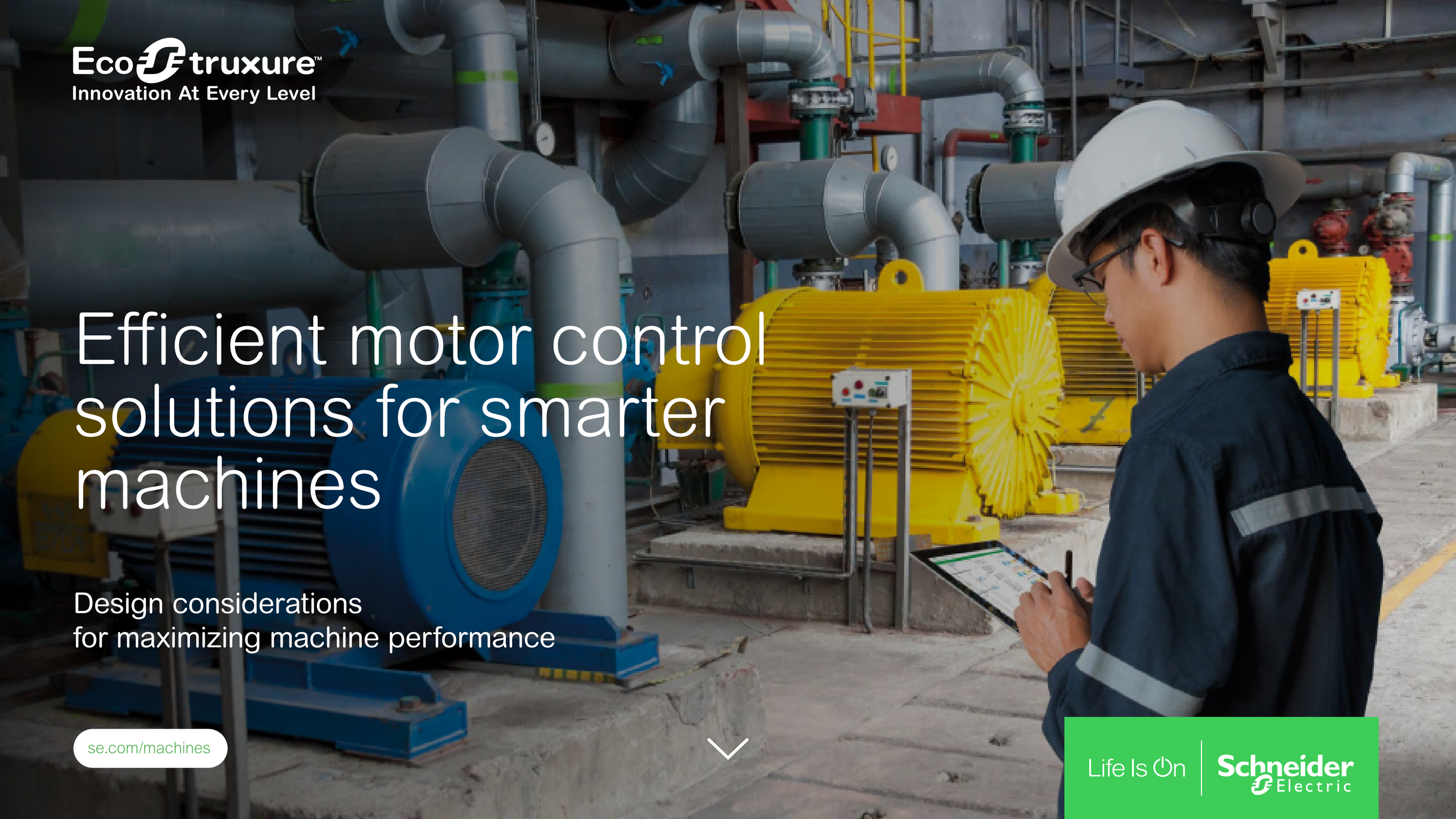


EcoStruxure™
Innovation At Every Level

Efficient motor control solutions for smarter machines

Design considerations
for maximizing machine performance

se.com/machines

Life Is On | Schneider Electric

Table of contents

Understanding the importance of optimized motor control

Understanding the importance of optimized motor control and protection

Most processes in industrial plants depend on electric motors, including conveyor belts, pumps, compressors, agitators, and fans. To put it in perspective, consider this:

70%

of total energy consumption in the industry can be attributed to electric motors*

46%

of electricity globally is consumed by motors*

*International Energy Agency, Energy-Efficiency Policy Opportunities for Electric Motor-Driven Systems, 2011

** TU Bergakademie Freiberg Institut für Elektrotechnik, Asynchronmotor – Stationäres Betriebsverhalten, Skriptum für Nichtelektrotechniker, 2005

Asynchronous motors are most common, covering around **85 percent of all motors in industry****. They're suitable for low and medium power applications, especially those in which the starting torque has to increase with the speed. Their popularity stems largely from their low cost, robustness, and ease of installation and maintenance.

As motor performance directly impacts the continuity of critical operations, productivity levels, and business efficiency, optimized motor control and protection are essential and should be the primary focus for machine builders.

When selecting solutions for asynchronous motors, machine builders should take a few things into account:

- High start-up current which is mostly reactive and can cause a significant voltage drop
- High number and frequency of start-up operations
- Need for motor overload protective devices with the right operating parameters to avoid tripping during the starting period

Only motor control and protection solutions tailored to application, operating conditions, and motor type can ensure reliable and efficient motor performance in the long run.

