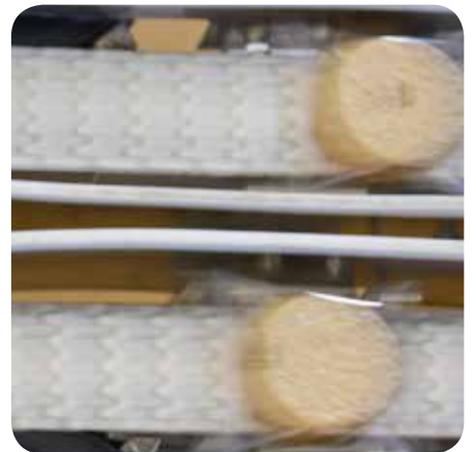


Automation solutions for the packaging industry.



As easy as that.

A man in a blue and white checkered shirt is shown in profile, looking at a tablet device. He is in a factory or industrial setting, with machinery and equipment visible in the background. The lighting is bright, and the overall scene conveys a sense of modern industrial operations.

**70 years
experience in
the packaging
industry.**

As one of the leading drive-technology and automation specialists with extensive know-how in the packaging industry and a worldwide network of experts, we work closely with you to find the best solution for your needs. We love being able to set your ideas in motion, regardless whether you want to upgrade an existing packaging machine or develop a completely new one.

We cooperate with you in all phases of your projects in accordance with your individual requirements and aims. And when you devise an innovative overall concept, we are there to help you make it a concrete reality.

We develop innovations for the packaging industry – as easily as that:

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



Rising requirements for packaging machines.

The innovativeness of the packaging industry means that new challenges are constantly arising with regard to the systems and machines that it uses. Increasing digitisation is and will continue to be a part of the current and future requirements for packaging machines. The following across-the-board trends are becoming more and more important.

Flexibility

Machines can increasingly be regarded and flexibly deployed as individual units. This enables a speedy response to trading activities and coverage of a broad product range by a single machine. Moreover, retooling and format changes can be carried out

more quickly. The time and effort needed to launch new products are therefore reduced.

Individualisation

Flexibility can be maximised to such an extent that even batch sizes of 1 are possible. This means that a very individual approach to the customer can be adopted, whereby the customer becomes directly involved in product development. The high degree of flexibility also enables faster adaptation to the needs of the market and increasing rates of innovation. A reduction of stocks – the key idea here being “Make-to-order” – is possible at the same time.



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 tied-up 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 it also reduces their susceptibility to make errors. Mobile terminals and open interfaces enable flexible control and access to all a machine's functions, whereas. 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.



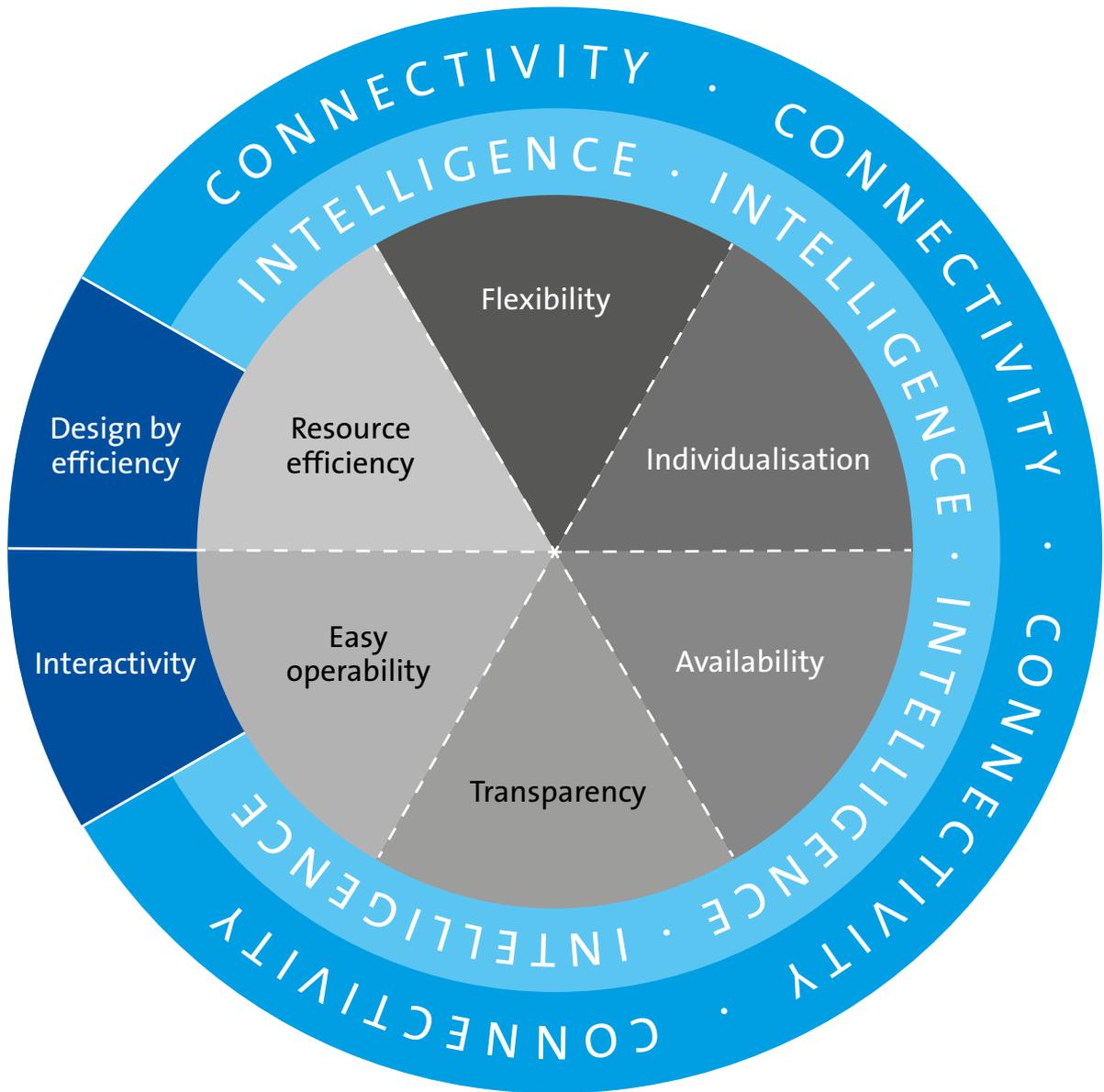
Industry 4.0. – Cooperative competence becomes the new core competence.

