


Automation solutions for converting and printing machines.



As easy as that.

A bald man with a friendly smile, wearing a grey work jacket, stands in a factory or industrial setting. He has his arms crossed and is looking towards the camera. The background shows industrial machinery and equipment, including a large blue component and some containers on a workbench.

70 years of
experience in
the finishing
and processing
of paper, film
and foil.

As one of the leading automation and drives specialists, with extensive sector know-how and a worldwide network of experts in the converting and printing industry, we will work with you closely to find the very best solution. Whether you want to improve your existing equipment or develop a new machine, we set your ideas in motion with dedication and enthusiasm.

In line with your individual requirements and ideas, we support you in all aspects of your projects, assist you with their implementation and your overall innovative concepts.

We develop innovations for the converting and printing industry and this is how we do it:

- Experienced experts understand your requirements and goals
- Innovative software and hardware for the implementation of advancing solutions
- Reliable drive systems for high-level system availability
- Use of open standards
- Global production with uniform Lenze quality standards
- Worldwide efficient logistics concept
- Global service network and range of training courses offered



Increasing requirements for converting and printing machines.

In today's innovative converting and printing industry, 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 cross-the-board trends are becoming more and more important.

Modularization

Machines are increasingly being customized with a design based on modules that are standardized. 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 modularization, changes requirements of 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.

Customization – Batch size 1

With batch size getting smaller and smaller, customization even for orders of just one helps target customers more directly providing a competitive advantage. In terms of engineering, this means that short changeover times and resource efficiency, 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 standardized data structures.

Optimized 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 minimizes the amount of tied-up capital. Replacement parts can be ordered easily, delivered quickly, and installed without any learning process. This 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. Internet technologies support diagnostics and 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 minimized. In addition, intelligently controlled motors enable energy recovery – a considerable benefit.



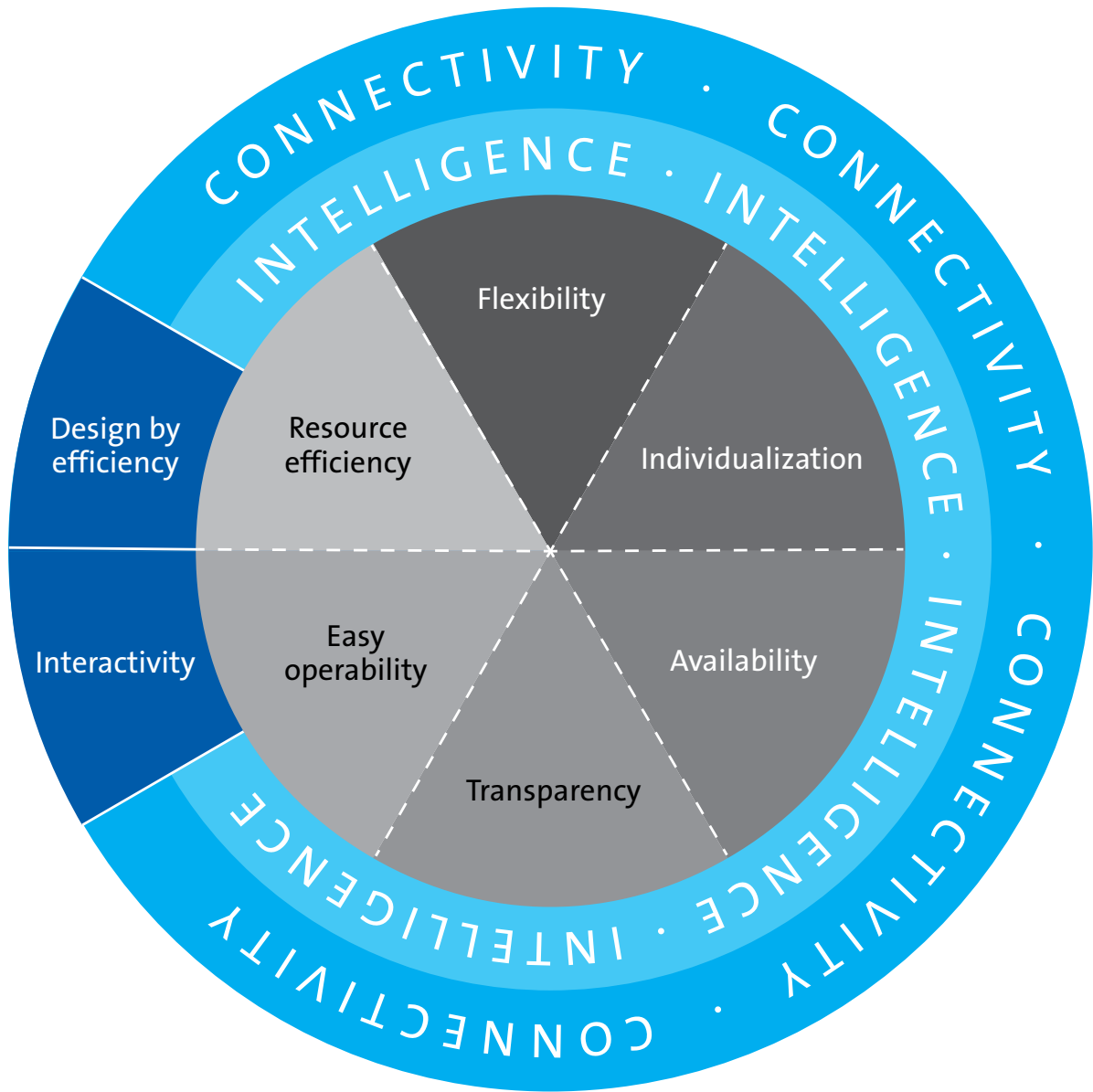
Industry 4.0 – Cooperation skills as a new core competence.

Engineering has always been characterized by a high degree of orientation to the customer, converting their needs into real technical solutions. With Industry 4.0, possibilities and new facets offer fresh opportunities from outside the industry of mechanical engineering. Anyone who cooperates with partners faster and more effectively, and who integrates their on-going processes, will always win in competition with others. Collaborative skills generate a high level of expertise to manage trends and end user

requirements for the next generation of machines, allowing technical solutions and innovations that bring competitive advantages to be created:

- What benefits are most important to you?
- What technical measures have already been taken?
- What are your greatest challenges?

We look forward to talking to you about possible joint perspectives for the future.



Industry 4.0, in all its many facets, can only succeed if all those involved: end users, mechanical engineers, technology suppliers and the scientific world – all pull together.

Adjusting to reality.

Increasingly faster web speeds and smaller batches, as well as individual finishing requirements, are challenges that mechanical engineers are having to face more frequently. Good reasons for us to make your everyday work easy.

