Lenze
engineered to win

Automation solutions for converting and printing machines

More than 75 years
of experience
**in the finishing
and processing
of paper, film
and foil**

As one of the leading specialists in drive and automation technology, we always work closely with our partners to find the very best solution. With extensive know-how and a worldwide network of experts in the converting and printing industry we are well suited to set your ideas in motion with an eye for the optimal solution. This is true whether you want to improve existing equipment or develop a completely new machine.

We partner with you in all phases of your projects in accordance with your individual goals and requirements. When you design an innovative overall concept, we are there to help you make it a reality.

With our regional subsidiaries, our experts are active in over 60 countries around the world, working with you to develop the best solution for your application. Around the globe, well-known customers from this sector partner with Lenze.

This is how we develop innovative solutions for the converting and printing industry:

- Experienced experts who understand your requirements and goals
- Innovative hardware and software for the implementation of energy-efficient solutions
- Reliable drive systems for typical warehouse applications
- Open standards
- Global production with uniform Lenze quality standards
- Worldwide efficient logistics concepts
- A global service network and range of training courses offered

Find out more ...

Growing requirements **for converting and printing machines**

The innovativeness of the converting and printing industry means that new challenges are constantly arising with regard to the systems and machines that it uses. Increasing digitization is and will continue to be a part of current and future requirements.

The following across-the-board trends are becoming more and more important.

Modularization
Machines may increasingly take on a modular and customised design based on modules that are standardised to a great degree. This modularization runs through all phases of the process, from configuration, quotation, engineering and production, to documentation, commissioning and after sales.

The standardization required for this modularization changes the requirements for the software structure. The software is now modular as well, with the integration of historically developed OEM core competence in the form of encapsulated “software cores” and certified security technology.

Customisation – Batch size 1
With batch length getting smaller and smaller, customisation even for orders of just one item helps target customers more directly and provides a competitive advantage. In terms of engineering, this means that short changeover times and resource efficiency also when setting up for operation become increasingly important selling points.

Transparency
Improved data management is the
basis for inter-company networking. All process sequences are simplified due to standardised data structures. Optimised monitoring processes facilitate preventive and corrective maintenance while the entire production control system is also perfected. Servicing for customers is improved due to the use of mobile devices and track & trace options.

Availability
The early detection of problems ensures maximum machine availability. Maintenance can be planned and the need to keep fewer replacement parts in stock minimises the amount of tiedup capital. Replacement parts can be ordered easily, delivered quickly, and installed without any learning process. This, in turn, enables greater freedom in machine procurement.

Human-machine interaction
Intuitive concepts make it easier for operators to handle complex technology and reduce the probability of mistakes. Mobile terminals and open interfaces enable flexible control and access to all of a machine‘s functions, and internet technologies support diagnostics and also reduce the number of errors in production.