Analyzing the potential of motor control and protection solutions

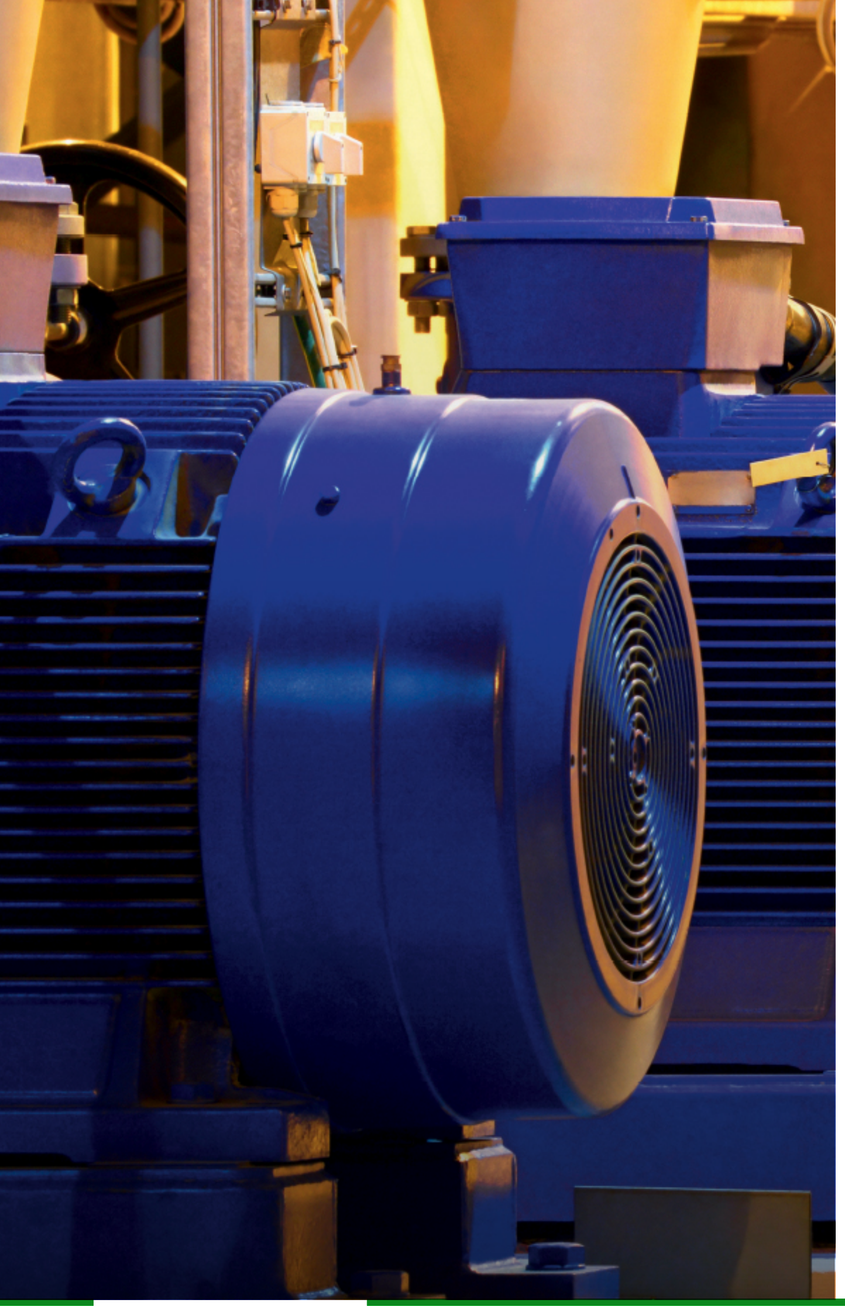
Motor control encompasses a number of functions: switching, short-circuit protection against abnormal currents, overload protection against an abrupt current increase, and motor management.

Switching and protection are basic functions but can nevertheless be enhanced in a variety of ways:

- **Multi-functional devices**, aggregating several functions in a compact size, save space in the panel. They also simplify configuration as there's no need to choose multiple components separately.

- **Energy-efficient solutions** for motor control are appreciated by industrial customers looking to optimize resources and costs, both for economic reasons and due to the consumer-led drive for sustainable products. For machine builders, this is an opportunity to differentiate. By implementing new designs and smart technologies, they can bring more value with lower energy consumption, less waste, better performance, and a shorter time to ROI.

- **Digital configuration tools** provided by manufacturers help machine builders streamline solution design. Step-by-step assistance ensures all functions are covered in the process and makes it faster to find the right components. Digital design tools also help manage the project budget and optimize time spent on project development.



Motor management, a more holistic motor control approach, offers greater innovation potential. Digital technologies open new opportunities, facilitating motor control solutions that better meet operational goals.

- Motor management covers a **broader functional spectrum** than simple motor control. It's about managing motors collectively rather than as individual products, and it's based on planning to minimize motor downtime, optimize operating costs, and save energy.

- **Communication capabilities** added via communication modules make it possible to monitor motor loads, spot faults, and track performance patterns through logs. These insights give operators greater control of equipment, including remotely, helping them to optimize performance and better plan maintenance to mitigate motor failure risks. This helps prevent plant stoppage, equipment damage, or danger to people and the environment.

- **Analyzing equipment performance data** provides further information that can be used to fine-tune motor control applications for maximum machine availability, thus improving operational efficiency. Analytic capabilities are delivered by advanced software and apps based on digitization capabilities.