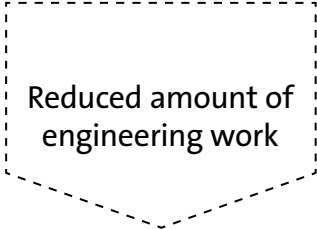
The Engineering Toolchain that we offer contains tools for consistent engineering in all the different phases of a plant's lifecycle. They are oriented to mechatronic engineering tasks and are optimally tailored to the needs of the users and tasks they have to perform. In addition, we make your software engineering easy by modularizing and standardizing the software, significantly reducing the time needed to develop your machine.

We offer intelligent solutions for controller-based and drive-based motion control for the performance of very different tasks. Due to our energy-efficient L-force portfolio, you profit from reliable technologies, long-lasting quality and easy handling of all products.

As a result, you not only reduce the number of different drive variations, but also shorten your entire engineering process – benefits for everyone in the end.

Efficient software solutions

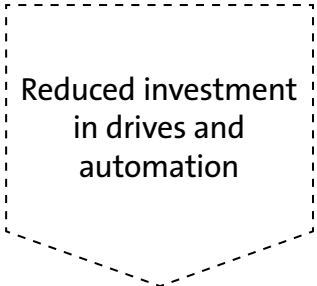
- Consistent engineering tool chain over the entire lifecycle
- Intelligent motion control with standardized technology functions



Reduced amount of engineering work

Appropriate automation solutions

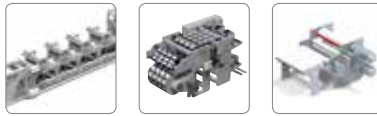
- The right system and the right products for every machine



Reduced investment in drives and automation

Mechatronics

Modular machine



Engineering

Engineering Toolchain



Functionality

Application template modular software structure



Technology modules



Motion



Camming



Robotics

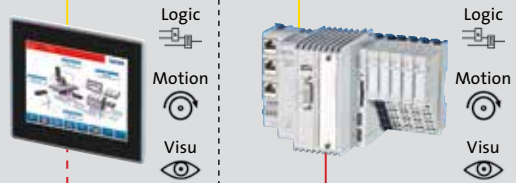


Positioning

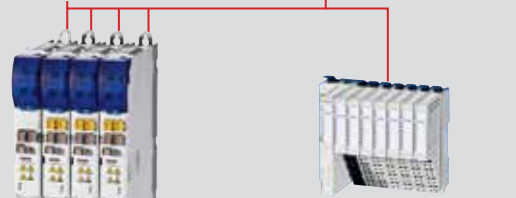
Process level



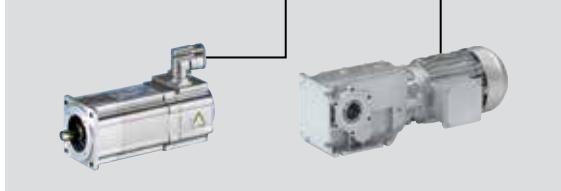
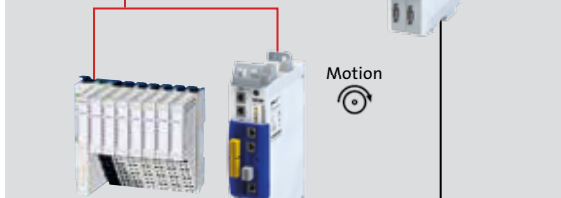
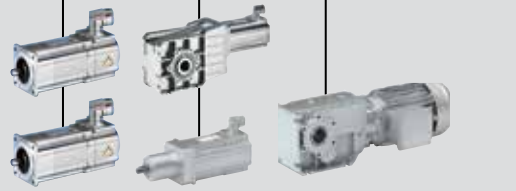
Control level



Field level



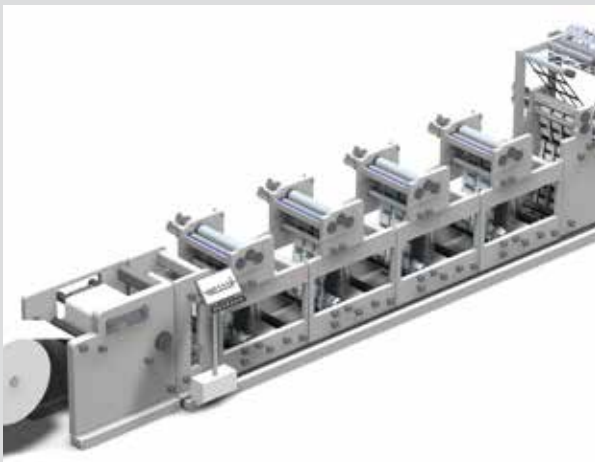
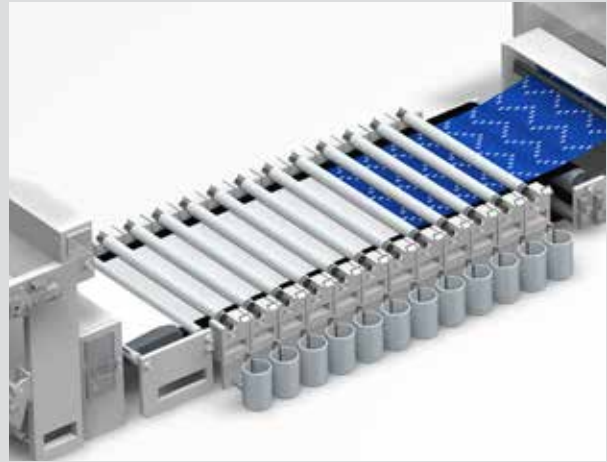
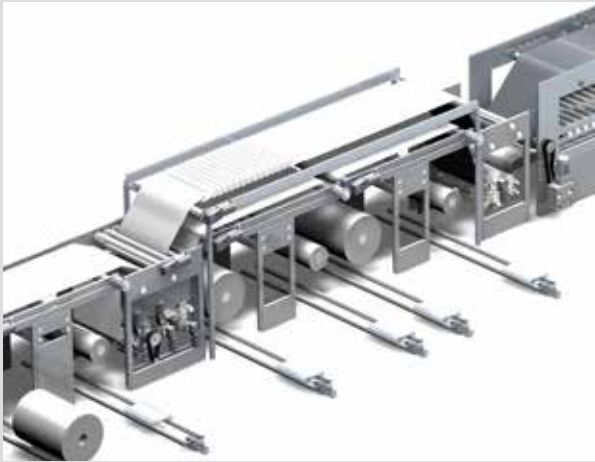
Actuator/sensor level – electromechanics



Exactly what you need for your machine.