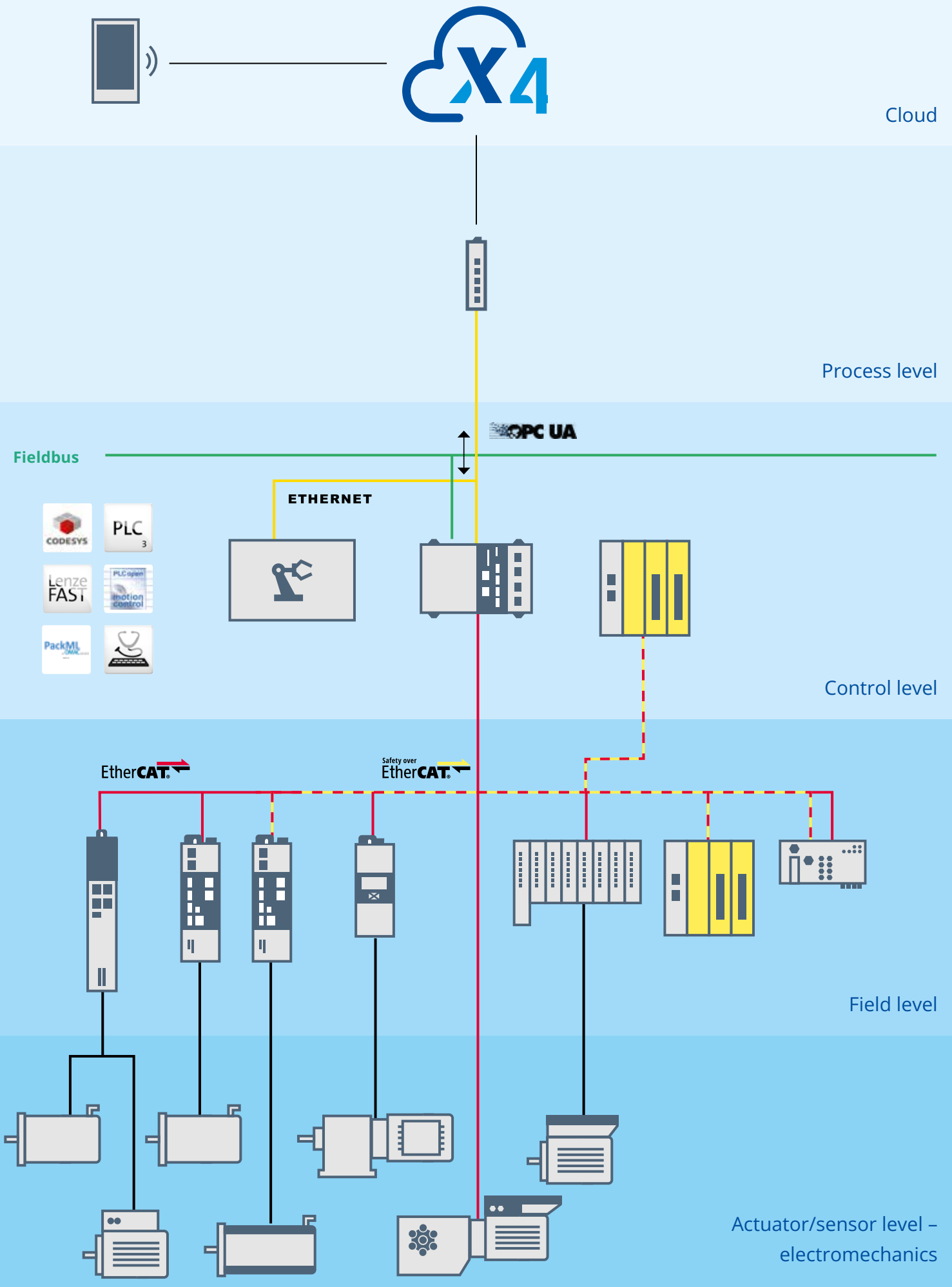
Resource efficiency
Digital networking can be used as a lever to enhance resource efficiency, whereby the machine adapts itself to the material and not vice versa. In this way, the consumption of material and energy can be optimally adapted and the loss of product and materials can be minimised. On top of all this, intelligently controlled motors enable energy recovery – a not inconsiderable benefit.

A comprehensive Lenze Automation Platform: **Scalable for your machine**

Comprehensive and open
Our automation platform offers you everything from the control level to electromechanics for the implementation of a wide range of tasks. Thanks to our energy-efficient mechatronic portfolio you benefit from long-lasting quality and easy handling of all our products.

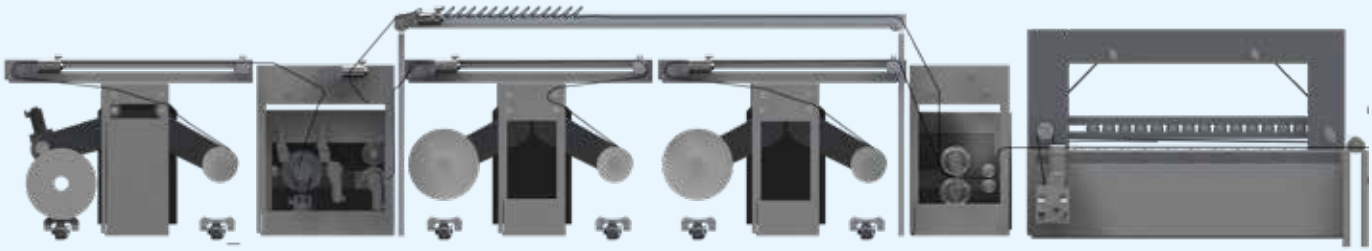
Furthermore, our platform is open for the efficient integration of components from various partners.

