SIEMENS
Ingenuity for life

When Failure is Not an Option.

SINAMICS G120 General Purpose Drives Overview

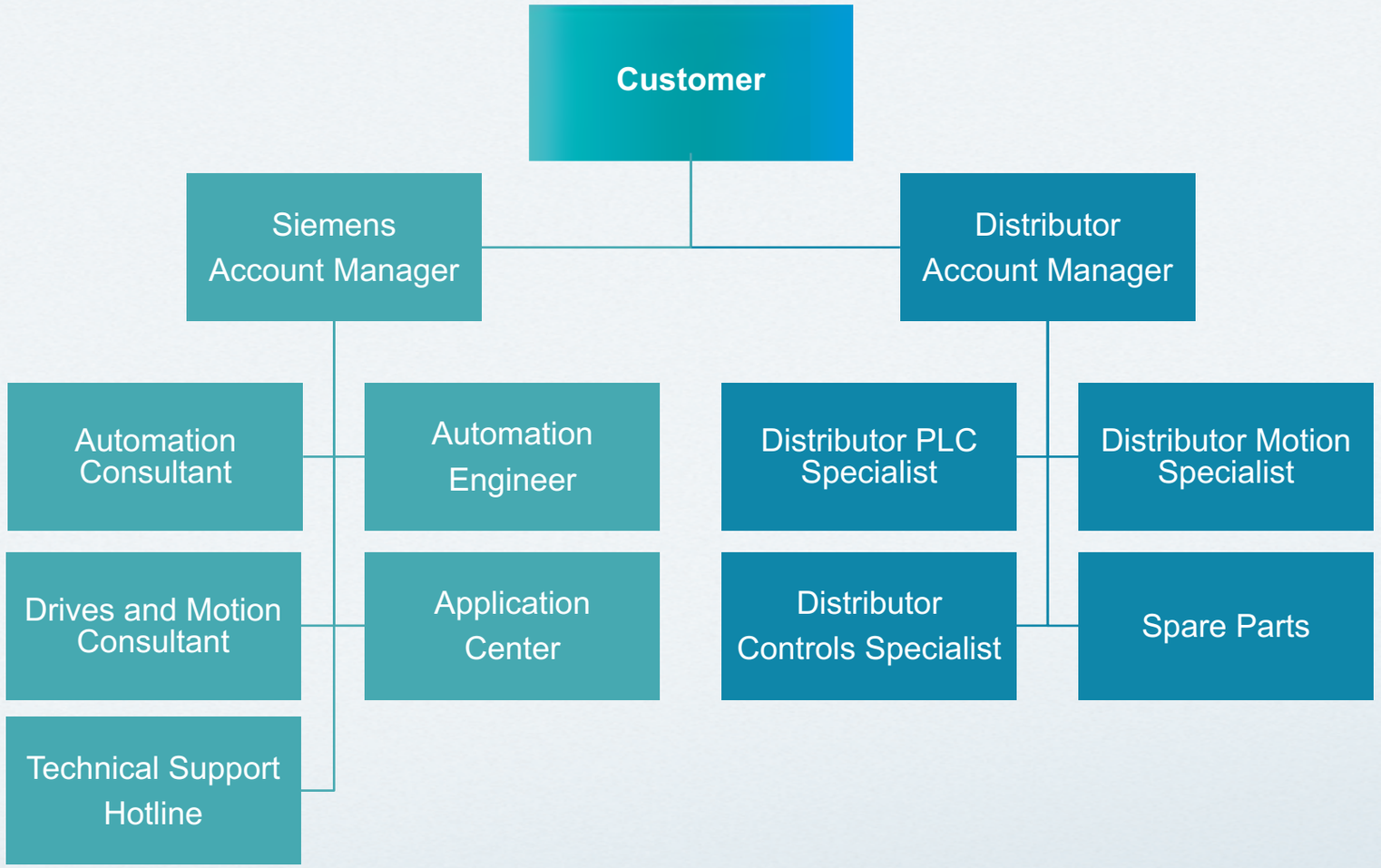
usa.siemens.com/SINAMICS-G120

Free Local Drives Support

Local, Highly Technical, Certified Experts Ready to Assist you

Local Support

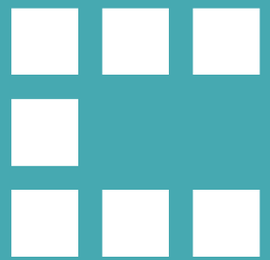
- **Specification**
- **Product selection**
- **Code development**
- **Application review**
- **Education**
- **Updates**
- **Spare parts**



Services & Support Portfolio

Comprehensive Services Support Portfolio

Service Programs and Agreements



Benefits

A comprehensive portfolio of services for products, systems, and applications as well as value-added and data-based services throughout the entire lifecycle of machines and plants.

Highly motivated and qualified Service Experts support you in:

- Minimizing downtime
- Optimizing personnel deployment
- Reducing use of assets and resources
- Developing new digital service business models