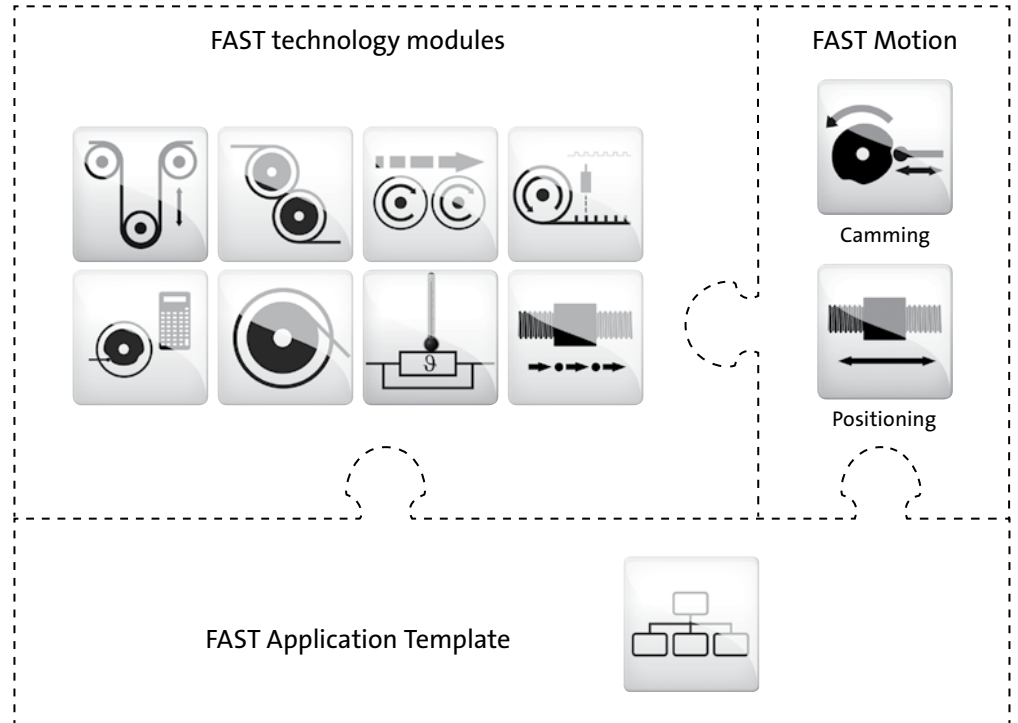
From corrugated cardboard production to printing and finishing packaging materials and labels – with our intelligent automation solutions, we will work closely with you to quickly find the best solution for the machine

you want to create. You can rely on our easy software engineering tools, the use of open standards, and the right sizing for your drives and energy-efficient solutions.



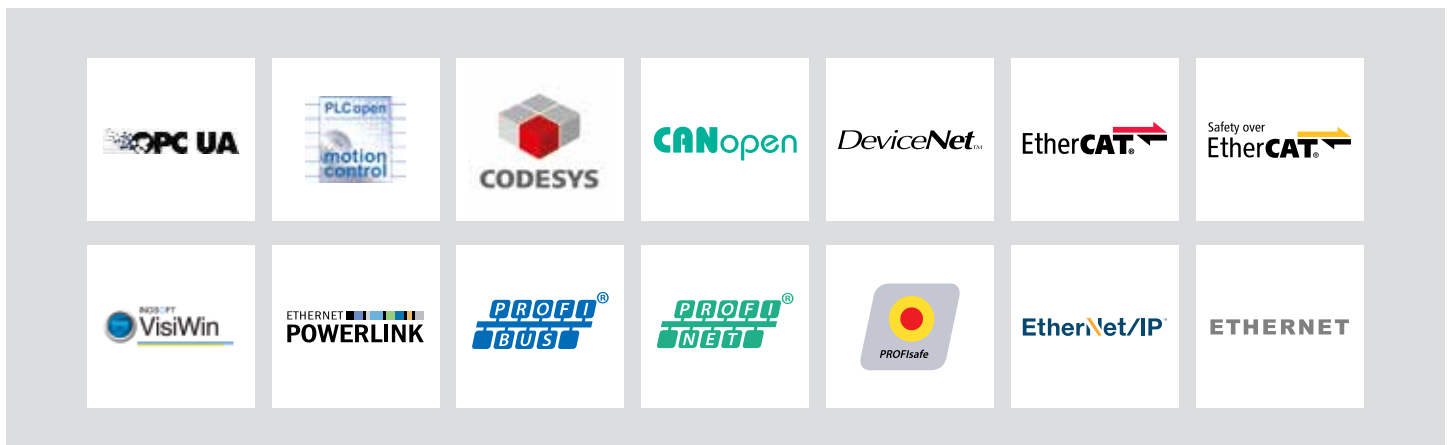
Software engineering made easy
 With Lenze FAST, our application software toolbox, you can combine intelligent standardized software modules for very different machine modules in a single template, creating your machine software the easy way.

This reduces your motion software engineering work by up to 80%, which leads to a considerable reduction of time needed to develop the basic functions of your machine.



Open standards mean no black boxes
 Lenze automation systems are open systems. Due to the use of market standards, we can network with the manufacturers of other control and drive systems at any time.

This enables easy integration into higher-level line structures. This openness makes mechanical engineers and end users confident in being able to adapt to changes in the future. Keep your core expertise in-house and hold onto your competitive advantage.



Much more than just remote maintenance: Remote Services & Analytics offer added value for OEMs and end users.

Industry 4.0 is based on the digital networking of machines, products and components – and people as well, of course.

We provide a secure platform for remote maintenance in that we link the service technician to the machine with a connection that can be monitored. The machine operator, therefore, has the assurance that only authorized people can gain access to the machine and can do so only at the selected time.

Additionally, data can be collected from the machines and saved to a private 'cloud'. The data is then analyzed and converted into key figures that enable deeper insight into how the machines are functioning. We offer you a complete cloud-based quality management system. All cloud services are available in the form of a flexible subscription service, which makes the online transfer of machine data scalable. This has several advantages over an in-company system. IT investment, costly software licences and maintenance are unnecessary. What is also decisive is the fact that complex, individual programming is rendered superfluous.