Digitization opportunities in motor control

Across industry, smart technologies are gaining popularity but are still rarely applied to motor control and protection. There's huge potential in digitizing this domain, as smart solutions enable unprecedented visibility and reactivity. Powerful analytic tools help extract more information from motor-level data and deliver actionable insights for better operations planning and equipment maintenance.

By including cloud connectivity in their machines, machine builders can offer more advanced services, including real-time condition monitoring, remote troubleshooting, and predictive maintenance plans to improve process continuity.

Digital solutions also help improve motor energy efficiency. With energy quality and consumption data aggregated into dashboards and reports, end users can easily identify and tackle inefficiencies to save on energy costs.

Streamlining motor control design

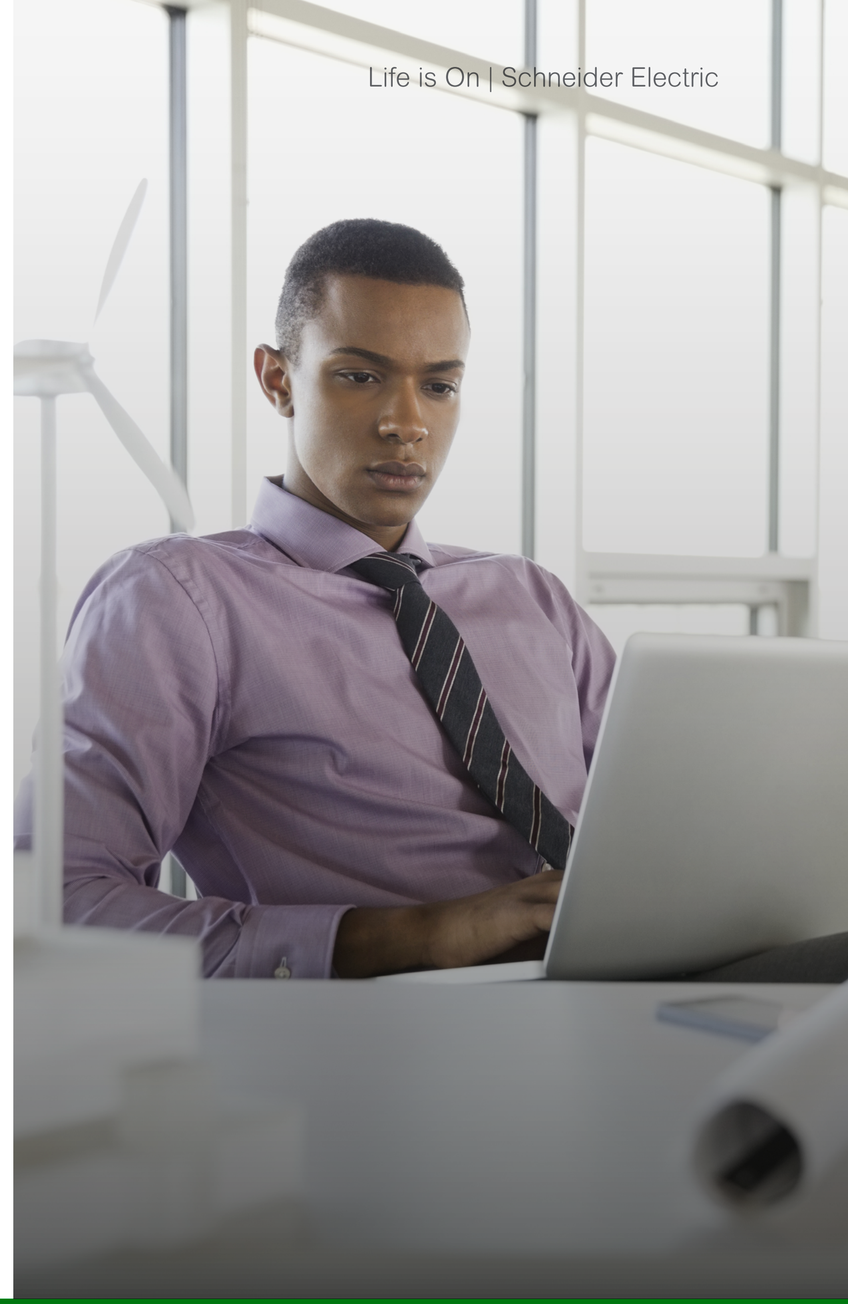
Focusing on scalability

Every machine type – simple, advanced, or complex – needs motor control and protection optimized for its capabilities in order to deliver maximized performance. To accomplish that, machine builders need to find ‘just the right’ product configuration for each application and operating conditions. Scalable solutions facilitate this process.

The scalability of motor control and protection helps achieve top overall equipment effectiveness (OEE), meaning reliable and up-to-speed performance and top machine availability. OEE is a key indicator as it affects the efficiency of the entire manufacturing process.

Scalable motor control and protection solutions are also important for project cost optimization. By selecting components with the right functionality level, machine builders can not only stay on-budget, but also enable future savings on energy and maintenance costs.

With easy-to-scale solutions, machine builders can better meet specific project requirements such as reducing the cabinet space taken by motor control and protection devices, now and in the future. Scalability also supports machine builders’ efforts to build equipment faster and shorten time-to-market.



Defining the optimal solution

Schneider Electric, an industry leader in motor control solutions for nearly a century, has developed a complete motor management approach based on five fundamental domains of expertise. It takes all relevant electrical system and industrial process parameters into account to develop an optimal, sustainable solution. This approach delivers greater performance and efficiency while optimizing investment and operating costs.