Support and Consulting Services

Training Services

Digital Services

Spare Parts Services

Repair Services

Field and Maintenance Services

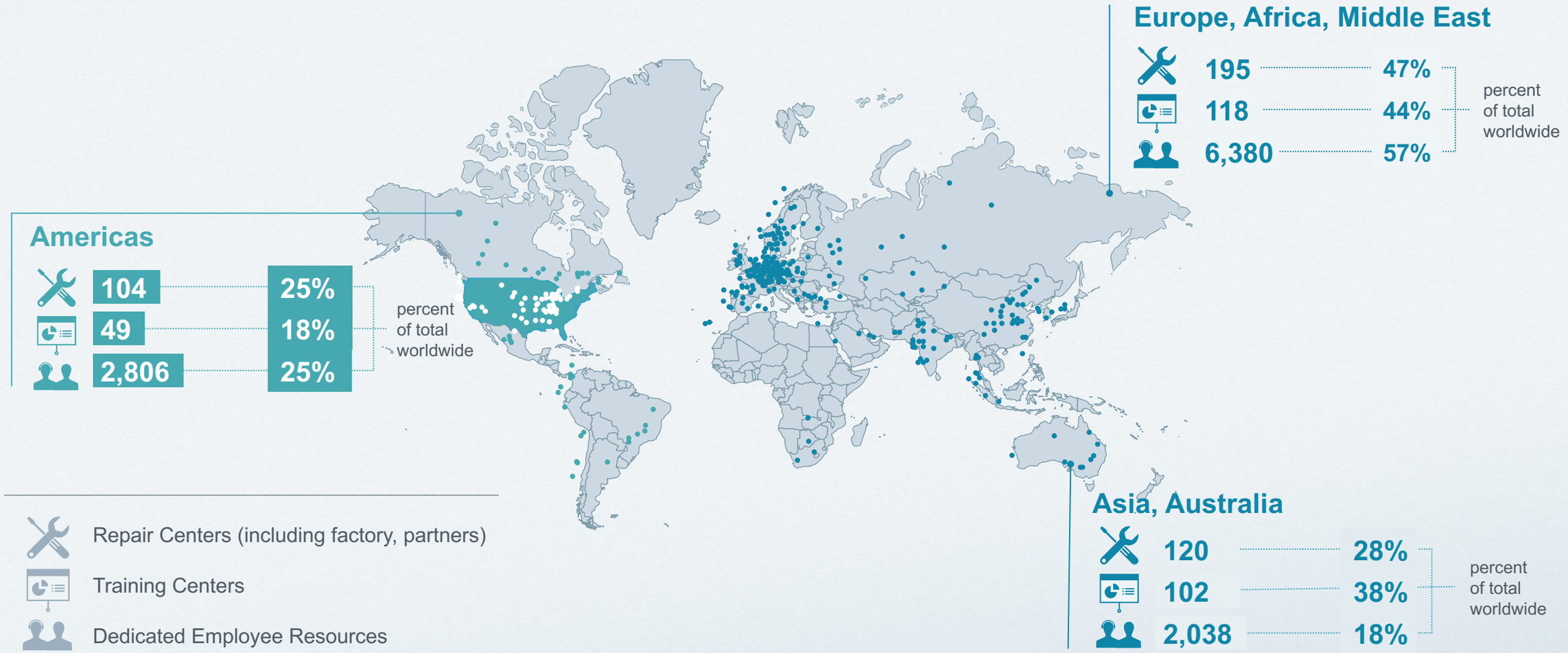
Retrofit and Modernization Services

Local Drives Support | Services & Support Portfolio | Global Drives Support

Customer Support | Modular Design | System Flexibility | Proven Reliability

Global Drives Support

Over 11,000 Employees, Over $6B in Research & Development



Local Drives Support | Services & Support Portfolio | Global Drives Support

Customer Support | Modular Design | System Flexibility | Proven Reliability

Innovative Modular Design

Configuration Simplicity and Flexibility that Saves Time

1

Power Module supplies voltage to the Motor

2

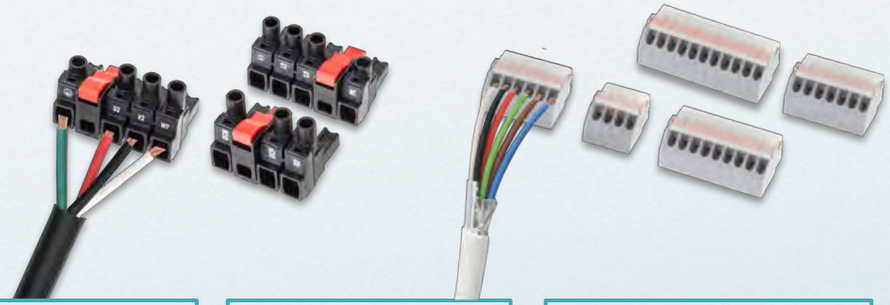
Control Unit monitors the PM and is the brains of the Drive

3

Operator Panel is the user interface for the Drive and Motor

Removable Terminal Blocks

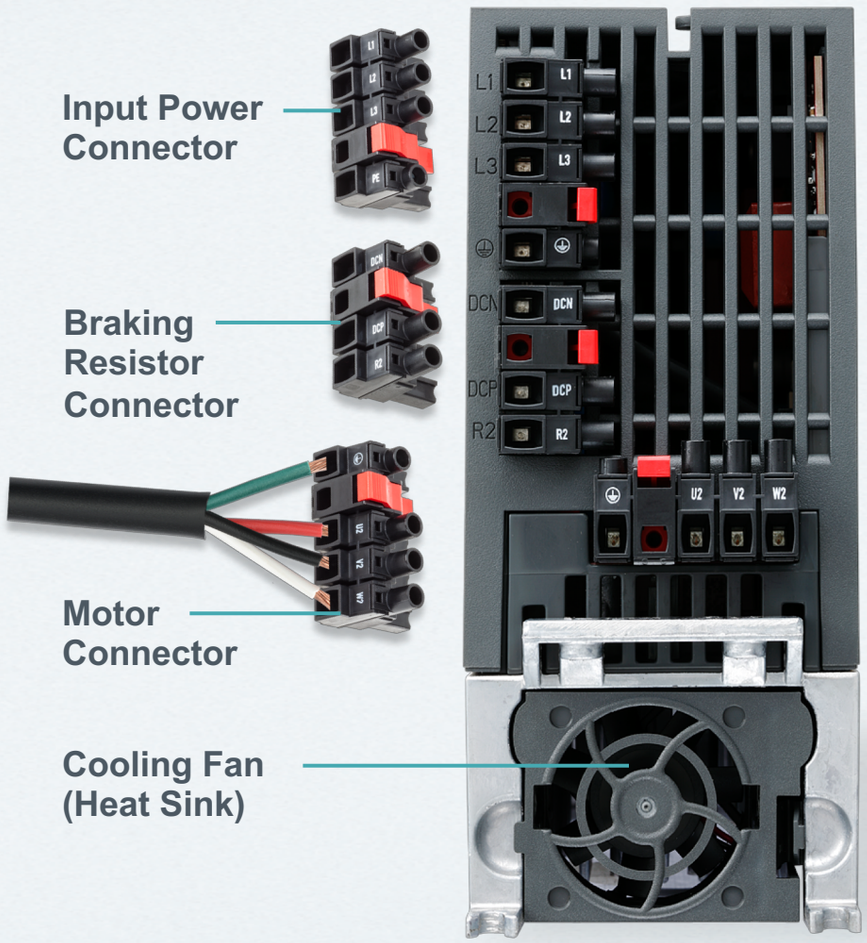
- Error-free wiring.
- Quickly add/remove power and I/O wires.
- No need to wait for drive to be mounted or for complete installation to start wiring.
- Build wiring harnesses in advance.