Undoubtedly, the most secure solution: The maximum security level "Financial Grade Security"

- Encrypted data from the network to the cloud
- NCP standard
- Transparent data exchange in the company network

Ready for the future

- OPC-UA access to Lenze controllers
- Permanent data transfer to the cloud
- All data is available for immediate or future analysis

Plant management

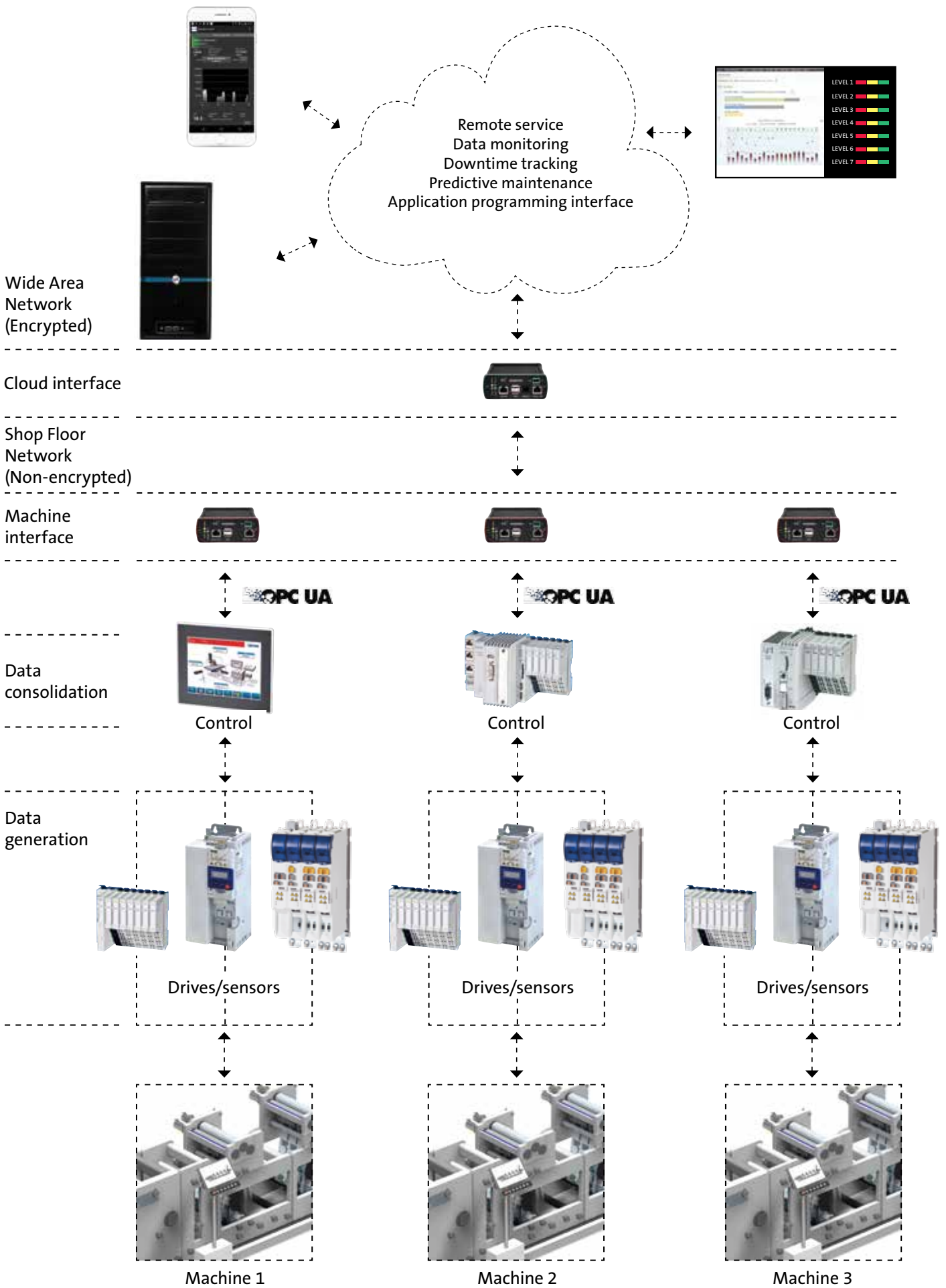
- Monitoring of machine utilization and availability
- Track & trace and productivity information
- Monitoring of quality parameters

Remote Maintenance

- Worldwide data access
- Remote diagnostics and servicing
- Reduces field service assignments by up to 80%