The five domains of motor management expertise

1. **Expert services for motor applications** to analyze application constraints and verify motor compatibility.

   - Software
   - Expert analyses
   - On-site support and services

2. **Advanced motor control** to ensure optimal starting and operating conditions for reliable service and longer equipment life.

   - Auto-transformer starters
   - Reduced voltage soft starters
   - Variable speed drives

3. **Motor protection and control** to define suitable protection and integration in the industrial control system.

   - Protection relays
   - Motor starters (DOL, Star-Delta, etc.)

4. **Power quality** to maximize energy efficiency.

   - Protection relays
   - Motor starters (DOL, Star-Delta,etc.)

5. **Asset management** to assess motor management solutions over time.

   - Portfolio management
   - Operational performance
   - Motor condition assessment

The approach defined above is built on Schneider's expertise and a broad offer portfolio which covers 99% of motor control and protection equipment, ranging from simple, single-function motor protection to multi-function control and protection devices. As a global company, Schneider is positioned to ensure high product availability and fast delivery worldwide.

All products carry the Green Premium label, indicating eco-design and sustainable performance. There's also a selection of free digital design tools, including **EcoStruxure™ Motor Control Configurator**, which helps machine builders define full solutions tailored to their applications. These tools save time at every stage of the design process, from product selection and configuration to engineering and commissioning.

Why use digital tools?

less time spent designing an optimized solution

investment savings with properly engineered motor management solutions

investment savings with selected suitable voltage level

Figures based on Schneider Electric customer data.
This is not a guarantee of performance in your specific circumstances.

Common motor control scenarios for configuring the right solution

To facilitate design for machine builders, we've identified three standard machine use cases covering the most common applications. The following chapters present three distinct motor control scenarios for different machine profiles, guiding machine builders to select the best motor control configuration for their customers. Each scenario explains the main challenges and trends behind each setup and lays out the combination of Schneider Electric products with the best price/performance ratio.