Mechanical engineering has always been characterised by a high degree of orientation to the customer, converting the needs of its customers into real technical solutions. With Industry 4.0, possibilities and new facets offering new opportunities arise from outside the known-world of mechanical engineering. Anyone who cooperates with partners faster and more effectively and integrates these partners into their ongoing processes will always win in competition with others. Cooperative competence generates a level of expertise that has answers to end users' trends and the requirements that will be placed on the next generation of machines.

It creates technical solutions and innovations that bring decisive benefits:

- What benefits are most important for you?
- What technical measures have already been taken?
- Where do your greatest challenges lie?

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



Industry 4.0 in all its many facets can only succeed if everyone concerned – the end users, machine builders, technology providers and the scientific world – all pull together.

Adjusting to reality.

Shorter and shorter innovation cycles, aggressive competitors and high pricing pressure are challenges that mechanical engineering companies are having to face up to. Good reasons for us to make your everyday work easy.

With our engineering tool chain, we offer tailor-made tools for all aspects of your engineering and in all the different phases of a machine's overall life cycle. These tools are designed for the performance of mechatronic engineering tasks and have been precisely tailored to both user and task. We also make your software engineering much easier by modularising and standardising machine software, thus significantly reducing the time you need to develop your new machine.

For the performance of very different automation tasks, we offer you intelligent solutions for controller-based or drive-based motion. Moreover, thanks 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 types of drive but also shorten your entire engineering process. And, at the end of the day, this pays off for everyone.

Efficient software solutions

- Consistent engineering tool chain over the entire life cycle
- Intelligent motion control with standardised 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

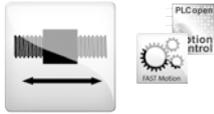
Application template Modular software structure



Technology modules



Motion



Camming

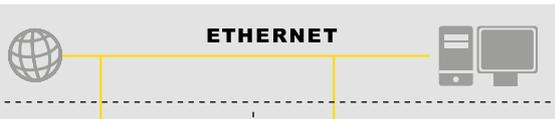


Robotics

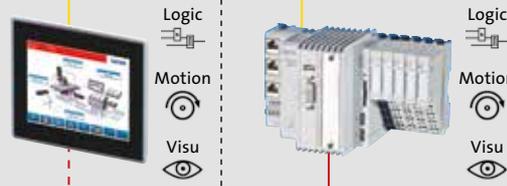


Positioning

Process level



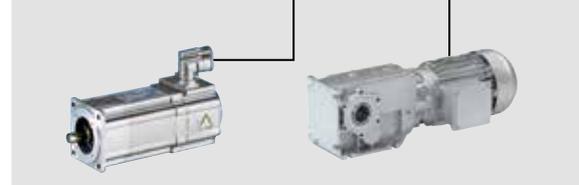
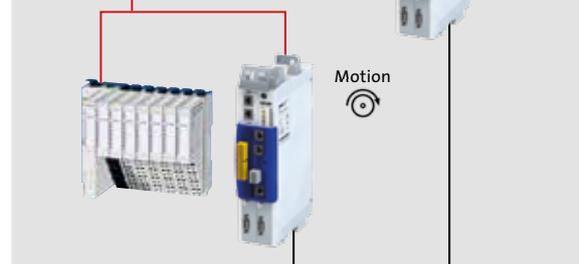
Control level