Predictive maintenance/Digital services

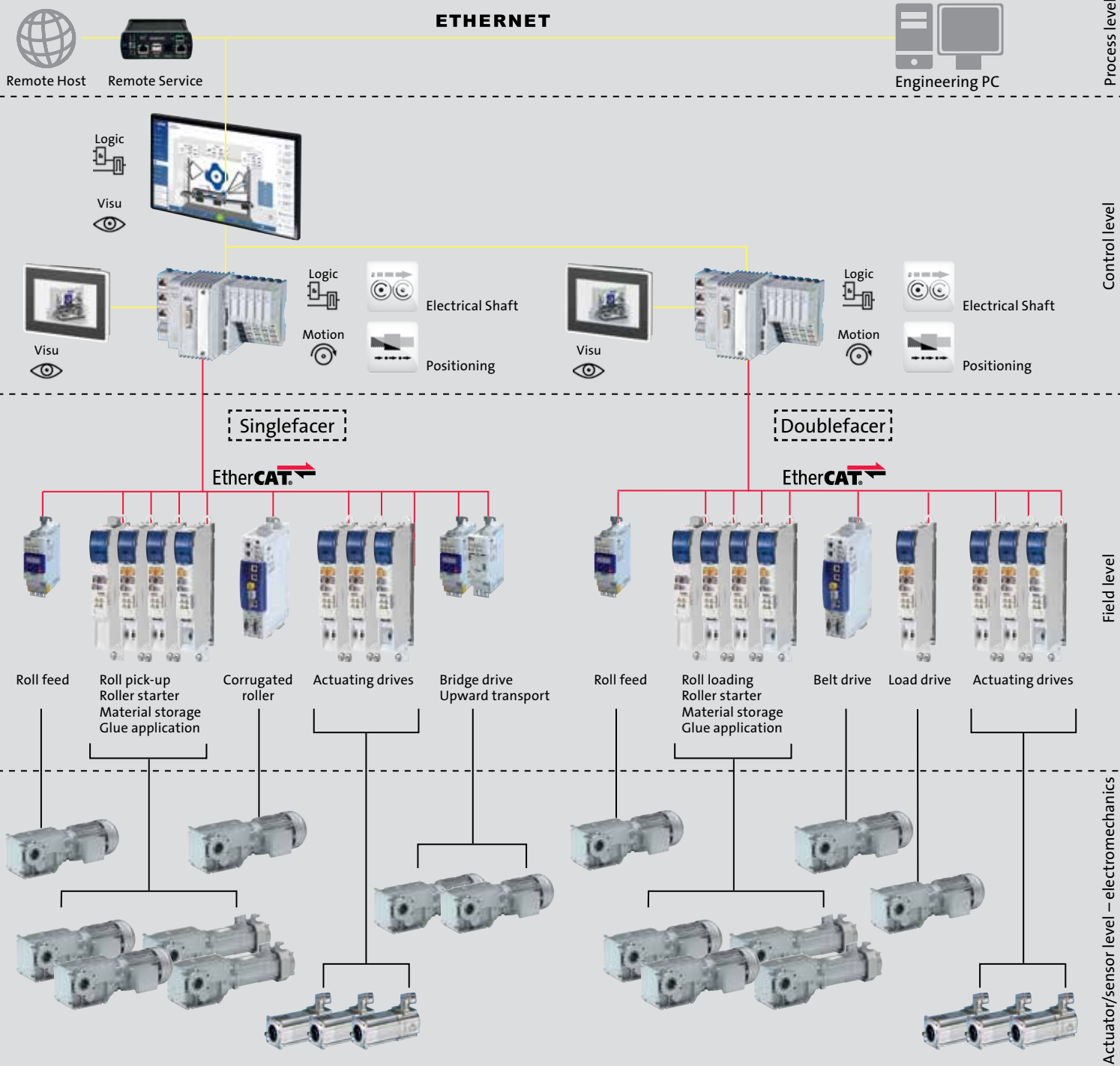
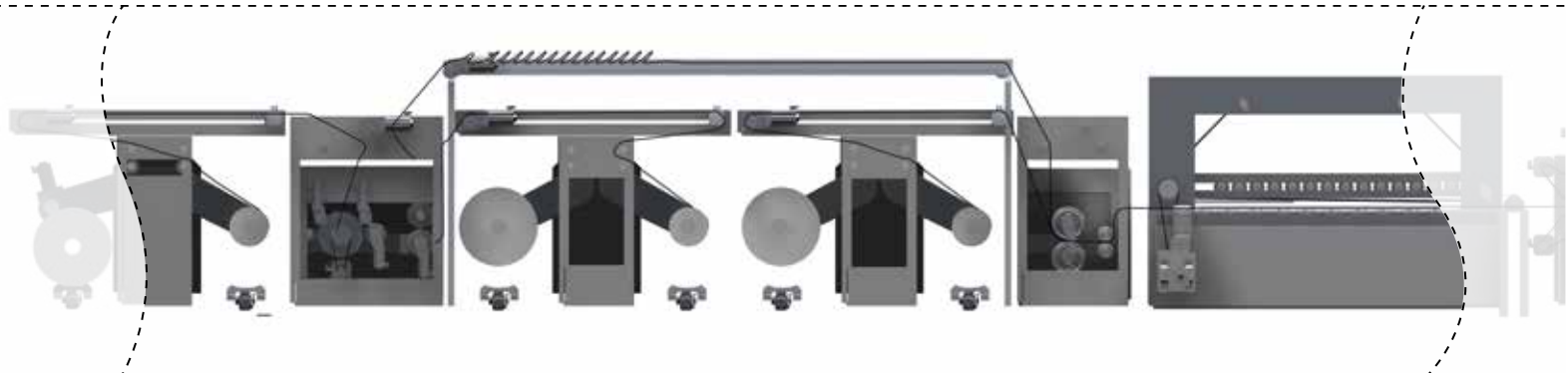
- Predictive detection of potential faults on the basis of "cloud data"
- "Big data" as the basis for advisory services for production optimization by the OEM



The perfect corrugation for your cardboard.

- 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 individual plant configuration is possible with regard to types of corrugation and corrugation combinations.
- Universally usable drives, with parameters kept centrally in the higher-level control system, are transferred to the drives during initialization. This enables lower stocks and easy servicing.
- Energy-efficient operation with a DC-bus connection to track and brake assemblies, carriage units and roller starter.

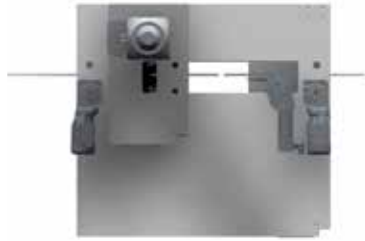




Make your mark with cross-cutting.

- Software engineering made easy due to Lenze FAST standard software module "Cross-Cutting".
 - Scalable functionality and performance, from standard cross-cutting to highly dynamic operation, with torque pre-control and precise cutting-mark synchronization
 - Integrated manual operation and referencing as well as visualization.
- Low supply power is possible with connection of 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