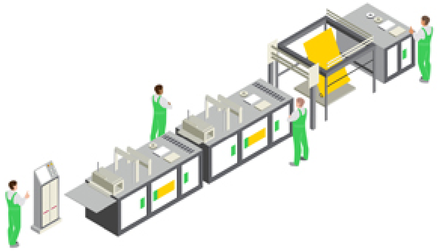
1

FIRST SCENARIO
Simple machines: for cost and performance optimization

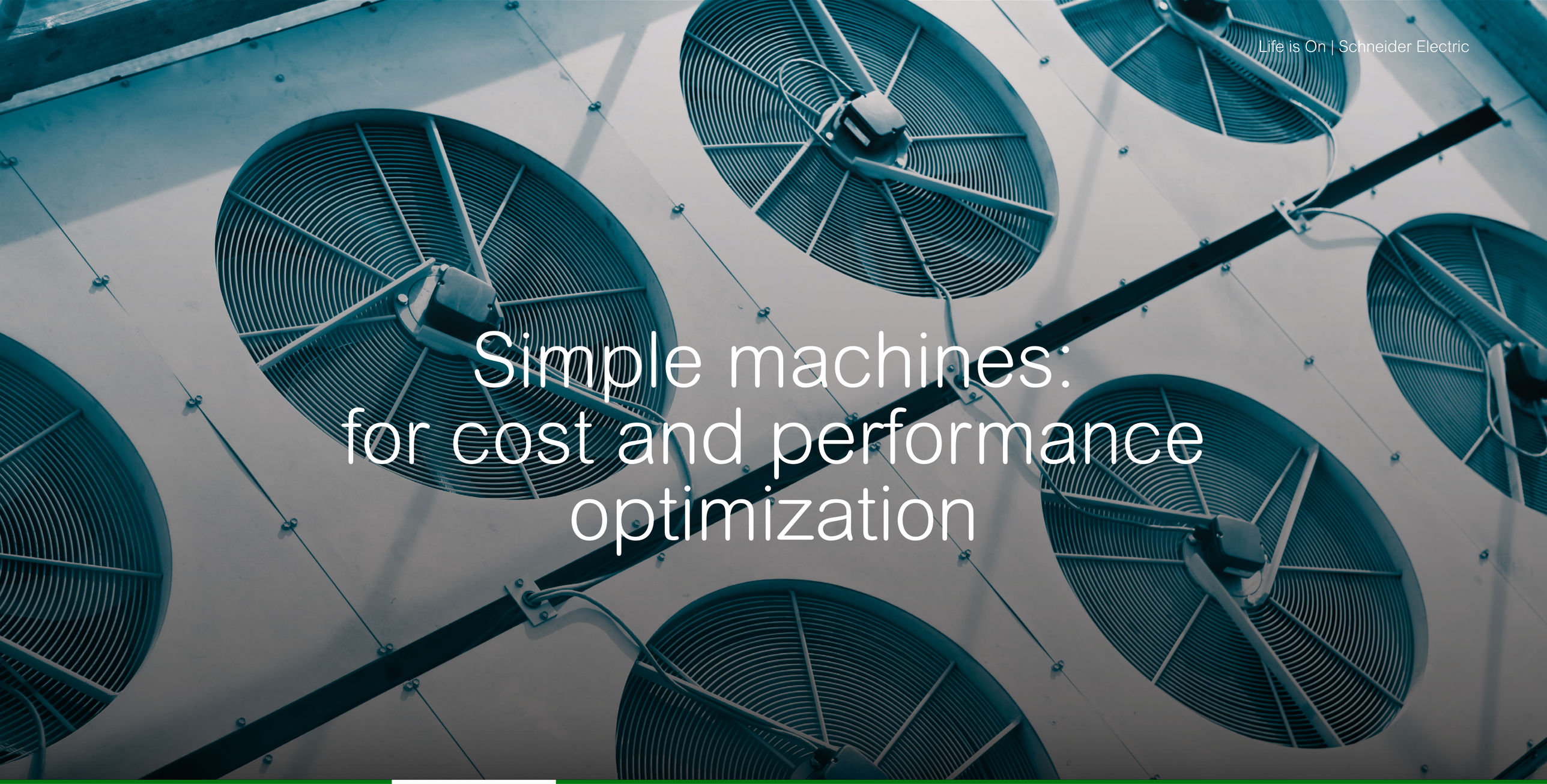
2

SECOND SCENARIO
Advanced machines: for productivity and modularity

3



THIRD SCENARIO
Complex machines: for connectivity and efficiency



Simple machines: for cost and performance optimization

Simple machines

1

Simple machines are often stand-alone, semi-automated catalog machines

Machine scenario	Challenges and trends	Recommended configurations

- Typical examples of this machine type are block hoists, simple HVAC machines, or pumps operating with – or possibly without – simple PLC/logic controller in a hardwired automation architecture.
- These machines are usually stand-alone, semi-manually operated, and do not perform a mission-critical function.
- These machines use one or a few motors with direct online starters or simple variable speed drives, depending on the application.

Simple machines

1

Simple machines are often stand-alone, semi-automated catalog machines

Machine scenario | Challenges and trends | Recommended configurations

Simple machines are typically manufactured identically, without additional customization. When choosing motor protection solutions for them, there is no need for extensive flexibility. In most cases, simple and cost-optimized solutions are preferred by customers.

- **End-user challenges** – Motor protection is necessary even for simple machines, but it's not a core feature for machine builders looking to win in the market. From their perspective, selecting the right components without functional overhead should take as little time as possible. With multiple solution providers and a variety of products, finding the optimal configuration fast isn't easy.
- **Export considerations** – Motor protection components must cover a wide performance range, be easy to install, and comply with the regulations of all target countries.
- **Functional upgrade** – Due to a stronger focus on energy efficiency nowadays, speed-controlled drives are increasingly used in simple machines. For such configurations, price-optimized frequency converters without functional overhead are needed.

Simple machines

1

Simple machines are often stand-alone, semi-automated catalog machines

Machine scenario | Challenges and trends | **Recommended configurations**

Motor protection solutions based on direct online starters are the first choice for simple machines. However, while simplicity is key, so is scalability. That's why Schneider Electric offers a variety of configurations. For speed-controlled motors, it's a 'just enough' solution providing a basic range of functions with simple frequency inverters and without fieldbus communication.

Configuration:

- 2-device direct online starter, up to 75 kW
- 3-device direct online starter, up to 15 kW

Configuration for enhanced functionality:

- Soft starters, up to 400 kW
- Variable speed drive, up to 15 kW

Motor control solutions focusing on cost and performance optimization

1

	DOL 2 device (up to 75 kw)	DOL 3 device (up to 15 kW)	Soft starter (up to 15 kW)	Variable speed drive (up to 15 kW)
Safety switch disconnector	 TeSys Vario			
Short circuit protection	 TeSys GV* P	 TeSys GV* L P	 TeSys GV* or TeSys GV* P (for ATS01)	 TeSys GV* P
Overload protection		 TeSys LR.K / TeSys LR.D	 Altistart ATS01 / Altistart ATS22	 Altivar Machine ATV320 / ATV12 watch video
Motor control	 TeSys K & TeSys D	 TeSys K & TeSys D		
Panel integration	 (Spacial SM / Spacial SF / Spacial CRN / Spacial S3D)			

*Contact your local Schneider Electric office for the most optimized solution in your region

Motor control solutions focusing on cost and performance optimization

Simplicity-just enough functionality for simple applications

- **TeSys Vario**, **TeSys Vario/Mini-Vario** are the simplest options for local starting or stopping motors.

Scalability with 2- and 3-device motor starter solutions

- Single and multifunction versions of **TeSys** short circuit breakers offer leeway to focus on cabinet footprint or simplicity. In both cases, compact contactors and reversing contactors from the **TeSys D** and **TeSys K** provide flexible, compatible components for easy installation and maximized continuity of service.

Easy to select and install

- Contactors, short circuit breakers, and thermal overload relays of the **TeSys** ranges provide can be easily and quickly mounted together to create modular and compact motor starter solutions.

Softstarter for more differentiated motor control

- **Altistart 01** and **Altistart 22** provide scalability for cost-sensitive applications, as well as applications with higher functional demands.

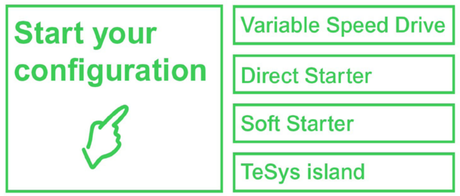
Explore more content on simple machines

For design engineers

Select and configure motor control solutions for simple machines, easily. Design your solution in three simple steps with the online EcoStruxure Motor Control Configurator. Find more detailed information on motor control solutions in our digital catalog (Digi-cat).