Power Module | Control Unit | Operator Panel | Digital Access | Configuration Management | Common Parameters

Power Module (PM)

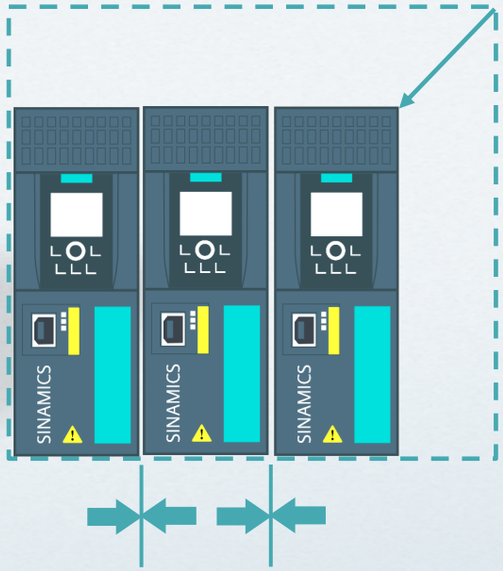
Increased Power Density in a Space-Saving Design



– Bottom View –

Powerful and Compact:

- Space-saving as a result of the same frame size, with and without integrated filter.
- Integrated energy recovery enables excess energy to be directly regenerated to the line supply which, eliminates the need for braking resistors.
- Side-by-side mounting saves space in control cabinet and reduces costs without derating.



25% less panel space due to higher power density versus the competition

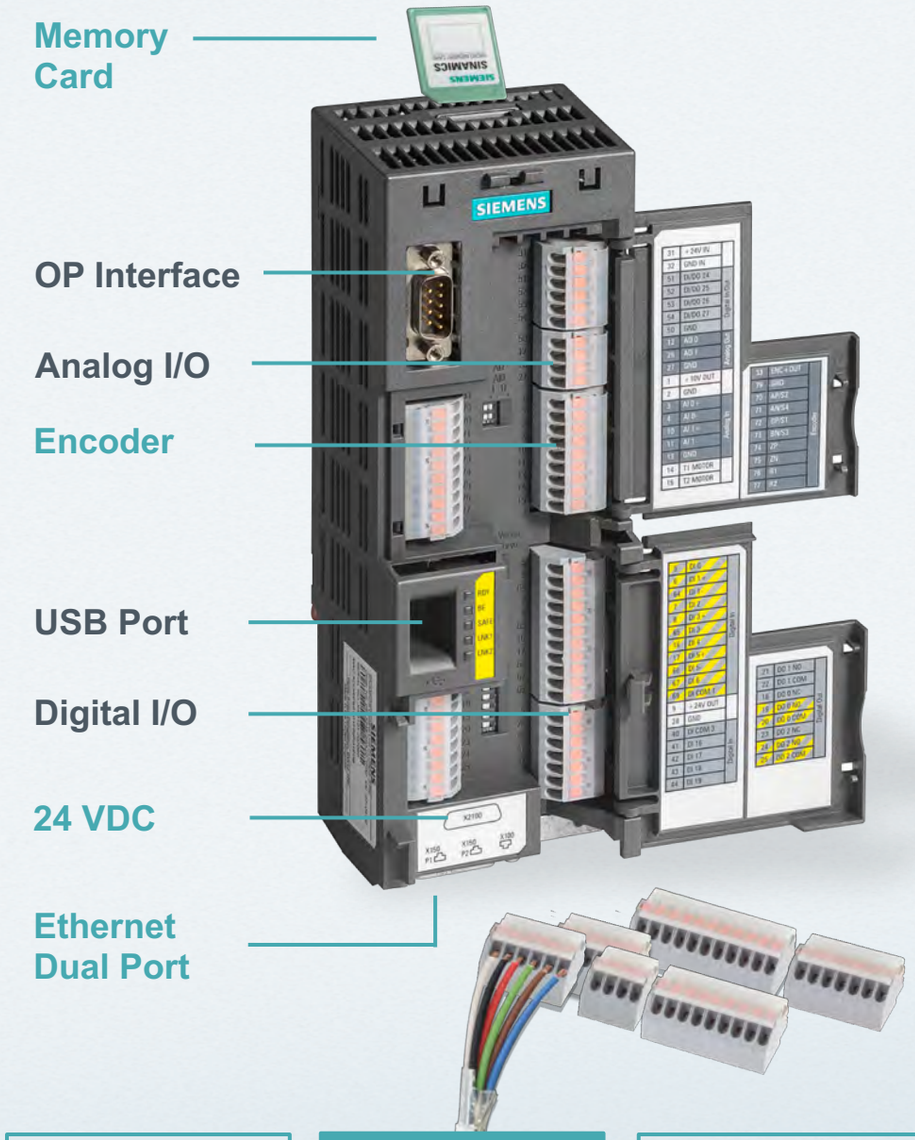
No space required between drives

Power Module | Control Unit | Operator Panel | Digital Access | Configuration Management | Common Parameters