Remote Host



Remote Service

ETHERNET



Engineering PC

Process level



Visu



Motion



Logic



Electrical Shaft



Flex Cam



Cross Cutting

Control level



Capacitor module

DC bus

EtherCAT

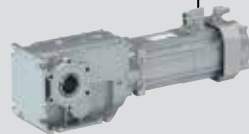


Field level



Draw in

Withdrawal



Scrap flap



Knife drum on left

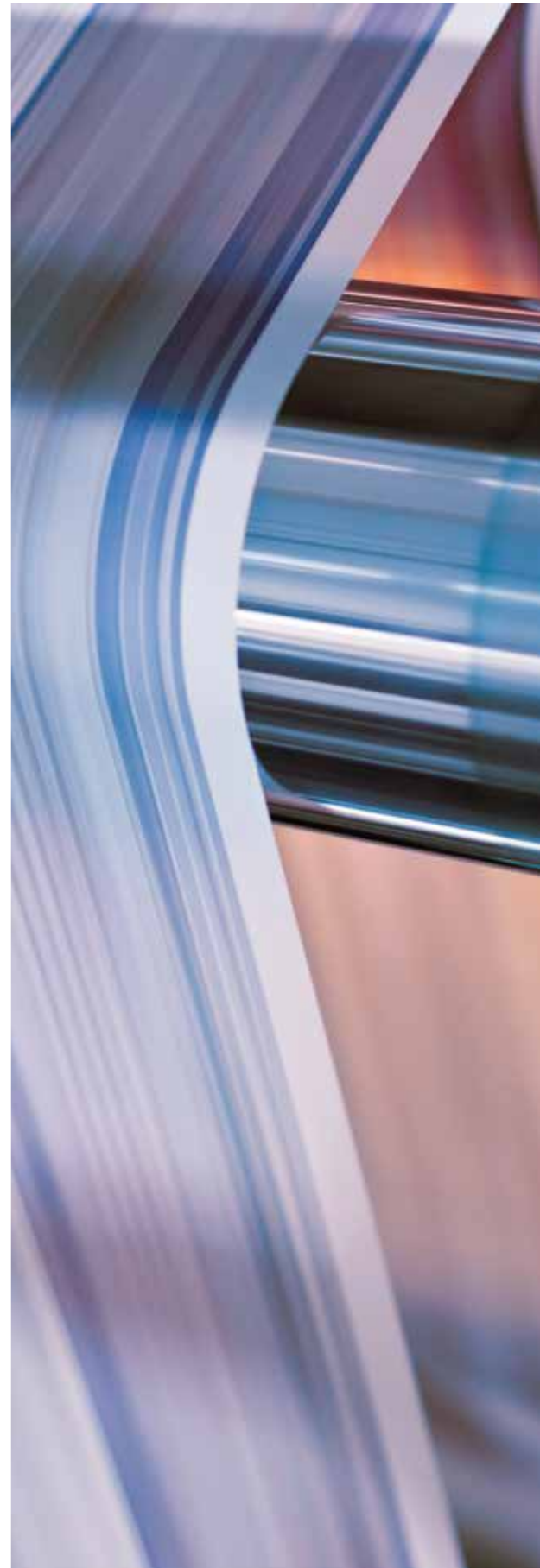


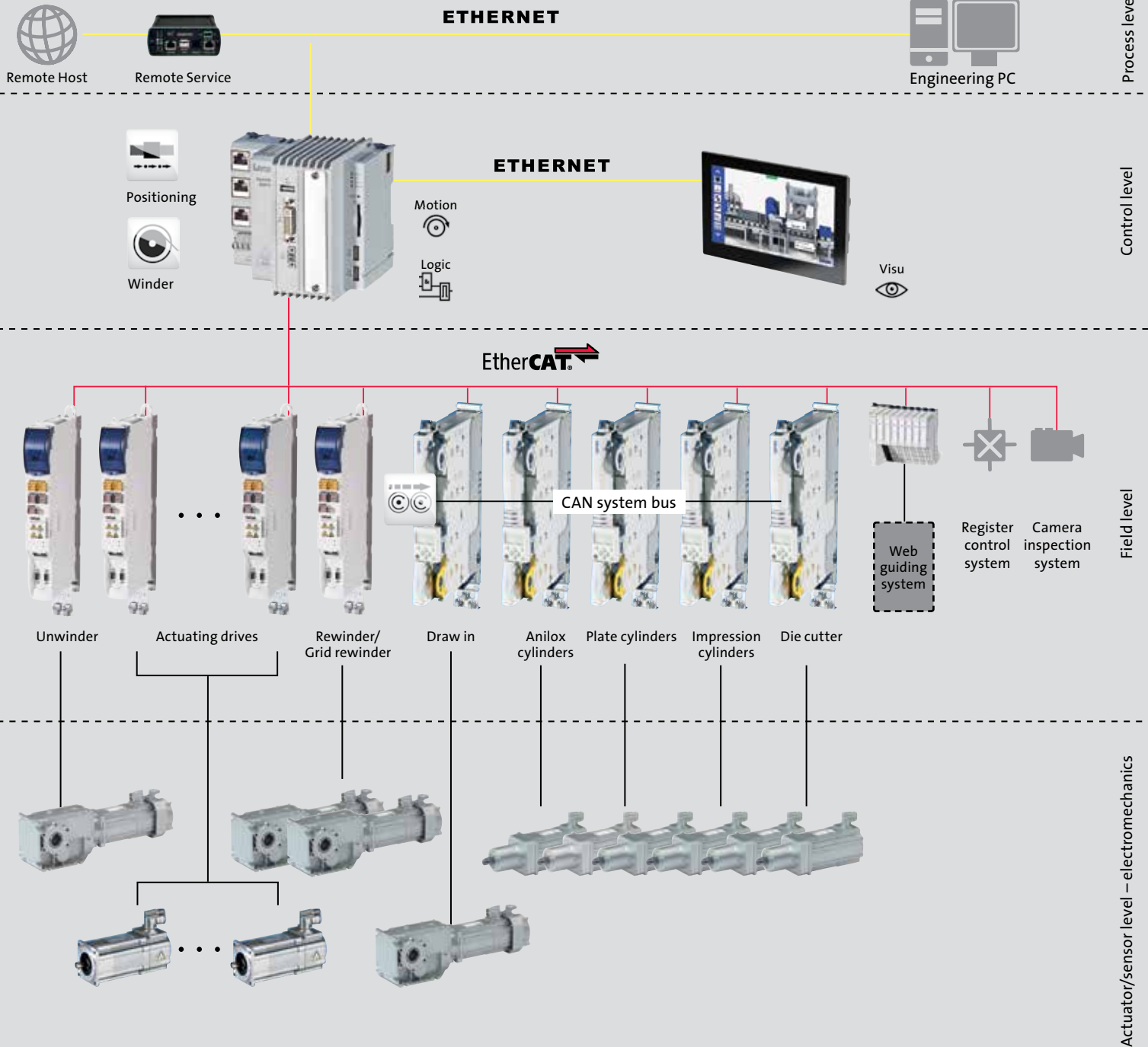
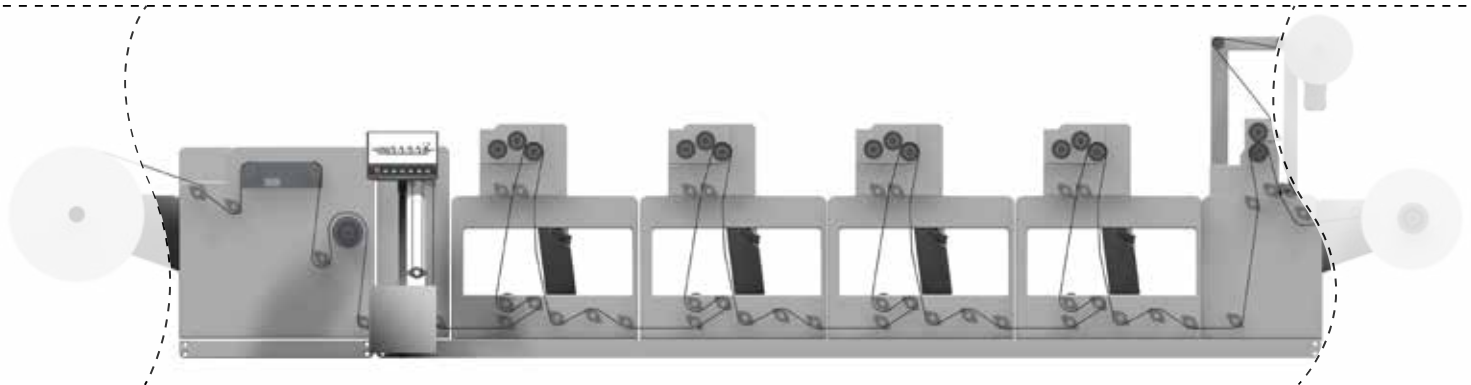
Knife drum on right

Actuator/sensor level – electromechanics

For high quality patterns.

- Fast synchronization 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 colors and finishing stations without any notable extra stress on the higher-level machine control system.
- Uniform development environment enables easy integration of external actuators and sensors such as web guiding systems, register sensors and camera inspection systems.