Digi-cat

EcoStruxure Motor Control Configurator



For marketing directors

Follow the latest trends in motor control and asset management to make your machines a cut above the rest and better meet your customers' needs.

- Everything You Need to Know About the Direct On Line (DOL) Motor Starter
- 5 Ways That Motor Circuit Breakers Provide Optimal Protection for Motors
- Motor Protection: Three Common Mistakes and How to Avoid Them

Advanced machines: for productivity and modularity

Advanced machines

2

Advanced machines range from ´top´ simple machines to machines equipped with a PLC or motion control

Machine scenario | Challenges and trends | Recommended configurations

- The spectrum of advanced machines ranges from applications like booster pumping stations or standard cranes to packaging machines running with 100–120 cycles, such as bagging machines, labelers, or tray packaging machines of low or medium complexity.
- Such machines can work stand-alone or in inline processes with a limited number of process stages.
- The automation architecture is based on PLCs or motion controllers (more complex applications).
- Automation and motor control devices are in a cabinet or, in case of distributed architectures, partially in the machine frame or decentralized small cabinets.

Advanced machines

2

Advanced machines range from ´top´ simple machines to machines equipped with a PLC or motion control

Machine scenario | **Challenges and trends** | Recommended configurations

Typically, advanced machines are based on a standard design, but at least partially customized. This requires modular machine design. Machine builders want platform strategies for automation solutions with variable controller performance as well as approaches for designing and programming the whole machine portfolio within a single engineering environment. In this context, tools to efficiently select and commission should make configuring the right solution quick and easy.

Cabinet-free automation is a trend these days, rising from new modular options. This has, in turn, boosted the preference for compact motor control solutions with reduced space requirements.

Energy consumption is another aspect that should be taken into account when designing motor control solutions. Even if machine builders are trying to win end users with competitive performance features and unique benefits, advanced machines also have to be cost efficient.

And let's not forget asset management, whether remote or on-site. Even if customers aren't always asking about it, the topic is quickly gaining importance. Thus automation solutions should be open to future integration of new asset management approaches. In practical terms, this means that, at the minimum, health data for AC motors should be available without the need to rework the entire motor control solution.

Advanced machines

2

Advanced machines range from ´top´ simple machines to machines equipped with a PLC or motion control

Machine scenario | Challenges and trends | Recommended configurations

For the low end of the machine spectrum, Schneider Electric proposes direct online starters:

- Devices with multi-functionality at different levels save cabinet space and motor starters with communication capabilities help to future-proof the solution.
- Soft starters and variable speed drives, with or without fieldbus communication, provide scalability to achieve an optimized cost/benefit ratio for different needs.

Configuration:

- 2-device direct online starter, up to 250 kW
- 3-device direct online starter, high current

Configuration for enhanced functionality:

- Soft starters, up to 400 kW
- Variable speed drive, up to 75 kW

System integrations:

- EcoStruxure Motor Control Configurator
- EcoStruxure Machine Expert
- SoMove setup software for motor control devices
- Modicon M241, Modicon M262

Panel integration:

- Universal Enclosure Spacial (CRN/S3D/SM/SF)

Motor control solutions focusing on productivity and modularity

2

	DOL 1 device (up to 18 kw)	DOL 2 device (up to 250 kW)	Soft starter (up to 400 kW)	Variable speed drive (up to 75 kW)
Power feeder		 ComPact NSXm		
Short circuit protection	 TeSys U	 TeSys GV* P	 TeSys GV*	 TeSys GV*
Overload protection				
Motor control		 TeSys D (75 kW) TeSys F (250 kW)	 Altistart ATS01 / Altistart ATS22	 Altivar ATV340 / Altivar ATV320 (ATV Regen as option)
Panel integration			(Spacial SM / Spacial SF / Spacial CRN / Spacial S3D)	
System integration			(Modicon M241 / Modicon M262 / EcoStruxure Machine Expert / SoMove)	

*Contact your local Schneider Electric office for most optimized solution in your region

Motor control solutions focusing on productivity and modularity

Minimized cabinet space requirements

- Components like the compact power feeder of the **ComPact NSXm** ranges or the **TeSys U** all-in-one motor starter are enablers for compact motor control solutions. For fewer components, the **Altistart soft starter** range provides a complete solution.

Scalability with advanced direct online starters

- Standard motor solution with **TeSys D**.
- Enhanced communication options with **TeSys U** to enter analytics.
- Direct access to detailed information for every motor starter, bringing motor condition data into edge-level analytics.

Soft starters providing scalability in cost and functionality

- **Altistart 01** soft starters combine simplicity and efficiency, **Altistart 22** are multi-functional, all-in-one devices with enhanced connectivity.

Scalable Speed Control technology

- The **Altivar Machine ATV320 series** provides basic functionality.
- **Altivar Machine ATV340** provides state-of-the-art technology safety functions and embedded web server.

Easy selection, configuration, and commissioning

- The **EcoStruxure Motor Control Configurator** speeds up the design of individual motor control solutions while providing the best cost/performance ratio.
- The **SoMove** setup software for PCs, DTM libraries for **Altivar ATV 320** and **ATV340**, **Altistart 22**, and **TeSys U** speed up the creation of the solution.
- Up to 40% time-saving in offer selection!

Efficient engineering and lifecycle management

- **EcoStruxure Machine Expert** is a software tool for developing, configuring, and commissioning an entire machine in a single software environment, delivering:
  - Up to 30% improved performance of the machine.
  - Machine design differentiation through a modular software approach (**EcoStruxure Machine Expert**).
  - Two times faster time to market for new machines.