Customer Support | **Modular Design** | System Flexibility | Proven Reliability

Control Unit (CU)

Selectable Control Configurations, Optimized for your Applications



Flexible, Selectable Configurations

- Built-in **Ethernet Dual Port**
  - Supports Ethernet/IP and Profinet
  - Seamlessly integrates into TIA Portal and Third Party Controllers
- **24 VDC** supply allows brains and communication of the drive to continue functioning even if the 480v power to the drive is removed. This means you can safely program the drive from the front without the risk of arc flash.
- Integrated **Encoder** incremental / high resolution feedback.
- **Memory card** quickly back up parameters or recover a program.

Several selectable application-specific operating modes:

- Pumps, fans, compressors
- General; mixers, agitators, conveyors, extruders
- Advanced; positioning

Power Module | Control Unit | Operator Panel | Digital Access | Configuration Management | Common Parameters

Customer Support | Modular Design | System Flexibility | Proven Reliability

Operator Panel (OP)

Wizards and Menu-driven Setup and Configuration

SAM / Wireless

IOP 2 / Intelligent

BOP 2 / Basic

Simple Commissioning

- Setup and configure using wizards with integrated plain text help functions.
- Quick access to all parameters.
- Displays fault codes without scrolling
- Simple, individualized local drive operation and visualization.
- Fast diagnostics using local display.
- Easy access to all parameters displays fault codes without scrolling through multiple screens.

Explore unique and flexible **Digital Access** and **Configuration Management** options…

Digital Access

From Commissioning to Maintenance – All at your Fingertips

Siemens Industry Online Support App (SiOS)
Supports the identification and analysis of the current drive configuration:

1. Generate a QR code once drive is configured
2. Scan QR code using SiOS app
3. Links you to videos, manuals and other info

Quick Commissioning

RUN in Jog or Setpoint

Quick Faults, Alarms and Status

Parameter Editing / Saving

Monitoring Status of Drive

Backup and Restore Settings to Cloud

Product ID

Smart Access Options

Power Module | Control Unit | Operator Panel | Digital Access | Configuration Management | Common Parameters

Customer Support | Modular Design | System Flexibility | Proven Reliability

Configuration Management

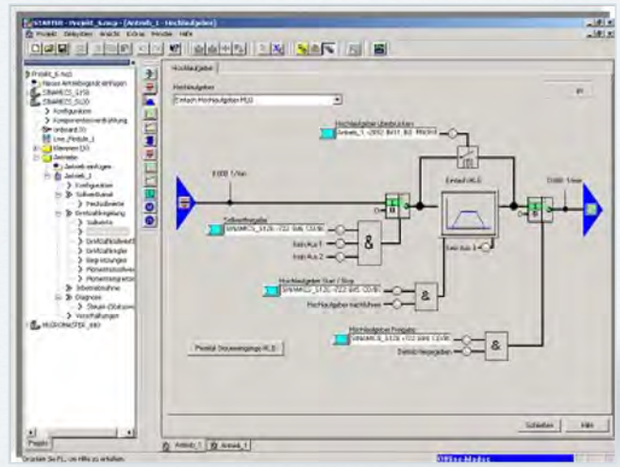
Flexible, Intuitive Backup and Recovery of Drive Information

SD Card
(Micro Memory Card)

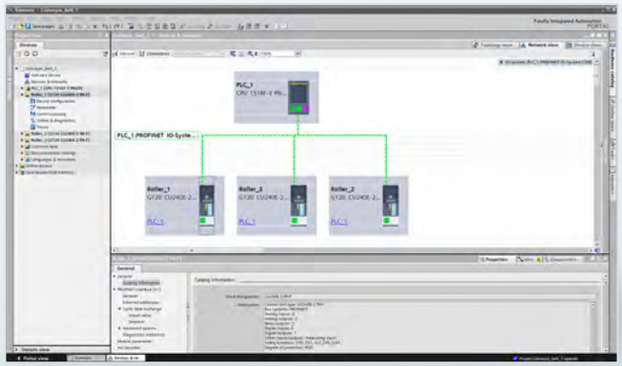
Operator Panel
(BOP-2, IOP-2, SAM)

Control Unit

SINAMICS **Starter**



SINAMICS **StartDrive**



Power Module | Control Unit | Operator Panel | Digital Access | Configuration Management | Common Parameters