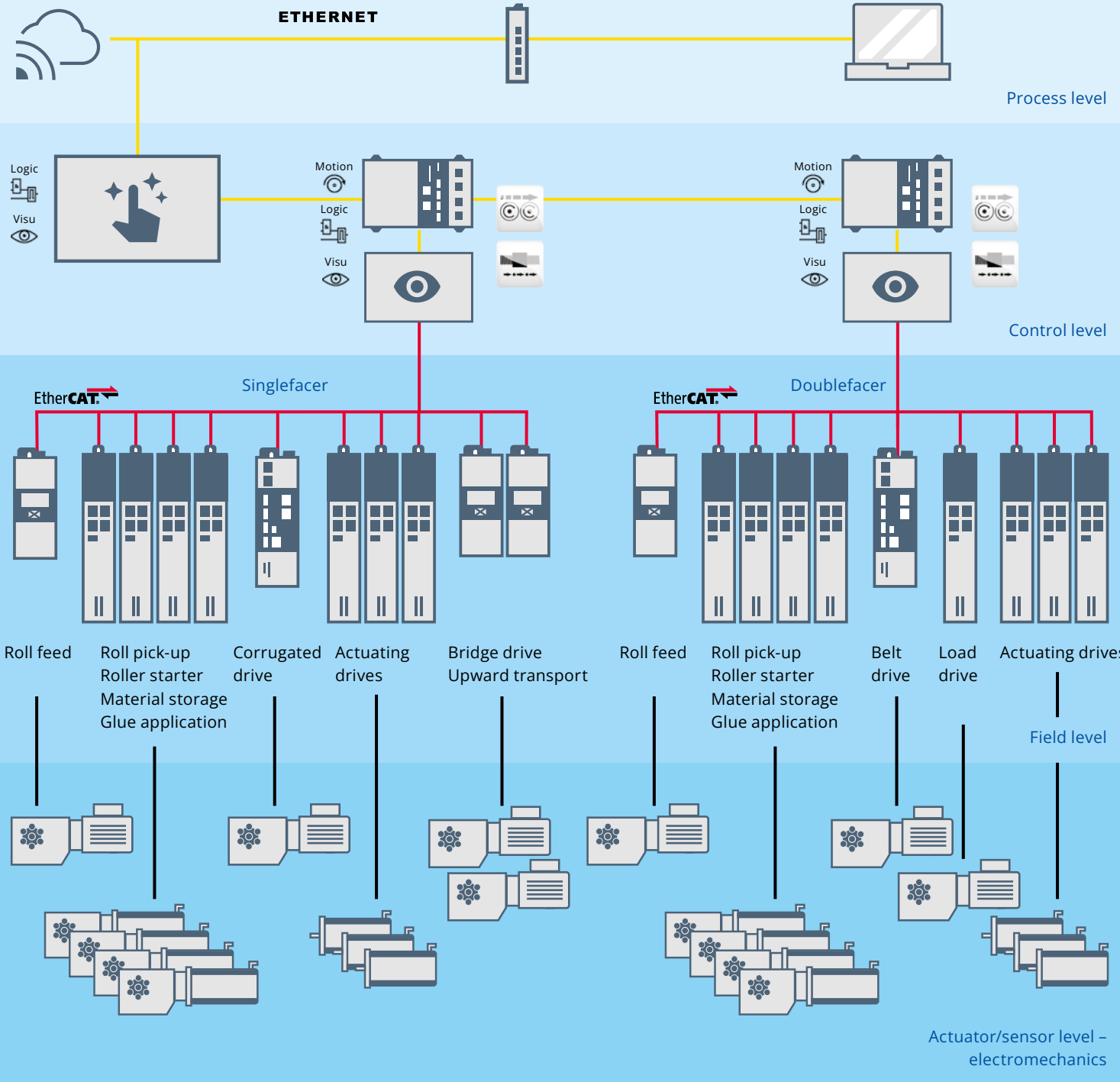
Compliance with market standards
We are able to network ourselves with control and drive systems at any time. This enables easy integration into higher-level line topologies. Design engineers and users can feel confident that this openness makes our platform future-proof, keeping your core expertise in-house.


Cloud
Process level
OPC UA
Fieldbus
ETHERNET
CODESYS
PLC 3
Lenze FAST
PLCopen motion control
PackML
Control level
EtherCAT
Safety over EtherCAT
Field level
Actuator/sensor level – electromechanics

Cardboard production: **For the perfect corrugation**

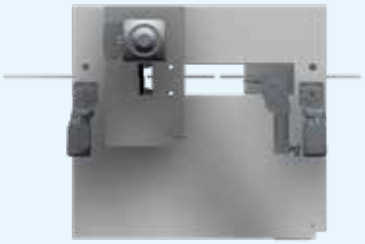
- **Modular design of single-facers and double-facers** with paper feeders under the control of one controller per machine module with an interface to the overall plant control system
  - Very easy adaptation to the individualplant configuration is possible with regard to types of corrugation and corrugation combinations
- **Universally usable drives,** whose parameters are kept centrally in the higher-level control system and are transferred to the drives during initialization
  - This enables lower stocks and easy servicing
- **Energy-efficient operation** thanks to DC-bus connection of track and brake assemblies, carriage units and roller starter




ETHERNET
Process level
Logic
Visu
Motion
Logic
Visu
Motion
Logic
Visu
Control level
EtherCAT
Singlefacer
EtherCAT
Doublefacer
Roll feed
Roll pick-up
Roller starter
Material storage
Glue application
Corrugated drive
Actuating drives
Bridge drive
Upward transport
Roll feed
Roll pick-up
Roller starter
Material storage
Glue application
Belt drive
Load drive
Actuating drives
Field level
Actuator/sensor level –
electromechanics