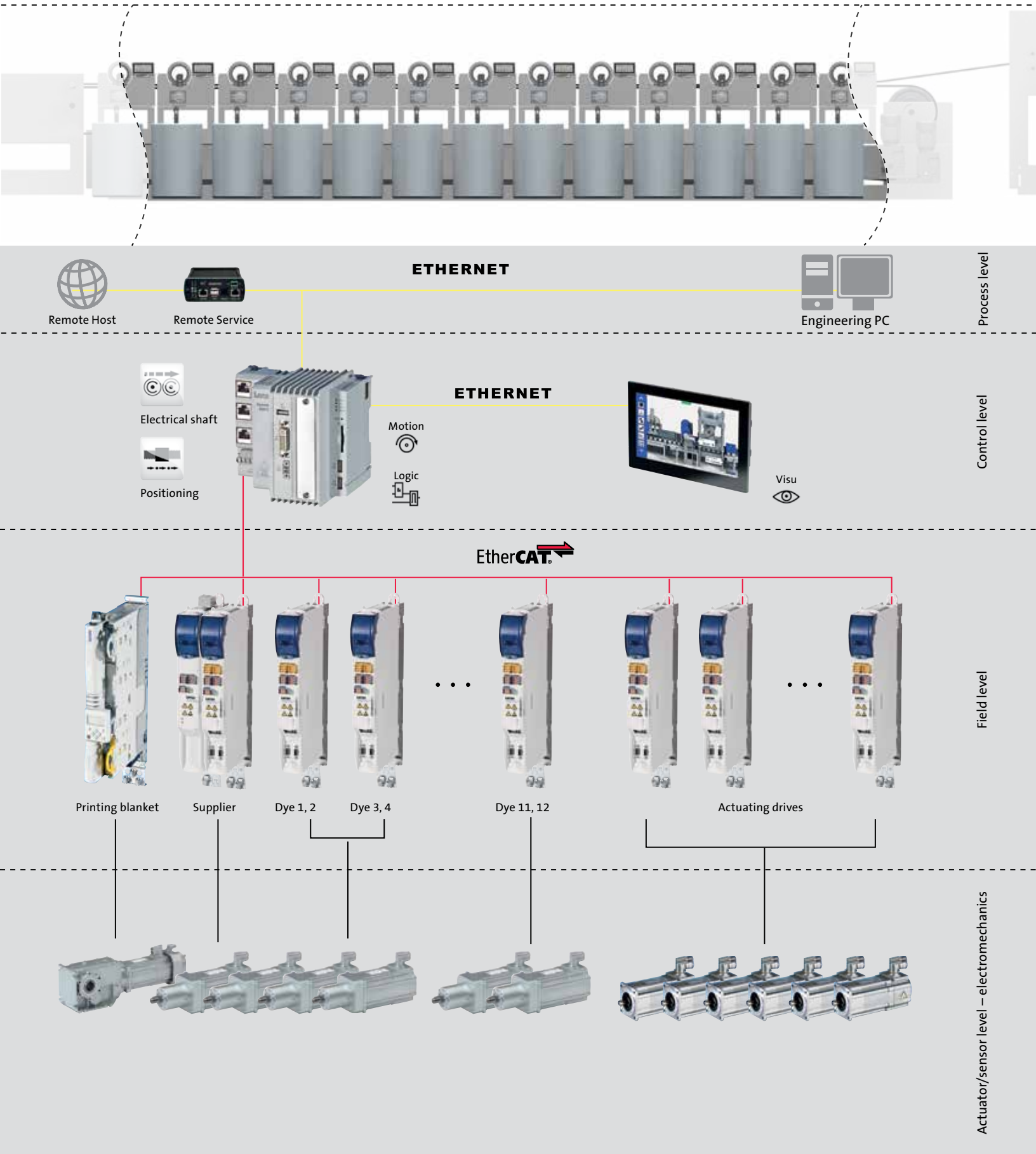




For a lasting impression.

- Easy engineering due to a 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 colors with optional nodes.
- High printing precision with synchronized servo axes.
- High plant availability due to using an alternative printing axis in the event of a printing machine fault or failure.

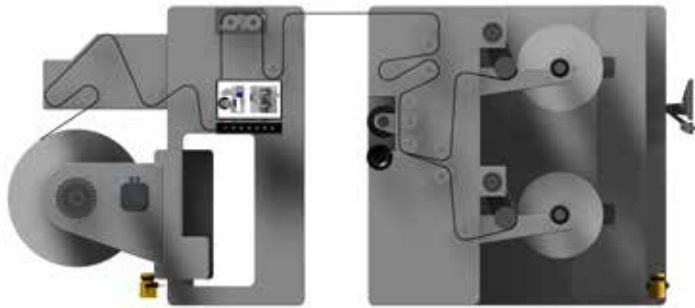




Wound safely and precisely.

- Seamless automation 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.





