

Principle:
• Pressure drop changes with geometry and flow rates
• Function adapts PID control points for:
  • Difference in geometric height at outlet and usage
  • Friction loss changes at different velocities.

Advantages:
• Accurate pressure control at point-of-use
• Additional energy savings at reduced flowrates
Asset Management

Personnel safety, Downtime reduction, Maintenance optimization, Process protection
Anti Jam Function

Perfect fit for waste water applications

• This function allows manually or automatically executing forward & reverse pump rotations.
• Consecutive Anti-Jam sequences are counted on each Anti-Jam sequence start. Alarm or fault appears if counter over a predefined threshold.
• Trigger by torque, start, time

Advantages:

• Usually applied in waste water lift station, avoid clogging substances damaging the pump.
• Reduced downtime and manual maintenance
Pipe System Protection

Pipe systems

- In water supply systems, water hammer can occur when the pipes of a system are filled too rapidly, generating pressure shocks
- Pipe bursts and pipe breakages are other common issues encountered in many systems

Customer Value:

- ‘Pipe Fill Mode’ eliminates the occurrence of water hammering by filling the pipes at low rate
- ‘High flow’ and ‘outlet pressure monitoring’ functions detect pipe break and prevents pipe burst from happening

• Water hammer effect
Smarter maintenance

Reduced Process Downtime with augmented reality for operators

Easy troubleshooting thanks to Dynamic QR code:

• No software to install just scan the QR and
• Access on line trouble shooting tutorial

Advantages

• Save time and get your process up and running
• Automatic creation of technical support request
• Register your device on mySchneider app to experience full support for Schneider Electric Customer Care Center
Cybersecurity Achilles Level 2

Intelligent Drive and Cybersecurity:

• Assess the network robustness of industrial devices and certify that they meet a comprehensive set of requirements.

Advantages:

• Better communicate network robustness expectations
• Reduce costs associated with comparing claims of system robustness and security
• Ensure your systems and networks meet current and emerging international cyber security standards (e.g. ISASP99) and government regulations (e.g. NERC/CIP).
Engaging the IIoT– Services Oriented Drives
Enabling Plant Operations Improvement with Altivar Process

1. **Process Optimization**
   - Simple network integration
   - Enabling Predictive Maintenance
   - Advanced application control

2. **Energy Management** - reduce energy usage up to 30%
   - Embedded energy monitoring
   - Energy usage analysis and reporting
   - Energy savings functions

3. **Asset Management** – reduce downtime up to 20%
   - Smarter Maintenance – QR codes
   - Enabling predictive maintenance
   - Application monitoring and asset protection
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