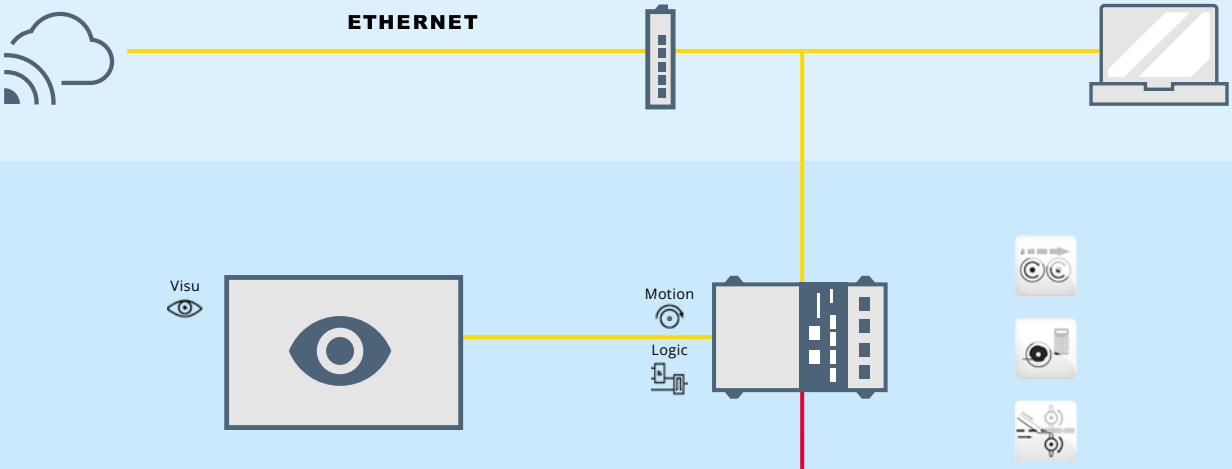
Cross-cutting: **Clean cut**

- **Software engineering made easy** thanks to Lenze FAST standard software module “Cross-Cutting”:
  - Scalable functionality and performance, from standard cross-cutting to highly dynamic operation with torque precontrol and precise cutting-mark synchronisation
  - Integrated manual operation and referencing as well as visualization
- **Low supply power** due to possibility of connecting an external capacity module for the dissipation and absorption of energy during acceleration and deceleration of the knife drum
- **Energy balance** between feed and output drives due to DC bus connection
- **Low investment costs** due to optional creation of a duplex cross-cutting system connected to a shared Lenze controller