Worldwide availability and compliance to regulations

- All product ranges are compliant to international and local regulations.

Explore more content on advanced machines

For design engineers

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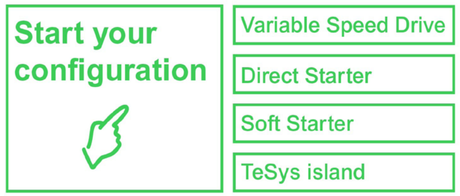
Digi-cat

EcoStruxure Motor Control Configurator



For marketing directors

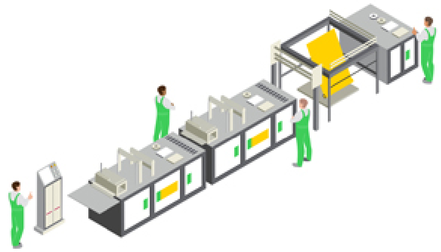
Follow the trends in motor control and asset management to better meet your customers‘ needs and differentiate your machines in the market.

- Integrating Motor Control, Automation, and Energy Systems Create More Efficient Plant Operations and Reduce Cost
- Executing the 3 Key Steps for Improving Machine Builder Efficiency
- Motor Protection: Three Common Mistakes and How to Avoid Them

Complex machines: for connectivity and availability

Complex machines

3



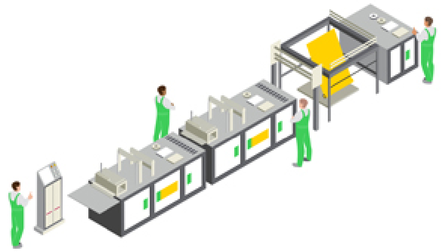
Complex machines are generally integrated into fully-automated production processes

Machine scenario | Challenges and trends | Recommended configurations

- Complex machine automation solutions are based on a PLC or a logic motion controller and fieldbus communication. These machines are characterized by a large number of I/Os, several asynchronous motors, often in addition to servo axes. Some motors are controlled by direct online starters or soft starters and some by variable speed drives.
- Complex machines are generally integrated into fully-automated production processes, often working in fully continuous shift operations, monitored with SCADA solutions.
- Usually these are non-catalog machines or small volume machines, each partially customized. Typical examples are filling, packaging, or assembly machines or handling solutions with integrated robotics.

Complex machines

3



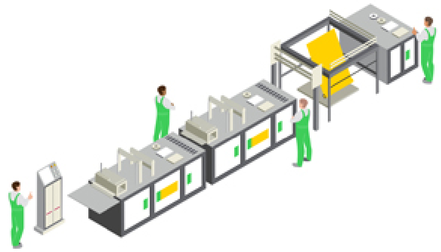
Complex machines are generally integrated into fully-automated production processes

Machine scenario | **Challenges and trends** | Recommended configurations

- Complex machine users expect from machine builders solutions that support their aim to maximize OpEx savings. Machine builders have to answer this demand with machines that provide maximum availability. This can be challenging for machine builders who are inexperienced in implementing condition/health monitoring and predictive maintenance solutions.
- In most cases, there is no existing database on the machine level covering all automation parts and a motor/drive solution. Creating a database is the first step.
- The machine digitization trend is gradually improving this situation as more and more asset management solutions appear on the market.
- But AC motors and loads are mostly white areas on the digitization map. Usually, there is no health/diagnostic data available for AC motors to serve as a base for integrating these motors into asset management tools. There is one exception here: motors controlled by soft starters or variable speed drives with fieldbus connectivity.

Complex machines

3



Complex machines are generally integrated into fully-automated production processes

Machine scenario | Challenges and trends | Recommended configurations

With the IoT-enabled EcoStruxure architecture, Schneider Electric is a leader in digitizing machines and processes. For motor control, the offer covers everything from scalable direct starters with basic connectivity up to fully digital load management and best-in-class variable speed drives with integrated web servers. Ready-to-use augmented reality solutions and digital services for remote asset management provide key functionalities to make the best use of the data generated.

Configuration:

- 3-device direct online starter:
  - up to 37 kW/up to 355 kW
- 2-device direct online starter, up to 37 kW
- 1-device direct online starter, up to 18 kW

Motor control solutions focusing on connectivity and efficiency (up to 37 kW)

3

	DOL 1 device (up to 18 kw)	DOL 2 device (up to 37 kW)	DOL 3 device (up to 37 kW)	Soft starters (up to 37 kW)	VSD (up to 37 kW)
Power feeder			ComPact NSXm (with PowerTag)		
Short circuit protection	TeSys U	TeSys GV2 & TeSys GV3	TeSys GV4L	TeSys GV*	TeSys GV*
Overload protection		TeSys island	TeSys LR9D	Altivar ATS22	Altivar ATV930 / Altivar ATV340 (ATVRegen as an option)
Motor control			TeSys D		
Panel integration			Set Cellean		
System integration			(Modicon M241 / Modicon M262 / EcoStruxure Machine Expert / SoMove)		
Asset management			Machine Advisor / EcoStruxure Augmented Operator Advisor		

*Contact your local Schneider Electric office for most optimized solution in your region

Motor control solutions focusing on connectivity and efficiency (up to 400 kW)