Customer Support | Modular Design | System Flexibility | Proven Reliability

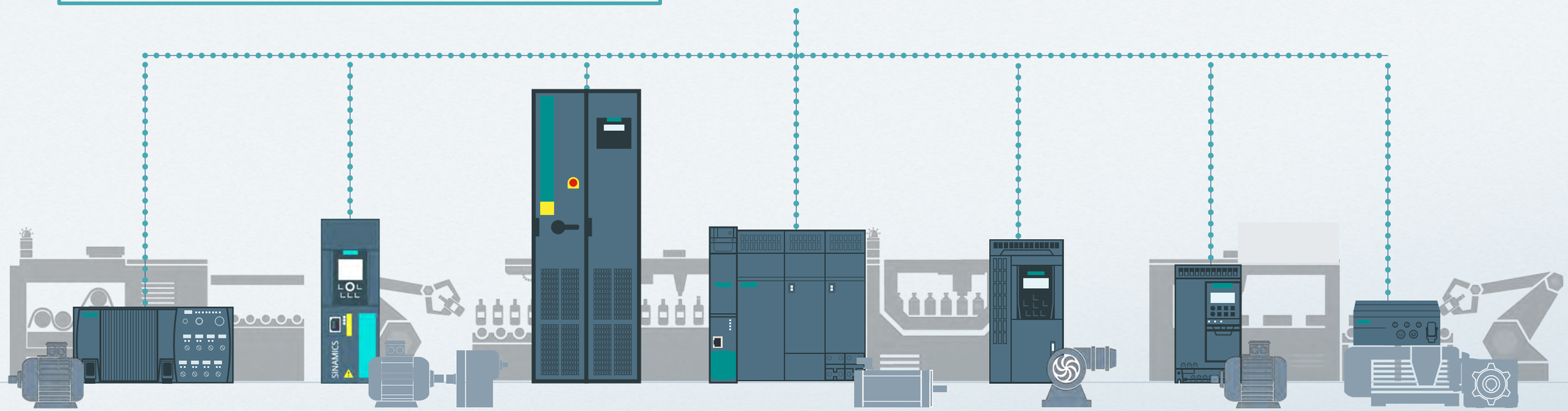
Common Parameters

Learn it Once and Apply it to all SINAMICS Drives

Common Parameters

SINAMICS Drives use common parameters

- From the basic V/HZ drive like the V20 to more complex coordinated drives like the S120, parameter 100 will have the same functions in all families
- Easier to program
- Easier to remember
- Less reliant on user manuals



Asset Protection

Keep Assets Operational without, Sacrificing Reliability or Safety

Best-in-class companies are utilizing Predictive Maintenance models to address and improve their top operational challenges:

Predict when maintenance is needed

Uncover in-depth root cause analysis of failures, determine optimum prescriptive action.

Preempt stoppages and unplanned downtime

Predict a failure before it happens to save costly downtime and disruptive stoppages in production.

Optimize operating conditions and extend equipment life

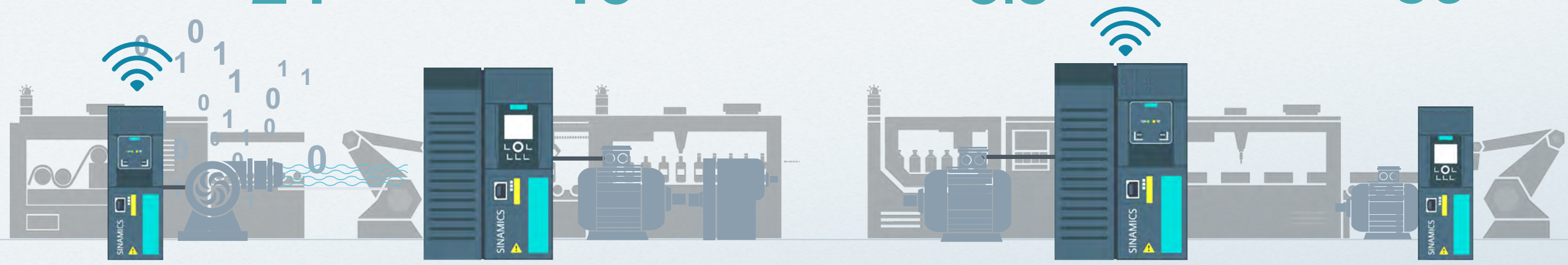
Optimize maintenance scheduling, inventory and ensure maximum production uptime.

Increased Return on Assets by 24%

Reduced maintenance costs by 13%

Reduced unplanned downtime to 3.5%

Improved Overall Equipment Effectiveness to 89%



*Source: Aberdeen Group, *Report: Asset Management, Building the Business Case for the Executive*

Predictive Maintenance

Example: Preempting Failure using Remote Condition Monitoring

G120 PdM Parameters

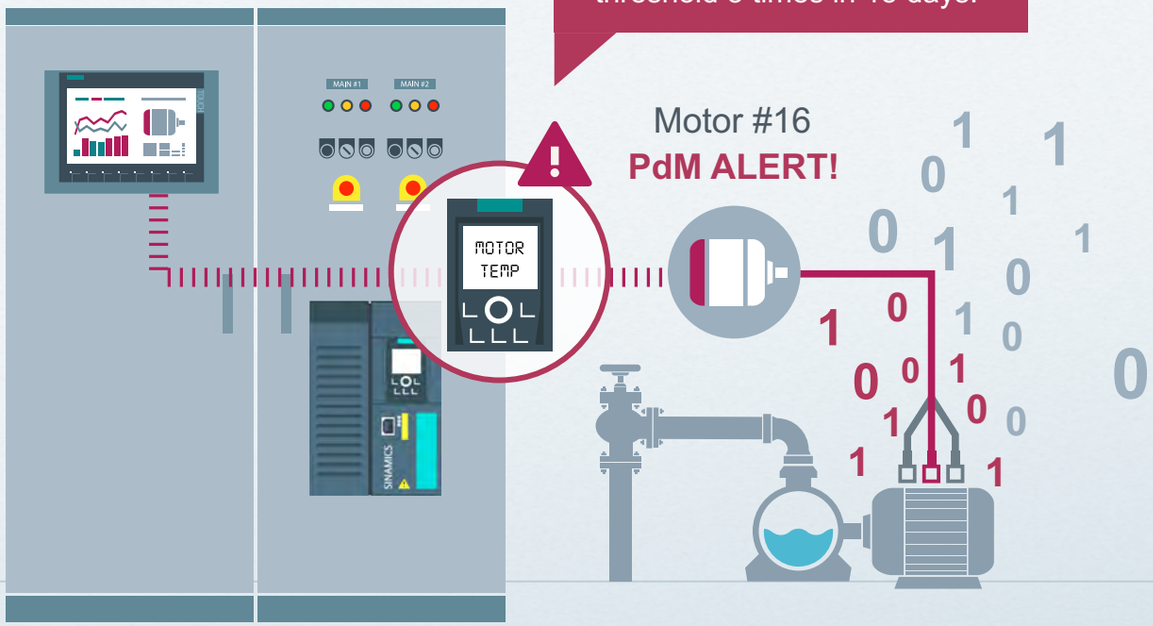
There are various parameters available that can be used for predictive maintenance such as;

- Drive / Motor Temperature
- Drive / Motor Voltage and Current Monitoring
- Fan Running Hours, Fan Life
- Number of Hours until Service is Needed

…and many others depending on the needs of your industry, applications and/or environments

Action: Need to schedule an inspection during next scheduled stoppage within 5 days.