Field level

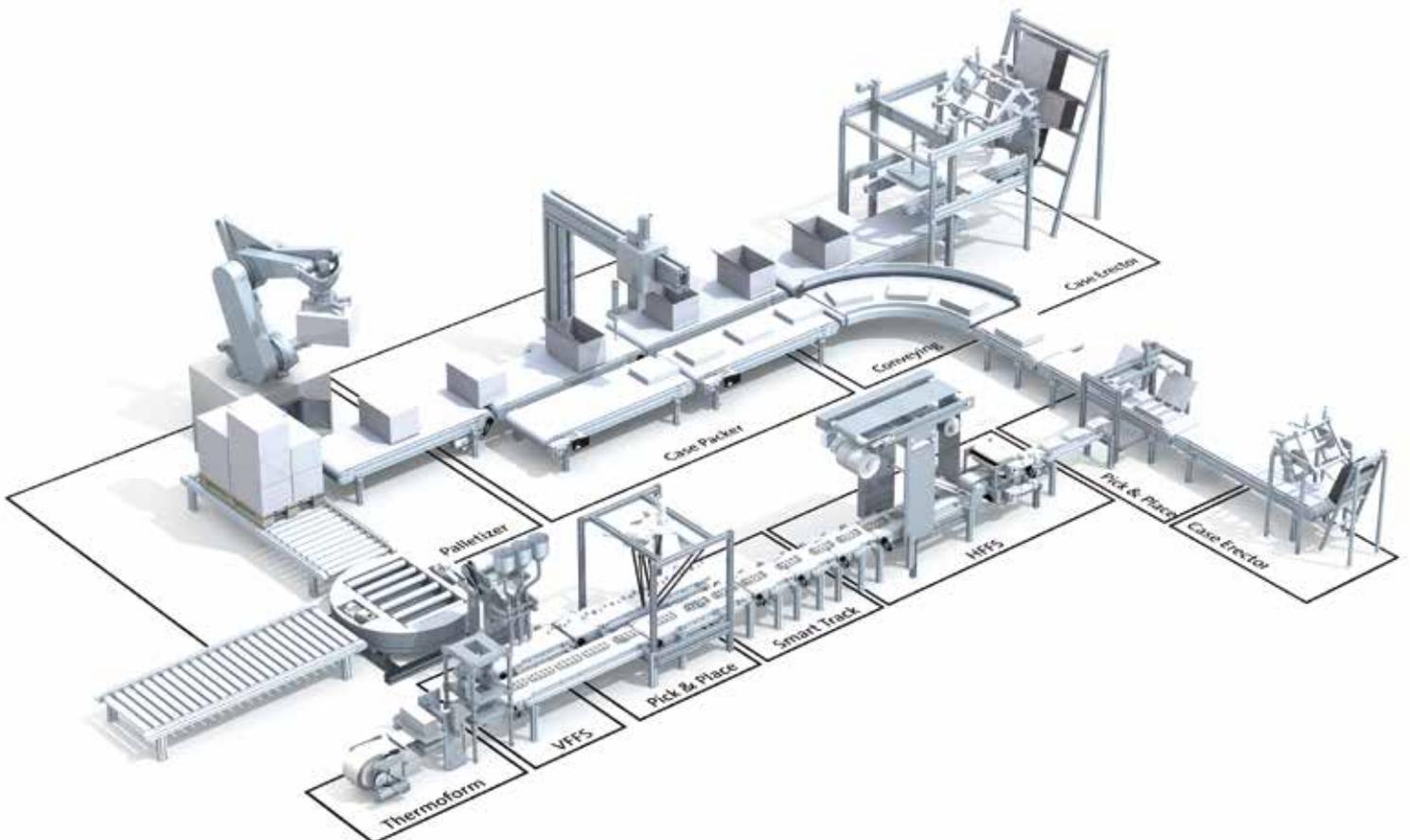


Actuator/sensor level – electromechanics



Exactly what you need for your packaging machine.