Side view

Rear view



Process level

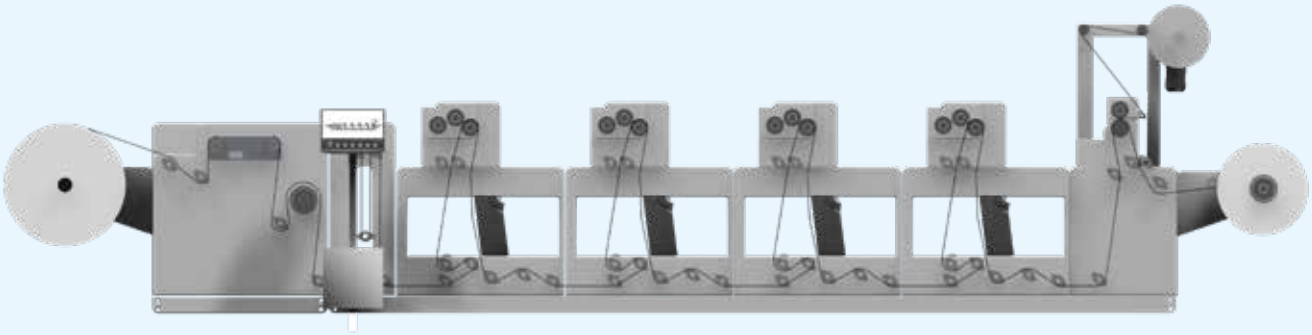
Control level

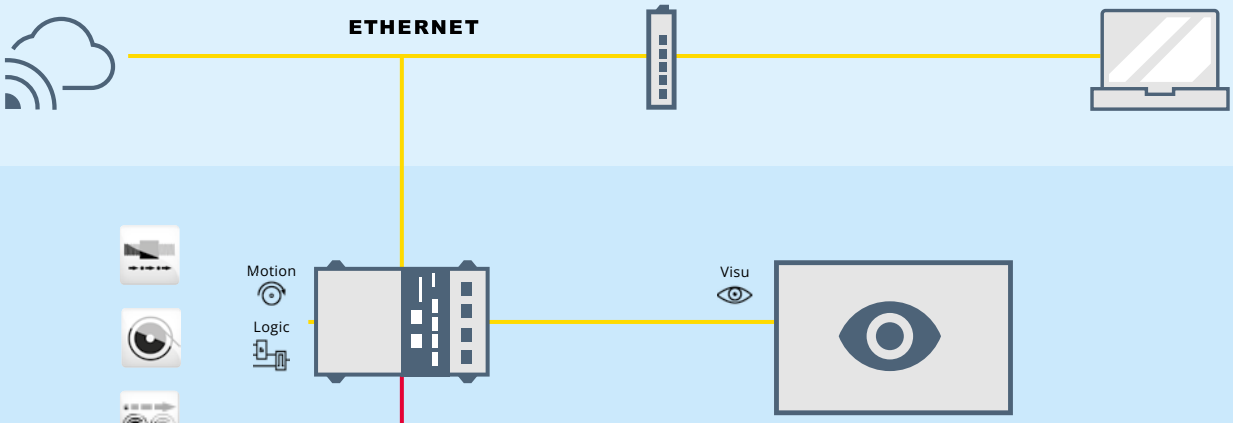
Field level

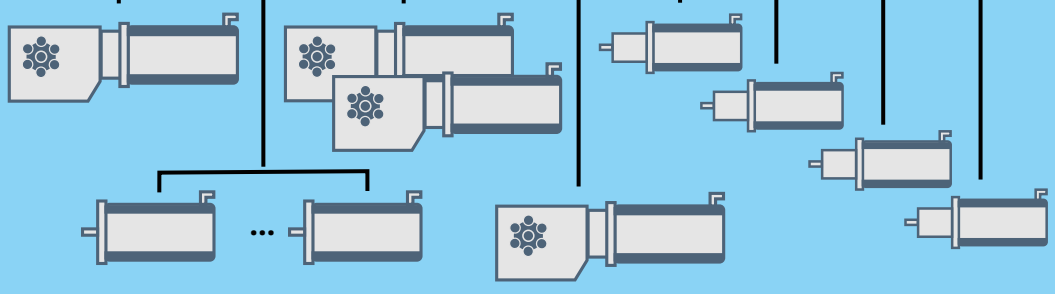
Actuator/sensor level – electromechanics

Inline flexo printing: **For high quality patterns**

- **Fast synchronisation of printing units** via an independent CAN system bus for highly precise printing results
- **Easy expansion** due to the modular design of the printing units
  - The use of intelligent drives on the main line section enables additional colours and finishing stations without any notable extra stress on the higher-level machine control system
- **Uniform development** environment enabling easy integration of external actuators and sensors such as web guiding systems, register sensors and camera inspection systems