Side view



Rear view



Remote Host



Remote Service

ETHERNET



Engineering PC

Process level



Machine side B



Visu



Machine side A



Visu



Winder



Positioning



Motion

Logic



Safety over EtherCAT

Control level

EtherCAT



Main drive



Unwinder



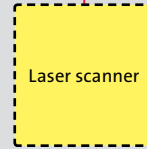
Rewinder



Web guiding system



Actuating drives



Laser scanner

Field level

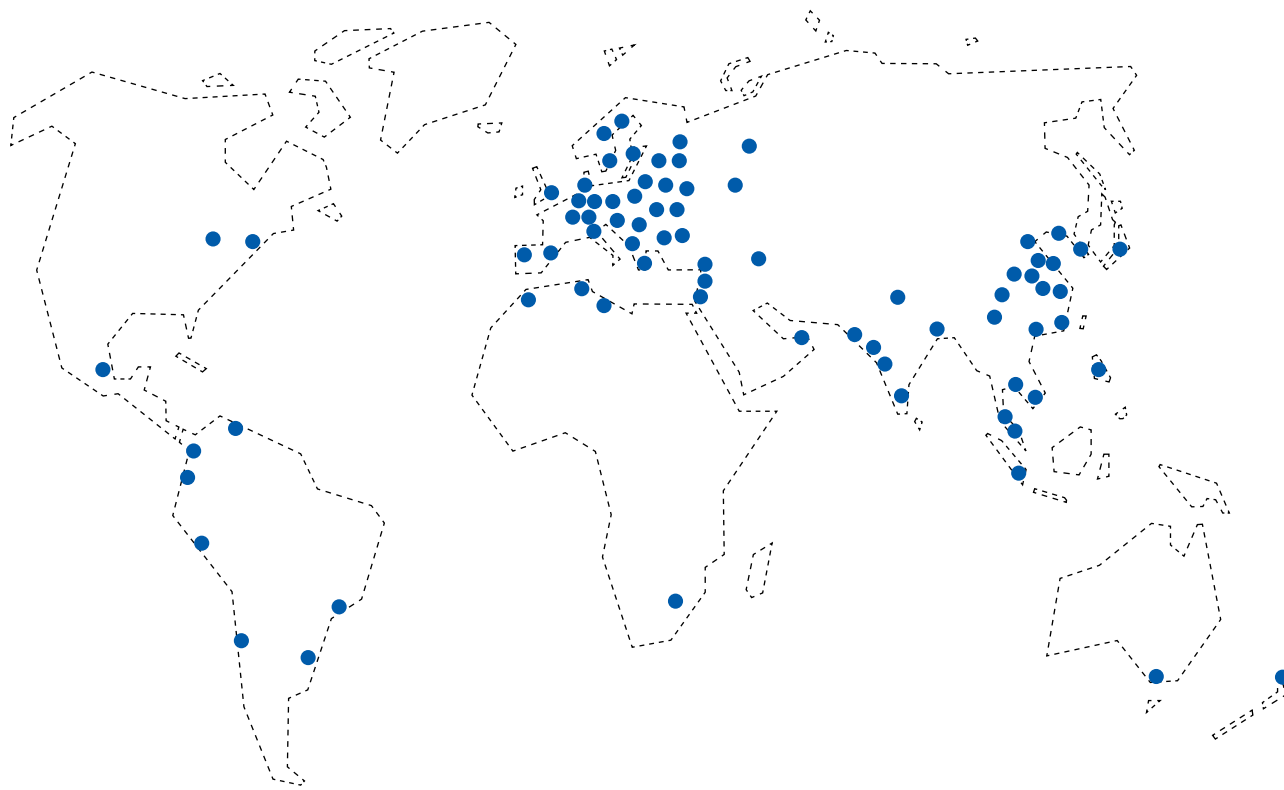


Actuator/sensor level – electromechanics

Worldwide service for the requirements of the converting and printing industry.

Productivity, reliability and new peak levels of performance every day – these are our decisive success factors for your system. We offer you individually designed service concepts for permanently safe and reliable operation. Our service modules,

combined with our expert support, are based on the excellent application know-how of our experienced specialists. Wherever, whenever, and however you need our support, we are always there to help you.



Lenze inspection

What is the current status?

You know your machine exactly. Working with you closely, we create the basis for suitable measures. For example, we uncover weak points or risks and find value performance reserves. One thing is certain, with us, your machine is in the very best hands.

Lenze prevention

Prepared for the unexpected.

Our comprehensive preventive service is the ideal way to minimize potential risks to your machine. We support you in increasing machine availability, and minimizing reaction times and downtimes in the event of faults. This saves you time and money – providing piece of mind.



Lenze optimization

Making good things even better.

We ensure that your systems work perfectly, and show you intelligent optimization possibilities including: reducing your energy costs, shortening set-up times for production changeovers, and improving efficiency. We take care of it all.

Lenze emergency service

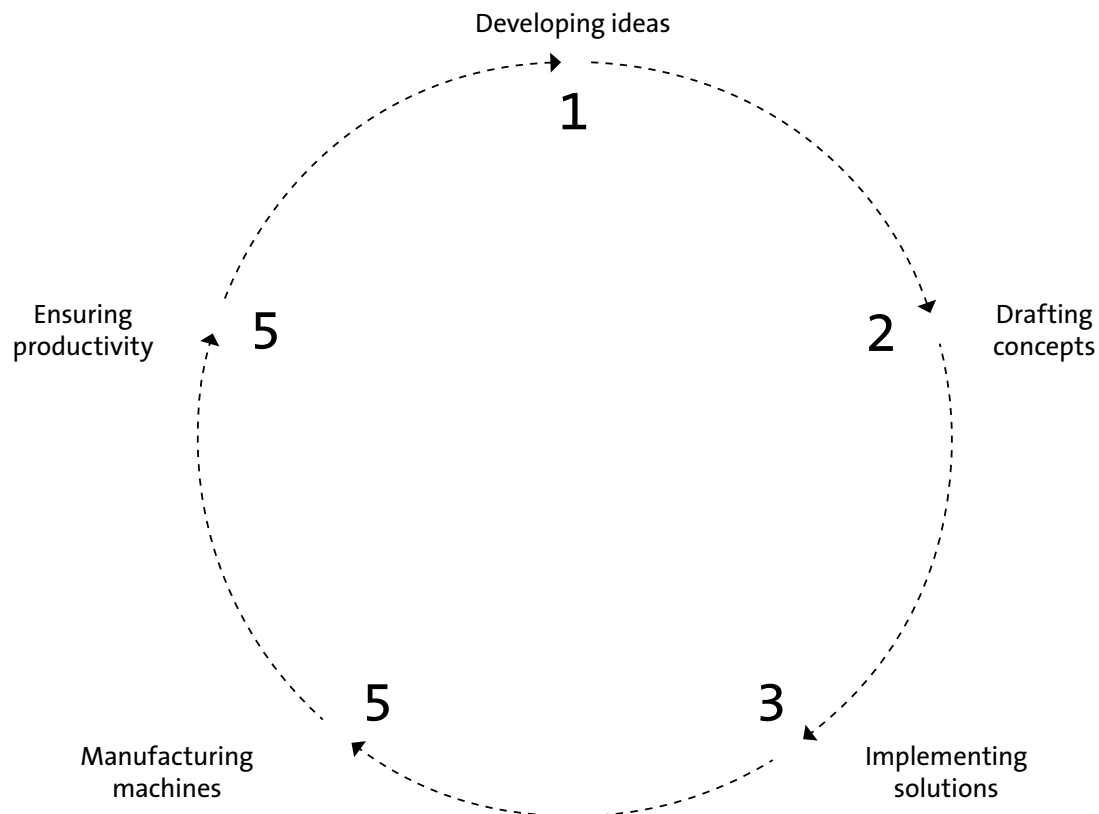
Perfectly equipped to handle any challenge.

You can depend on us in the event of an emergency. We make extensive preparations for potential problems. If something unforeseen should occur, we ensure speedy restoration and detailed fault analysis. With Lenze, your projects can be implemented safely and reliably.

Lenze makes many things easy for you: In every phase of the engineering process.

We will work closely with you to find the best solution, and work toward setting your ideas in motion. Whether you want to optimize an existing system or develop a new machine or application for a complete converting

and printing system, we aspire to make things easy while seeking perfection. This is an essential feature of our thinking, our services, and every detail of our products.





www.Lenze.com

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