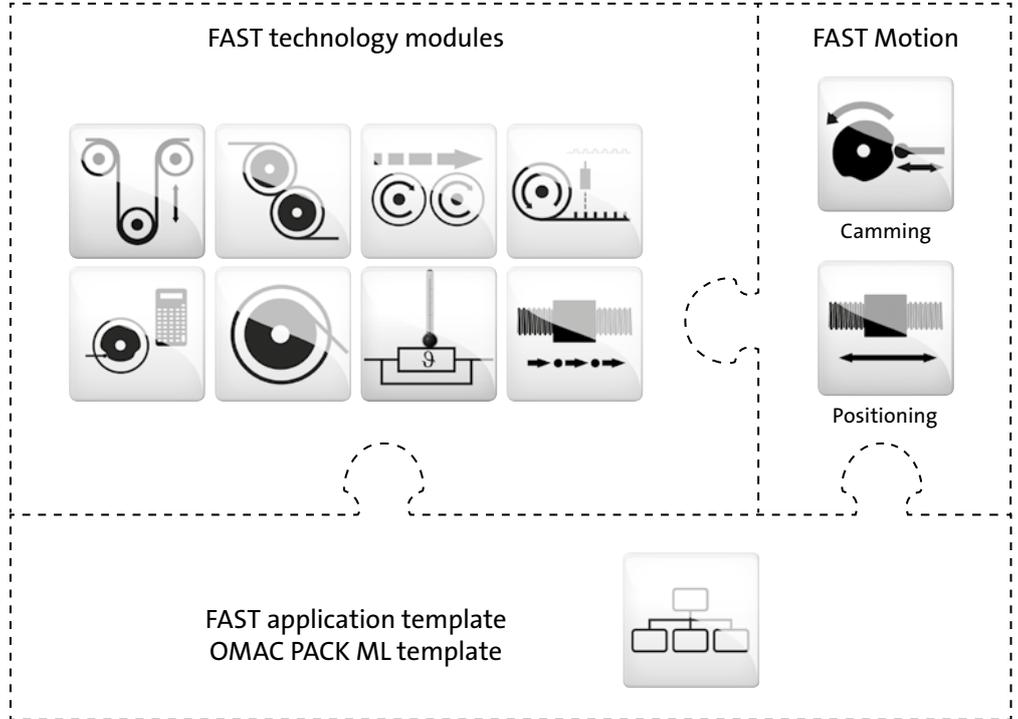
From primary packaging to palletising – With our intelligent automation system, we work with you closely to quickly find the best solution for any machine task. Rely on easy software engineering, the use of open standards, and exactly the right drive design.



Software engineering made easy

With Lenze FAST, our application software toolbox, you can combine intelligent standardised software modules for very different machine modules in a single template and thus create your machine software

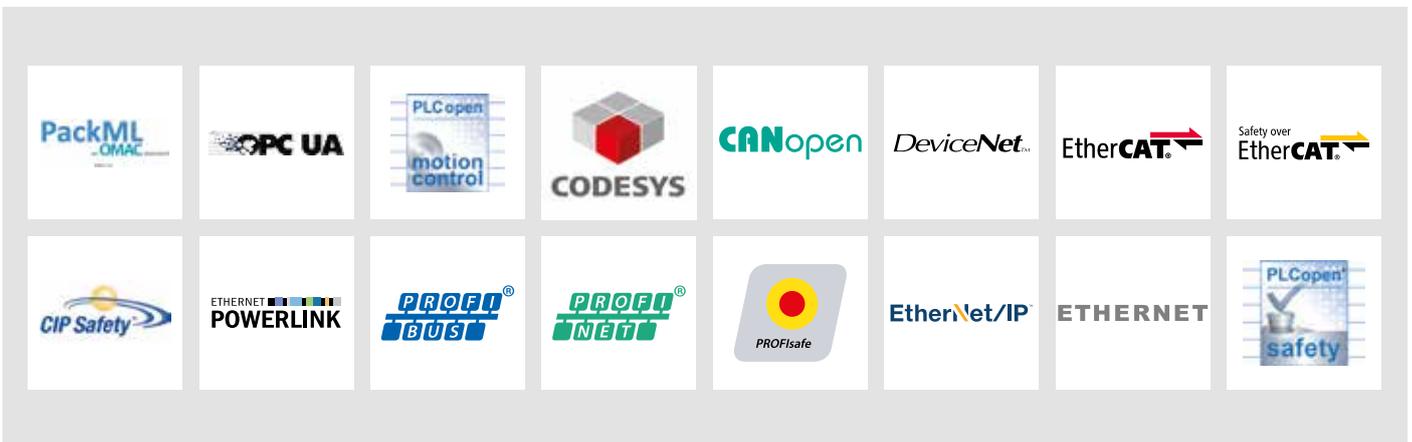
the easy way. This reduces your motion software engineering work by up to 80%, which, in turn, leads to a considerable reduction of the time you need to develop the basic functions of your machine.



Open standards

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, an ability

that enables easy integration into higher-level line structures. This openness makes mechanical engineers and end users confident of being able to adapt to changes in the future.



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 offer a reliable platform for remote maintenance. We use a connection that can be monitored in order to connect the service engineer to the machine. The machine operator thus has the certainty that only authorised persons gain access to the machine and do so only at the right time.

Moreover, we can collect data from the machines and save them in a private 'cloud'. The data are analysed and converted into key performance indicators that provide a deeper insight into how the machine is working. We offer you a completely cloud-based quality management system. We offer these services in the form of a flexible subscription service. This has a whole series of advantages over an in-house system. No maintenance, no IT investment and no costly software licences are necessary. The crucial aspect is that complex individual programming is rendered unnecessary. These services can be provided for a monthly subscription fee so that the online transfer of machine data becomes scalable.