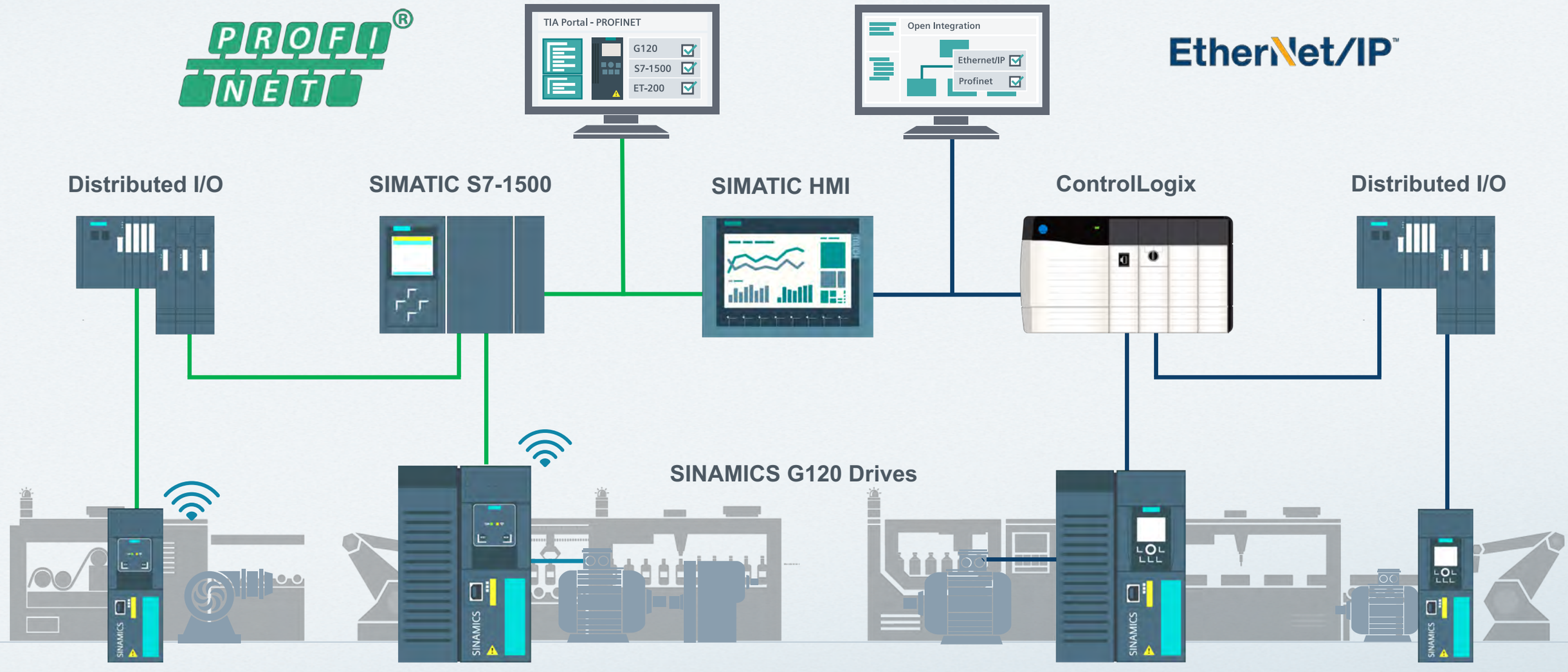
Problem: Drive parameters indicate temperature of motor #16 has exceeded predefined threshold 3 times in 15 days.



Motor #16
PdM ALERT!

Industrial Networks

Comprehensive and Flexible Industrial Connectivity Solutions

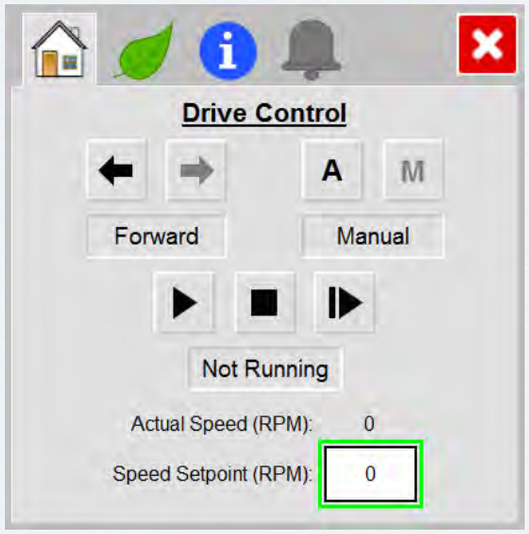


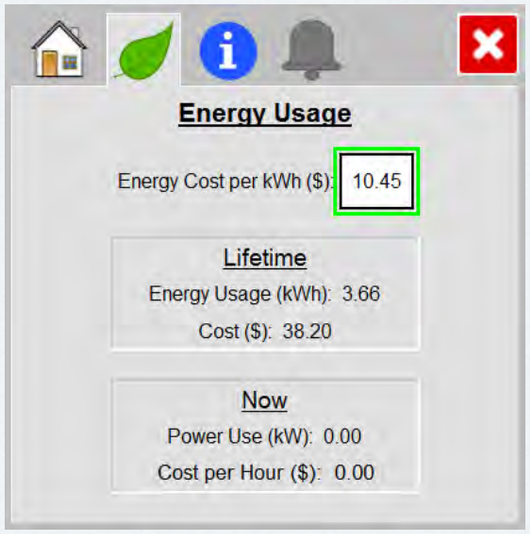
Asset Protection | Predictive Maintenance | **Industrial Networks** | Predeveloped Code | Cloud Computing