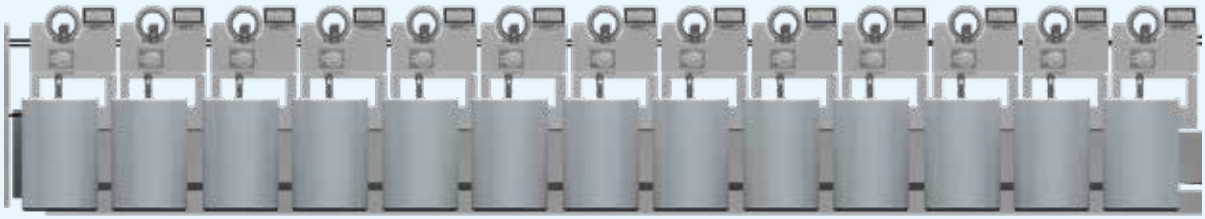


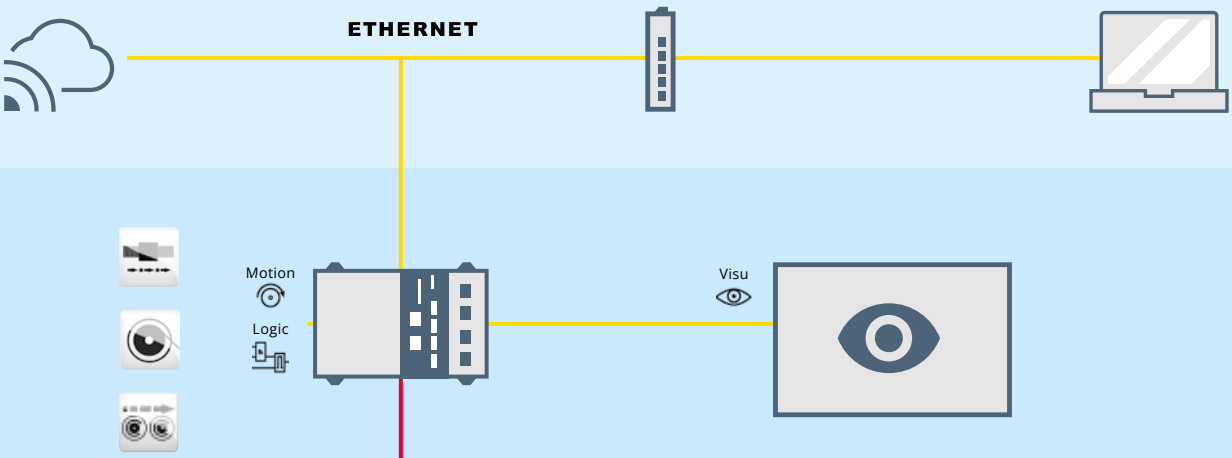


Actuator/sensor level – electromechanics

Rotary screen printing: **For a lasting impression**

- **Easy engineering** due to uniform software environment for visualization, printing roller drives and actuating drives
- **Support of modular machine concepts** based on a configuration for a maximum number of colours with optional nodes
- **High printing precision** due to synchronised servo axes
- **High plant availability** due to possibility of using an alternative printing axis in the event of a printing machine fault or failure





Process level

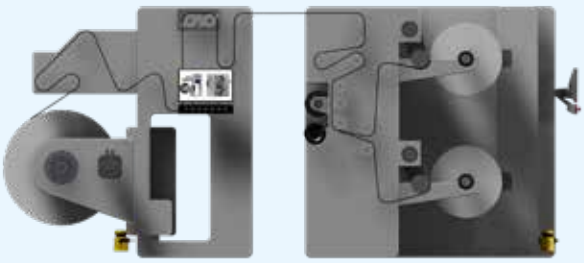
Control level

Field level

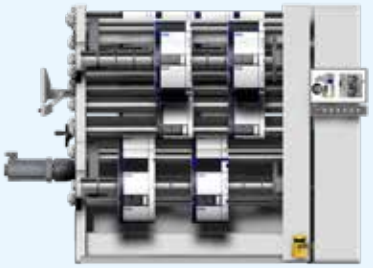
Actuator/sensor level – electromechanics

Slitter rewinder: **Wound safely and precisely**

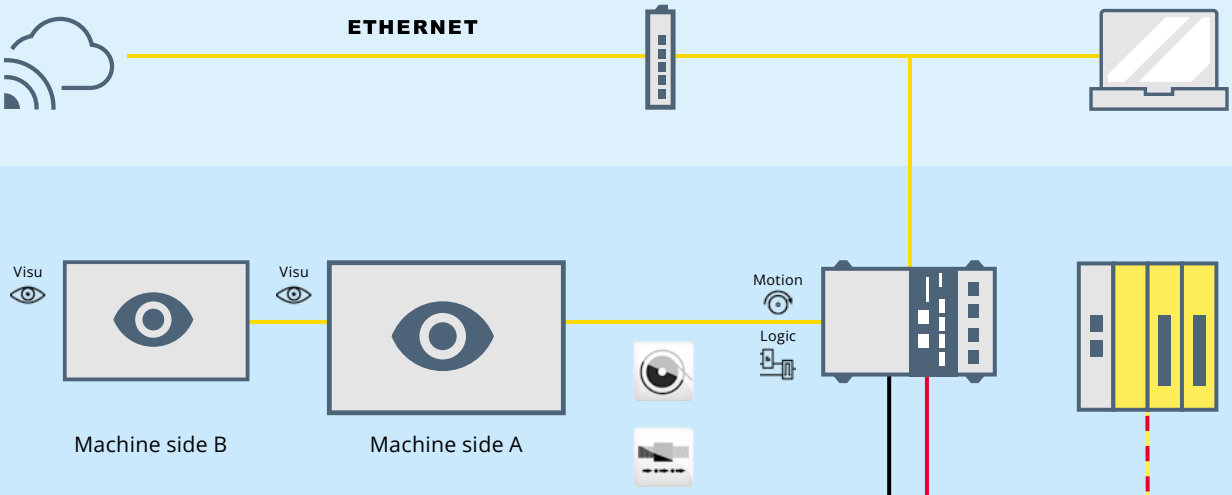
- **Seamless automated** from motion to logics and visualization
- **The Lenze FAST standard software module "Winder"** reduces costs and improves productivity and quality:
  - Based on 70 years of experience in the field of winding
  - Reduced winding drive power by full usage of the field weakening range
  - Integrated torque and diameter calculator for reduced expenses on sensor technology
  - High winding quality thanks to disturbance compensation (friction, acceleration)
  - Easy operating mode changeover with assignment of product-specific winding characteristics for fast product changes
- **Less wiring efforts** due to pioneering EtherCAT/FSoE topology



Seitenansicht



Rückansicht



Process level

Control level

Field level

Actuator/sensor level – electromechanics

Digital Services
Added value with perspective for OEMs and end users

For end customers, the supervision of the operating phase of a machine by the OEM adds additional value. In this context, digital services offer the possibility of tapping into new turnover potential and strengthening profitability in core service activities.