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 are available for immediate or future analysis

Plant management

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

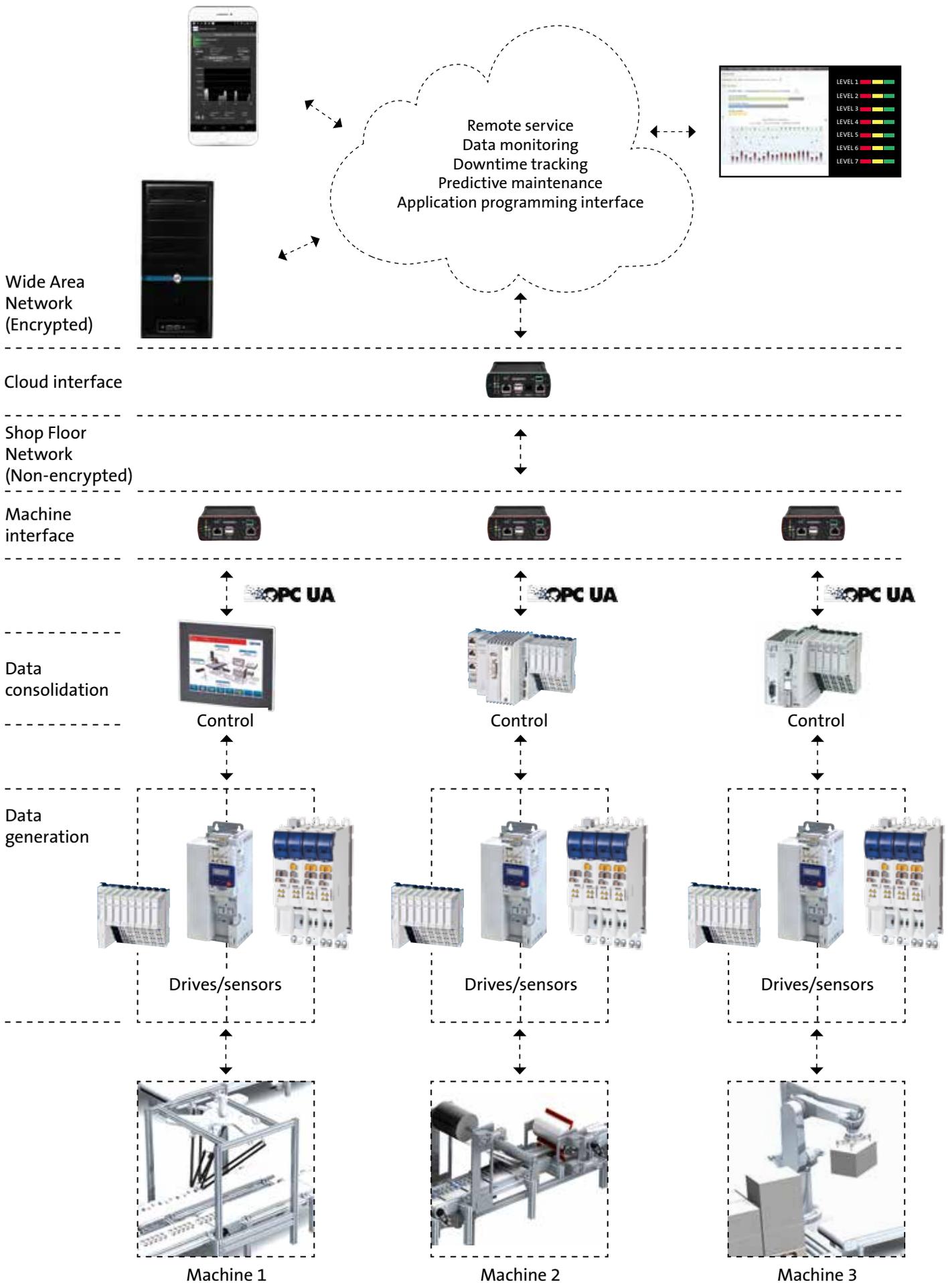
Remote maintenance

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

Predictive maintenance/

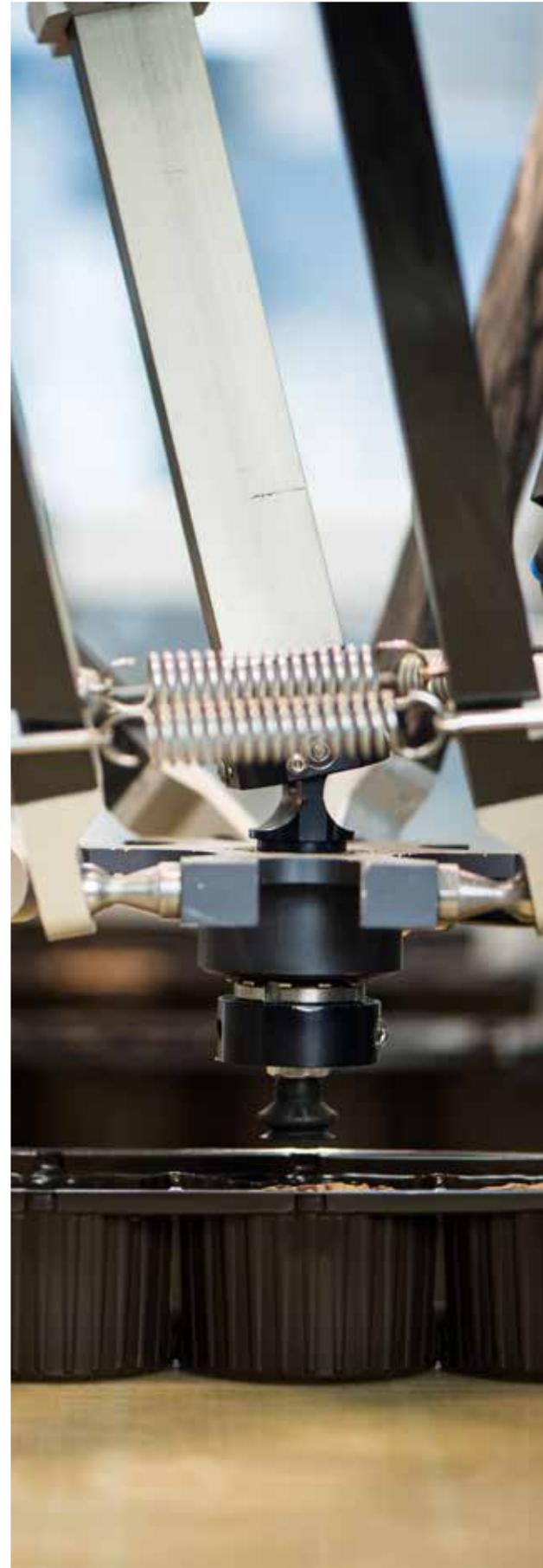
Digital services

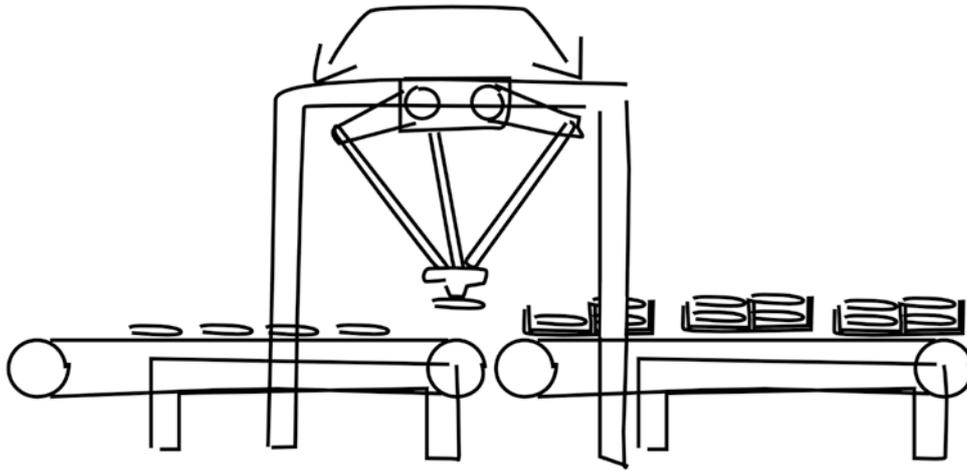
- Predictive detection of potential faults on the basis of the “cloud data”
- “Big data” as the basis for advisory services for the optimisation of production by the OEM



Maximum flexibility due to robotics.

- As a flexible component of a machine, the Delta robot is the very first choice for customised production.
- Lenze FAST technology modules enable parameterisation instead of programming – without any deep knowledge of robotics. We thus create software complexity that is easy to handle.
- Openness of our software: You remain independent and are able to contribute your very individual core competence.
- Integrative control combines logic, motion and robotics in one controller. This eliminates costs and engineering work for additional controllers.
- Easy linkage of peripherals such as cameras, conveyor belts etc.
- Uncomplicated connection to the MES/ERP system for e.g. track-and-trace functionality, recipe management, machine management.