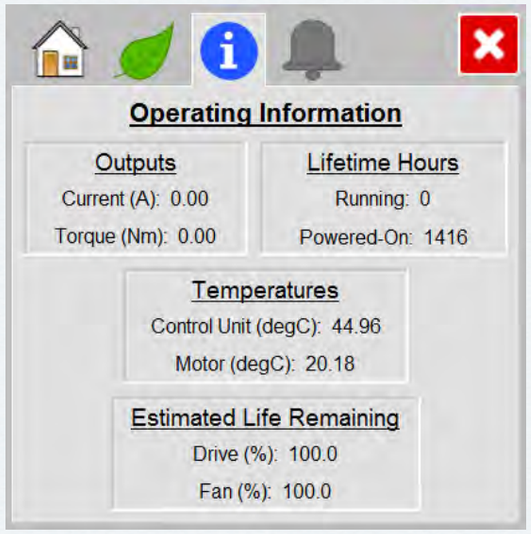
Customer Support | Modular Design | **System Flexibility** | Proven Reliability

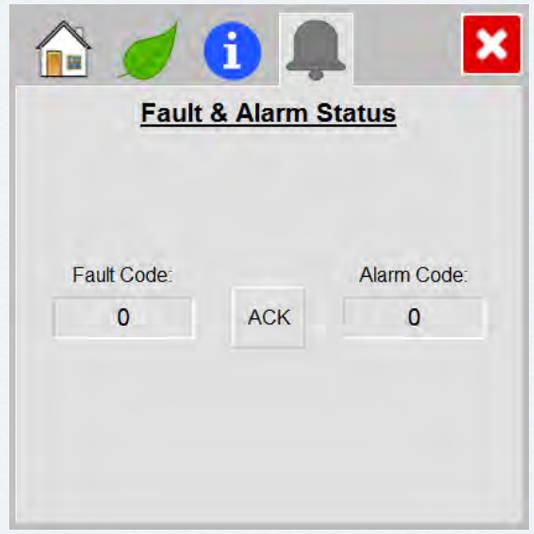
Ready-to-Use HMI Screens

Pre-Developed Control and Display at your fingertips









Drive Control
- Auto / Manual Mode
- Start, Stop, Jog
- Forward / Reverse
- Drive Status
- Manual Speed set-point
- Speed Feedback

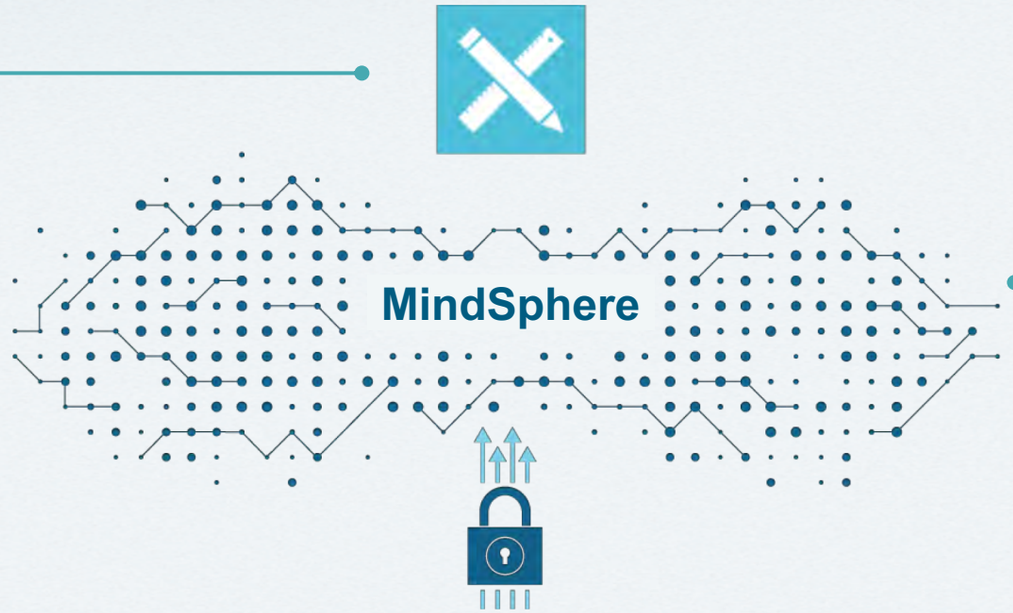
Energy Usage
- User configurable energy cost
- Lifetime KWH Usage
- Lifetime Cost
- Present Energy consumption
- Cost per hour of operation

Operating Information
- Output Amps and Torque
- Lifetime hours powered and running
- CU and Motor Temperature
- Estimated life remaining of power module and fan

Faults and Alarms
- Fault Code
- Alarm Code
- Text description of fault with alarm
- Acknowledge faults and alarms

MindApps

Internal or third-party applications for transforming data into knowledge



MindSphere

Data transferred to MindSphere or third-party clouds to generate knowledge

MindConnect

Connection to MindSphere via MindConnect

Drives and motors

Integration of drives and motors using engineering tools throughout the machine building cycle