Together with us, you will develop your tailored digital journey and define steps for your digital offerings which are feasible and realistic for you – today, tomorrow, and in future. With our digital product and solution portfolio, we support you in every phase of this endeavour.

TODAY

What is happening?

- Connection of all machines to a central cloud infrastructure without special IoT know-how
- Remote maintenance and condition monitoring from any mobile device with a web browser
- Autonomous creation of dashboards with the aid of widgets at the click of a mouse

Benefits for OEMs

- Secure and transparent access to remote maintenance
- Reduction in commissioning costs
- Reduce support costs through efficient remote maintenance
- Retrospective fault analysis

Benefits for end users

- Secure and transparent access to remote maintenance
- Higher machine availability through faster fault elimination by the OEM

TOMORROW

What will happen?

Optimization of availability, throughput, and production yield with the aid of KPIs (OEE, MTBF) in real-time.

Benefits for OEMs

- New turnover potential via digital added value services related to one's own machines
- Record of the contractually assured machine availability
- Optimize of machines based on recorded data

Benefits for end users

- Anticipate failures to reduce unplanned downtimes
- Display real-time and historical OEE data
- Utilize the entire machine outfit more efficiently
- Performance analysis within a multipoint line configuration

IN THE FUTURE

What comes next?

Increased availability and process quality via predictive analytics.

Benefits for OEMs/ end users

- Higher OEE
- Better product and process quality
- Plannable maintenance periods
- Longer maintenance intervals and lower maintenance costs
- Foray into new business models
  - Pay per use
  - Performance-based
  - Contracting
  - And many more

Lenze FAST
Efficient
software
engineering

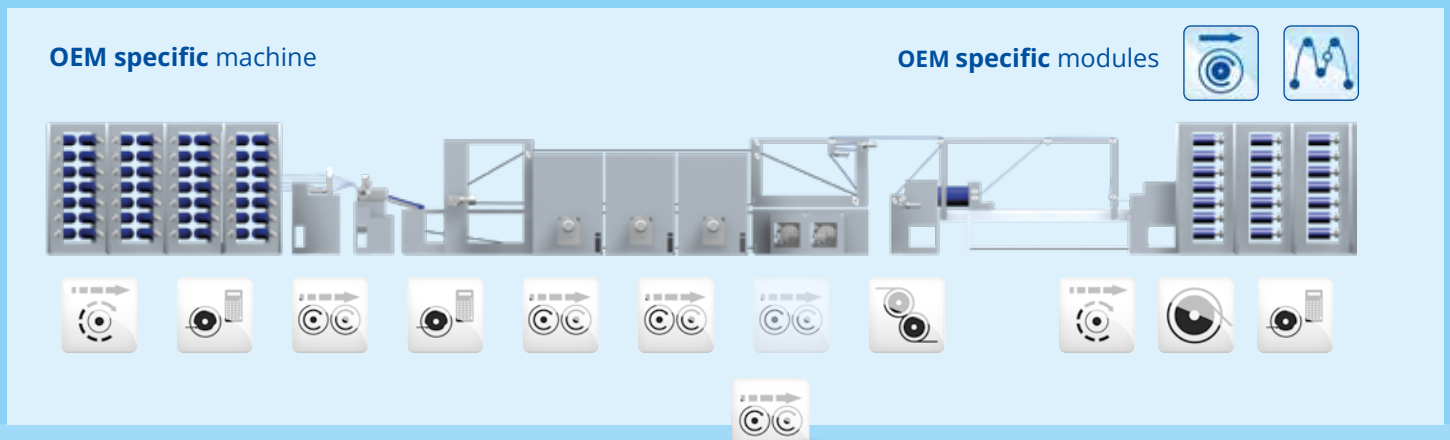
Lenze FAST is based on the experience **from several thousand realized applications.**

The engineering process is becoming increasingly digital. Whether it is higher machine flexibility which allows for batch sizes of 1 or improved productivity: Machine software is increasingly becoming the focus.

Our modular software system, the Lenze FAST Application Software Toolbox, incorporates the experience from several thousand realised applications. Ready-made and tested technology modules reduce development time for technology-specific basic functions, thereby simplifying the implementation of machine functions.

For better software quality, the technology modules can easily be reused. They can be used directly by the OEM or form the basis for the development of custom modules, thus allowing a machine to be programmed efficiently.
A structured programming layout is realized via the Application Template.

FAST Application **Template**



FAST **Technology Modules**

EASY Engineering Tools

The right software tool for every task

Do you want to plan, build or commission machines?

Adjust existing machines or run diagnostics? Regardless of whether you require simple applications or maximum precision and dynamics: You can choose the right tools for you and perform your engineering more rapidly and easily.