ETHERNET



Remote Host

Process level



Visu

Motion
Logic



EtherCAT

- Pick&Place
- Transformation
- Motion control
- Touch probe
- Electric shaft

Control level



Field level



Delta 1



Delta 2



Delta 3



Rotation



Tilt



Conveyor



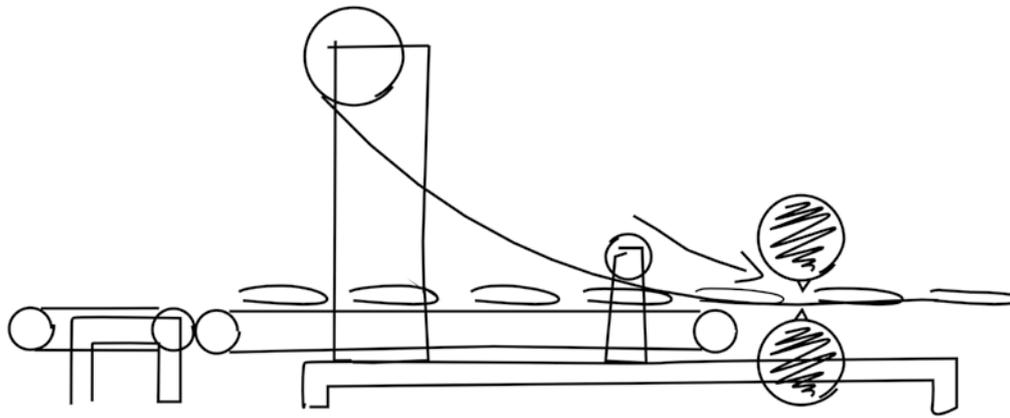
Conveyor

Actuator/sensor level – electromechanics

Efficient use of resources and maximum productivity.

- Modular and scalable software and hardware can be adapted to any requirements.
- The winder solution from Lenze compensates for problems such as friction and the influence of acceleration. This prevents material cracks/wastage and enables the use of thinner films that are sensitive to pulling. And all this without any additional costs for special sensors that are used to measure tensile force.
- Intelligent drives: The machine gets to know the parameters of the drive technology during the process. These parameters no longer need to be determined by means of time-consuming and costly expert tests.
- If the packaging material or humidity changes, the machine adapts itself accordingly.
- The predefined “Cross cutter” technology module calculates the cam for the synchronous movement of a cross sealing roller and synchronises it with the master axis. Empty packages and products between the sealing jaws are prevented.





ETHERNET



Remote host

Process level



Visu

Motion
Logic



Safety over
EtherCAT

Control level



Winder



Tension control



Register control



Temp. control



Cross cutter

EtherCAT



Field level



Sealing

Cross Cutter



Unwinder



Outfeed



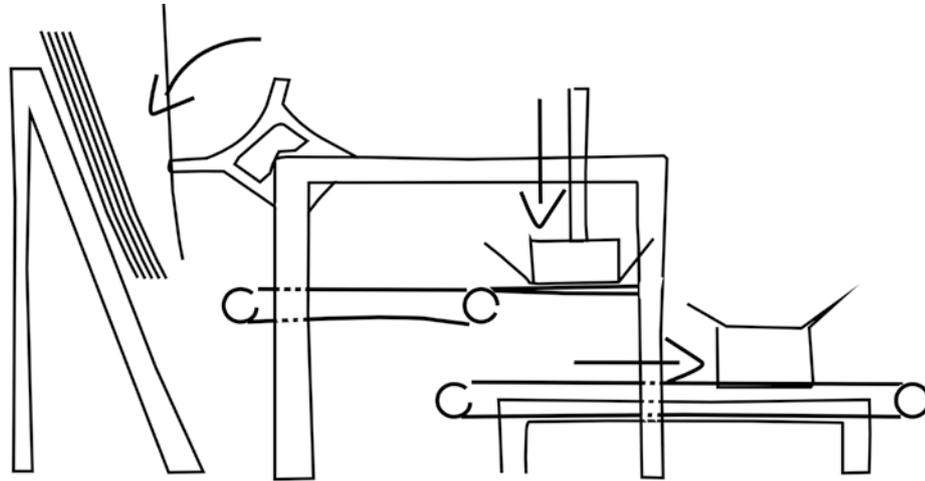
Infeed

Actuator/sensor level – electromechanics

The operator is at the centre of things.

- Visualisation with an operating concept centered on one user (User Centered Visualization) as well as highly flexible software.
- Intuitive control and navigation by means of language-independent user guidance (use of images and symbols).
- IPC design adapted to the existing machine design, easy user management, secure and easy log-in of the machine operator by means of RFID.
- Fast and reliable set-up, operation and servicing of the machines – worldwide.
- Visualisations on multi-touch displays as well as on different display terminals (mobile phone, tablet, browser, HMI etc.)
- Uniform HMI template and therefore better operability of all machines without any HMI training for individual machines. Standardised view and arrangement of the buttons, error display etc.