3

	DOL 1 device (up to 18 kw)	DOL 2 device (up to 37 kW)	DOL 3 device (up to 355 kW)	Soft starters (up to 400 kW)	VSD (up to 315 kW)
Power feeder			ComPact NSXm (with PowerTag)		
Short circuit protection		TeSys GV2 & TeSys GV3	TeSys GV4	TeSys GV*	TeSys GV*
Overload protection	TeSys U	TeSys island	TeSys T	Altivar ATS22	Altivar ATV930 / Altivar ATV340 (ATVRegen as an option)
Motor control			TeSys D / TeSys F		
Panel integration			Set Cellean		
System integration			(Modicon M241 / Modicon M262 / EcoStruxure Machine Expert / SoMove)		
Asset management			Machine Advisor / EcoStruxure Augmented Op-		

*Contact your local Schneider Electric office for most optimized solution in your region

Motor control solutions focusing on connectivity and efficiency

Communication options for monitoring and predictive maintenance

- **TeSys island** is extracting typical health and load data for condition monitoring of AC motors. Equipped with a bus coupler, it collects cyclical data from relays. Thanks to “avatars,” the device is easy to install and configure.
- **Altistart 22**, a multi-functional, all-in-one soft starter solution, is connected through serial communication.
- The **Altivar Machine ATV340** variable speed drives offer top-level automation capabilities. Data logging and monitoring can be done through the local system or remotely via an embedded web server.
- The **ATV340** drives are fully compliant with machine safety and cybersecurity standards to ensure the enduring protection of people and assets.
- The **Altivar Process ATV930** is the first services-oriented drive with embedded capabilities for power measurement and energy dashboards, process monitoring, and control, asset monitoring as well as protection and predictive condition-based maintenance.
- The **ATV930** has proven to reduce machine downtime by up to 20%!

Digital services for remotely monitoring and accessing machines

- **EcoStruxure Machine Advisor** is a digital, cloud-based services platform for machines:
  - Allowing remote access to machine data at any time, from anywhere.
  - Helping machine operators achieve higher machine availability thanks to analytics and notifications, faster servicing, reduced machine downtime, and improved performance.
  - Improving machine maintenance planning and quality thanks to better operation and activity tracking.

Augmented reality for efficient operation and maintenance

- **EcoStruxure Augmented Operator Advisor** combines real-time contextual and local dynamic information for mobile users, enabling them to experience a fusion of the physical, real-life environment with virtual objects. It can be applied to motor control at all levels of complexity, giving immediate, handheld access to relevant information for operations and maintenance.

Easy energy monitoring

- Monitoring achieved via a **PowerTag** wireless energy sensor added to a **ComPact NSXm** circuit breaker

Explore more content on complex machines

For design engineers

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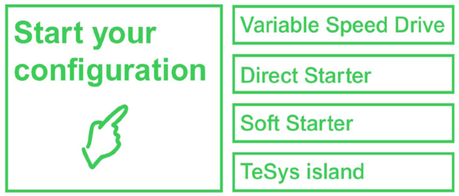
Digi-cat

EcoStruxure Motor Control Configurator



For marketing directors

Stay up-to-date with the latest trends in motor control and asset management for complex machines. Differentiate your offer and tailor your machines to your customers‘ needs.

- How New Generation Motor Starters are Driving Machine OEM Workplace Efficiencies
- For Machine OEMs, Digitization-driven Unprecedented Productivity Now a Reality
- How Machine Builders Apply Augmented Reality to Solve End User Business Problems

Final thoughts

Mastering solutions for motor control and protection

Motor control and protection solutions are responsible for more than just efficient machine performance. They impact entire processes, productivity, and operational costs. Because of this, machine builders need to thoroughly design motor control and protection solutions for each application and functionality.

While selecting a supplier, machine builders should consider component quality and reliability, the scope of the offer (as it impacts their ability to adapt to customer needs), and the availability of innovative solutions that cater to more advanced requests.

With access to a comprehensive product portfolio and intuitive digital design tools, machine builders can deliver solutions with added value. The high energy consumption of motors leaves space for efficiency improvements, which is easily achievable with the right motor control.

Machine availability is another area that can be enhanced by fine-tuning motor performance. The right component configuration helps mitigate the risk of downtime and improves process continuity.

Preparing for the future

As more industrial customers acknowledge the benefits of integrated plant operations, more will also be asking machine builders to connect motor control to automation and energy systems for greater visibility and optimization opportunities.

This increasing demand for edge-level equipment health and condition data makes digitization a topic of growing importance. Digitizing motor control is easier when working with devices like soft starters or variable speed drives featuring communication capabilities already in-built. It poses greater challenges for AC motors controlled by direct online starters. Solutions like Schneider Electric´s TeSys island can help here, providing differentiated motor and load data in short cycles that can be forwarded to the edge level via a standard fieldbus.

Advanced digital tools and services make it possible to integrate motor control into condition-based monitoring and predictive maintenance. Cloud-based services platforms, like EcoStruxure Machine Advisor, compile machine data for diagnostics and predictive analytics. The information is available both on-site and remotely, for the customer and the service provider. A number of issues can be resolved entirely through remote access.

Such capabilities create opportunities for machine builders, allowing them to develop new business models and win new customers with a more innovative offer. They also bring challenges that need to be addressed in order to fully embrace the benefits. New, more advanced solutions require machine builders to broaden their skills and expertise to support their customers with holistic competencies.

Cybersecurity is a prime example. Connected solutions must protect customer equipment data from unauthorized access. To help machine builders maximize the protection they offer, Schneider Electric takes product security into consideration from the very beginning of development and throughout the asset lifecycle. This way, products are more resilient and whole systems more secure.

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