Industrial Environments

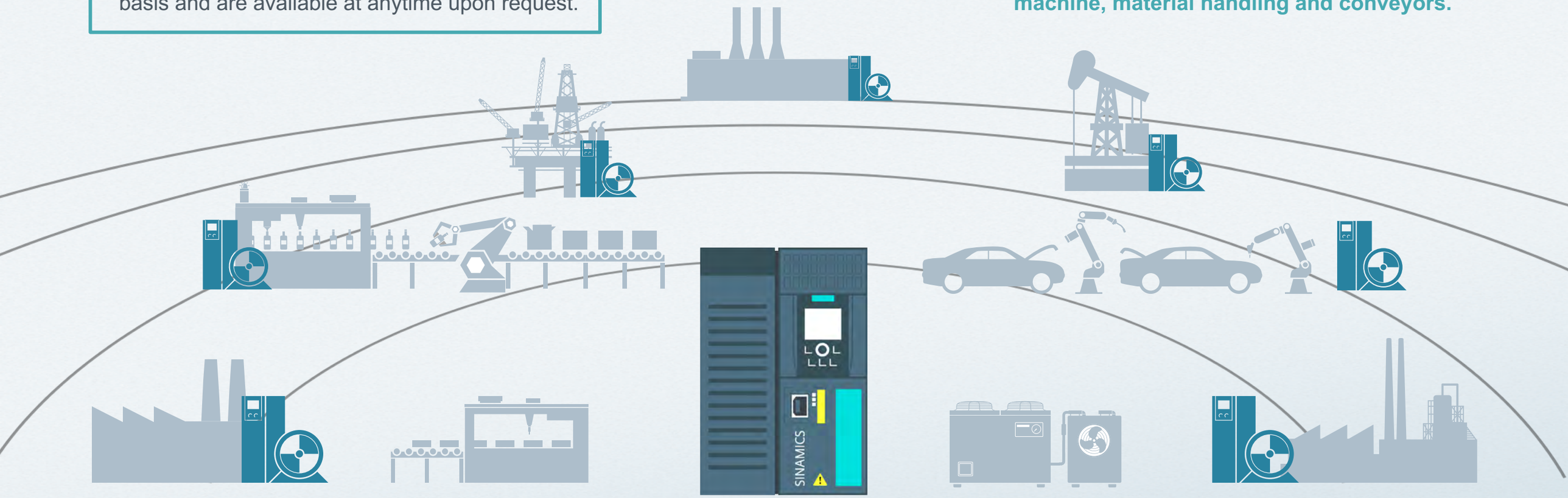
Managed Risk through Worry-Free Operation and Performance

Mean Time Between Failure (MTBF)

Siemens publishes MTBF to help manage risk and predict critical business system outages.

These values are maintained on a regularly basis and are available at anytime upon request.

Main industry applications include, automotive, textile, printing, water/wastewater and chemical sectors as well as higher-level production machine, material handling and conveyors.



Industrial Environments | **Extreme Environments** | **SiPLUS Conformal Coating**

Extreme Environments

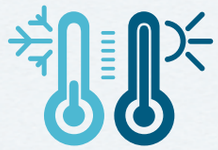
Conformal Coating for the Highest Level of Extreme Protection

Corrosive Substances

Condensation High Humidity

Salt Mist Contaminants

Mechanical Substances



Extended Temperature

Installation Altitude

EN 60721-3-3

- Industry standard coating = 3C2
- Siemens standard coating = 3C3
- SiPLUS extreme coating = 3C4

100% coating of PCB and soldering points, processors extended temperature range.

Additional heat sink, mechanical reinforcement and protective covers.

Industrial Environments | Extreme Environments | SiPLUS Conformal Coating

Customer Support | Modular Design | System Flexibility | Proven Reliability

SiPLUS Conformal Coating

Comparison between EN 60721-3-3 and ISA-71.04

				Industry Standard Siemens Small Drives		**Siemens Standard** Siemens Large Drives		**SIPLUS extreme**	
		EN 60721-3-3	**ISA-71.04**	**EN 60721-3-3**	**ISA-71.04**	**EN 60721-3-3**	**ISA-71.04**	**EN 60721-3-3**	**ISA-71.04**
		3C1 [2]	G1	3C2	G2	3C3	G3	**3C4**	GX [4]
Gas									
H_2S	Group A	< 7,1	< 3	< 360 [1]	- [3]	< 7 100	- [3]	**< 49 700**	- [3]
				< 71 [2]	< 10	< 2 100	< 50	**< 9 900**	>= 50 [4]
SO_2, SO_3		< 37	< 10	< 370	- [3]	< 3 700	- [3]	**< 14 800**	- [3]
				< 110	< 100	< 1 850	< 300	**< 4 800**	>= 300 [4]
Cl_2		< 34	< 1	< 100	- [3]	< 340	- [3]	**< 1 000**	- [3]
				< 34	< 2	< 100	< 10	**< 200**	>= 10 [4]
NO_x		< 52	< 50	< 520	- [3]	< 4 680	- [3]	**< 10 400**	- [3]
				< 260	< 125	< 1 560	< 1 250	**< 5 200**	>= 1 250 [4]
HF	Group B	< 3,6	< 1	< 36	- [3]	< 2 400	- [3]	**< 2 400**	- [3]
				< 12	< 2	< 120	< 10	**< 120**	>= 10 [4]
NH_3		< 420	< 1 500	< 4 200	- [3]	< 49 000	- [3]	**< 247 000**	- [3]
				< 1 400	< 10 000	<14 000	< 25 000	**< 49 000**	>= 25 000 [4]
O_3		< 5	< 2	< 50	- [3]	< 150	- [3]	**< 1 000**	- [3]
				< 25	< 25	< 50	< 100	**< 100**	>= 100 [4]
HCl		< 66	- [5]	< 330	- [5]	< 3 300	- [5]	**< 3 300**	- [5]
				< 66	- [5]	< 660	- [5]	**< 660**	- [5]

Industrial Environments | **Extreme Environments** | **SiPLUS Conformal Coating**

When Failure is Not an Option.

SINAMICS G120 General Purpose Drives Overview

Published by
Siemens Industry, Inc.

5300 Triangle Parkway, Suite 100
Norcross, GA 30092
1-770-871-3800

Published in USA

usa.siemens.com/sinamics-g120