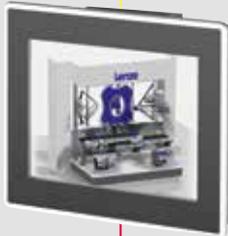
ETHERNET



Remote host

Process level

Logic
Visu



EtherCAT

Control level



Field level



Loader

Erector

Infeed

Outfeed

Actuator/sensor level – electromechanics

Worldwide service, for the requirements of the packaging industry.

Productivity, reliability and new levels of peak performance daily – These are our decisive success factors for your machinery. We offer you individually conceived service concepts for continuously safe and reliable operation. This is where our service modules play an important role,

whereby expert support is provided by our experienced specialists who have outstanding know-how regarding applications in this industry. 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 extremely well. We work together with you to create a basis for taking the appropriate measures. For example, we identify weak points or risks and tap valuable performance reserves. One thing is certain: with us, your machine is in the best hands.

Lenze prevention

Prepared for the unexpected.

Our comprehensive preventive service is the ideal way to minimise potential risks to your machine. We support you in increasing machine availability and minimising reaction times and downtimes in the event of faults. This saves you time and money – and soothes your nerves.



Lenze optimisation

Making the good better.

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

Lenze emergency service

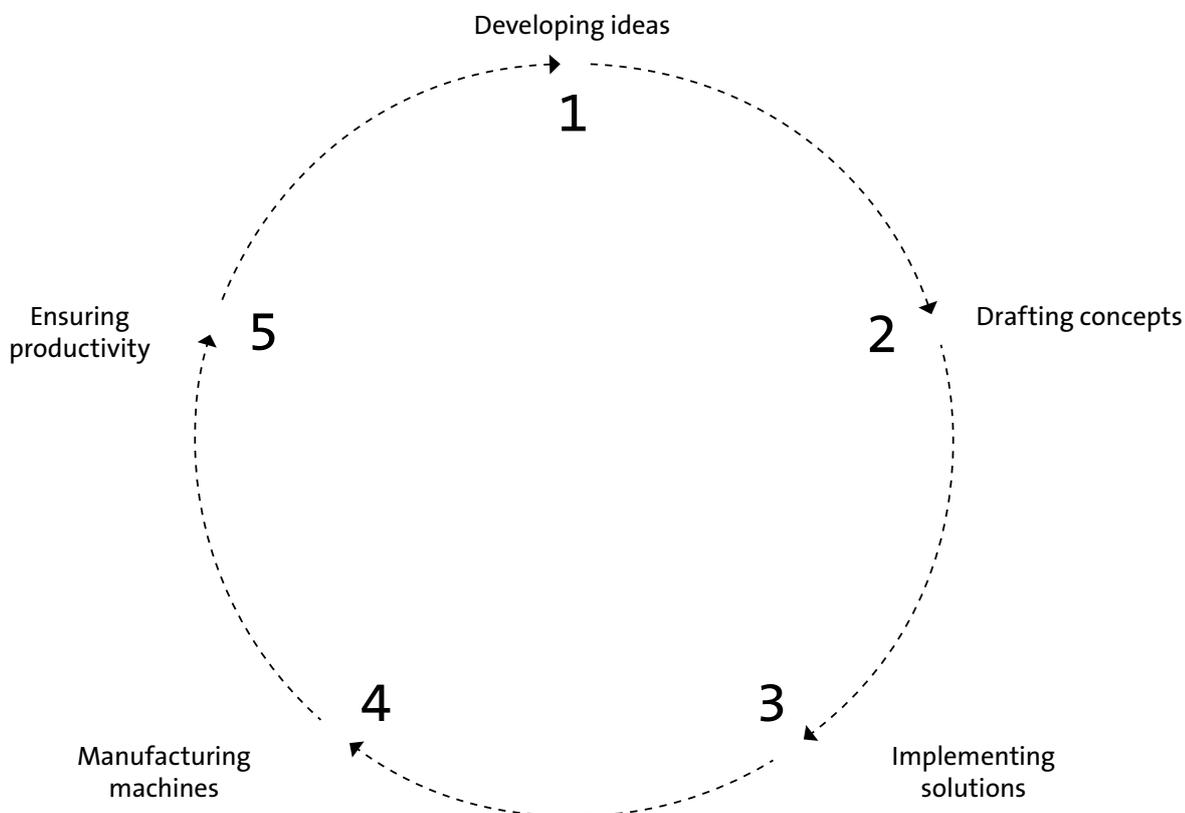
Ready for any situation.

You can also rely on us in the event of an emergency. We make extensive preparations for potential problems. Should something unforeseen ever occur, we will make sure that your systems are back up and running quickly and also perform an in-depth error analysis. With us, your projects are in safe hands.

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

We work with you closely to devise the very best solution and take great pleasure in setting your technical ideas in motion. Irrespective of whether you want to optimise existing equipment, develop a new machine or design an

overall application for plants in the packaging industry. We always strive to make things easy and seek perfection therein. This is anchored in our thinking, in our services and in every detail of our products.





www.Lenze.com

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