Developing **ideas**

Implementing **solutions**

EASY System Designer
Plan automation solutions

Drive Solution Designer
Design drive solutions

Conception | Product selection | Dimensioning | Quotation requests | Ordering

Drafting **concepts**

Manufacturing **machines**

Ensuring **productivity**

PLC Designer
Program the controller

EASY UI Designer
Machine visualization

EASY Starter
Parameterization and operation

Parameterization | Configuration | Programming | Debugging | Setup | Interface design

Commissioning | Diagnostics | Troubleshooting

Engineering Services
Together we develop solutions

Concept Engineering
The basis for the best solution for your machine task is that we first learn to understand your processes and your organization.

Building on this, we demonstrate your engineers how your machines can be developed efficiently and fully utilizing all possibilities with our automation solutions.

Project Engineering
The use of a Lenze automation system provides you with long-term advantages.

Integrated project management supports smooth workflows when creating your
- functional concepts,
- hardware concepts and
- engineering concepts.

Concept
Engineering

Project
Engineering

We support you throughout all phases of the engineering process.

With scalable hardware, modular software and brainware.

Project Realization

We offer you a complete solution by also assuming responsibility for the electrical design and the commissioning of the system.

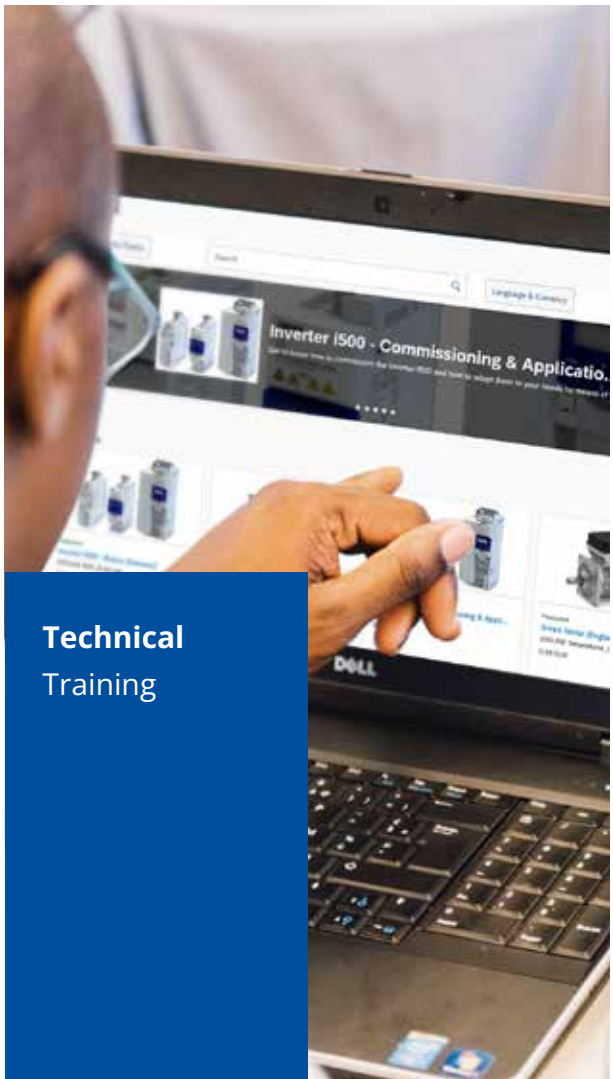
Technical Training

With an individualized training concept, we prepare you for the planning, implementation, and operation of your machine.

Our training courses are application- and practice-oriented and enable you to immediately integrate what you have learned into your day-to-day work.

To offer you flexibility and time savings, our offerings include on-site training programs, online training and video tutorials.

Project
Realization



Technical
Training

Worldwide **Services**

You can rely on every aspect of our high quality standards.
Our service is designed to ensure the reliability of your machine and to guarantee its availability.

With proactive solutions that rule out any contingencies, as far as possible and structured procedures, the fast and smooth restoration of the machines' functions in an emergency is ensured.

A large number of our services can be used online at any time. You can of course also get personal support and advice from our specialists.

24/7 Lenze expert helpline

Original repair

Online support
You can directly request support and repairs for specific Lenze products or order spare parts and call up technical data and documentation.

Simply enter the material number or scan the type plate with our integrated scan function. All support information is immediately available to you at a glance.

Replacement requirement
Are you using Lenze equipment and need to replace a complete device or some parts? We send you a corresponding quote quickly with our online service.

Original repairs from Lenze
In some cases, repairing a Lenze drive instead of replacing it could be a better alternative in terms of quality and cost-savings. This helps you minimize costly downtimes in cases of emergency and means that you don't have to keep large stocks of spare parts.

Maintenance with a plan
To ensure maximum machine availability, our maintenance package includes additional services that proactively safeguard your operations. We analyze your requirements together and customize your plan based on our many years of expertise in this field.

Lenze

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