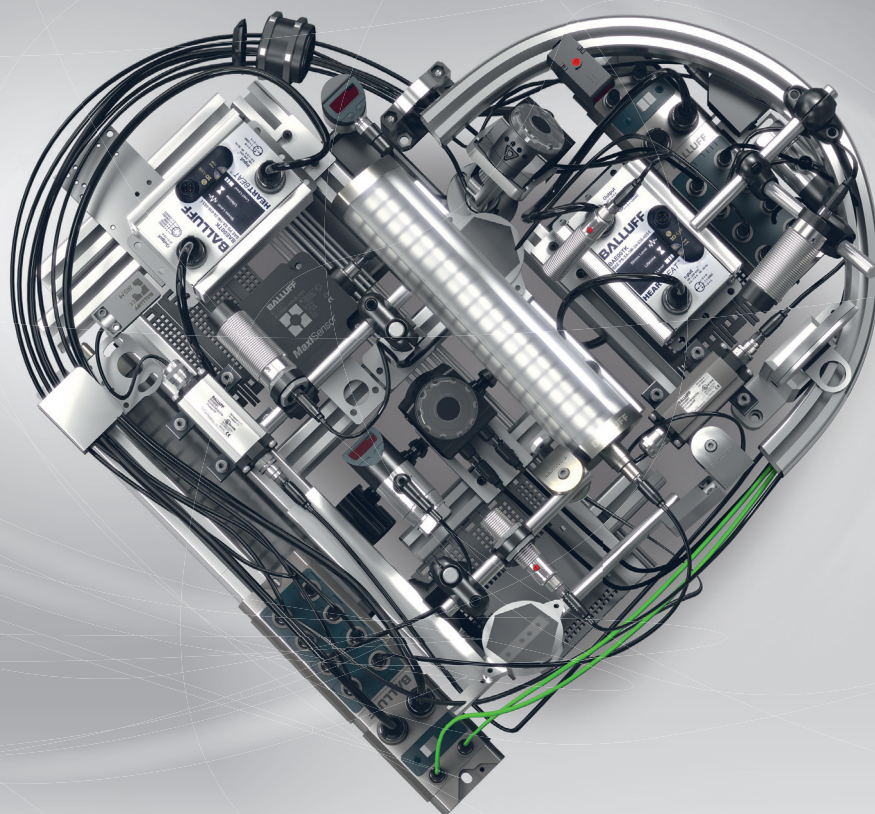


BALLUFF

sensors worldwide

THE HEARTBEAT OF INDUSTRY 4.0



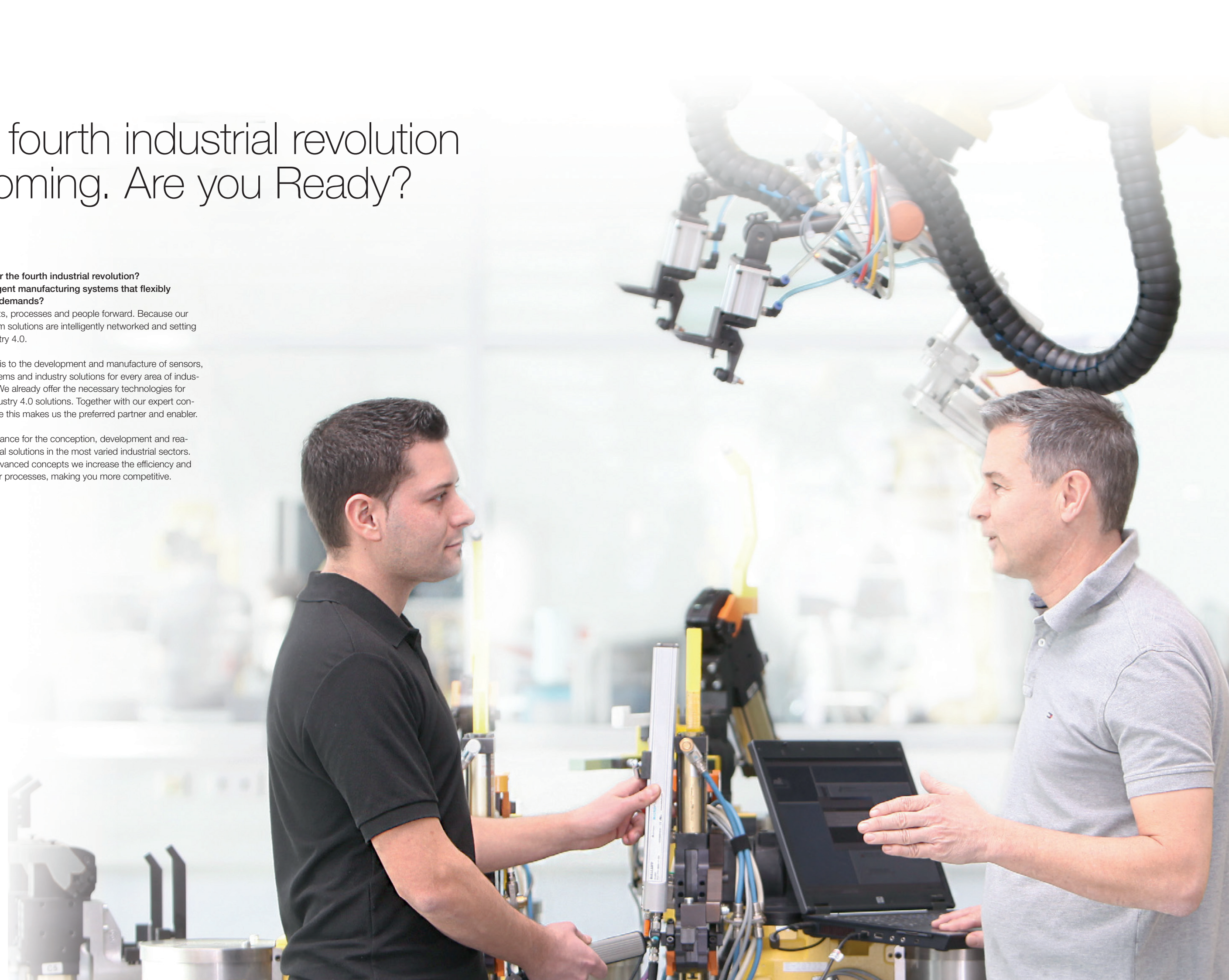
The fourth industrial revolution is coming. Are you Ready?

**Are you ready for the fourth industrial revolution?
Ready for intelligent manufacturing systems that flexibly
respond to new demands?**

We move products, processes and people forward. Because our sensor and system solutions are intelligently networked and setting the pace of Industry 4.0.

Our commitment is to the development and manufacture of sensors, identification systems and industry solutions for every area of industrial automation. We already offer the necessary technologies for implementing Industry 4.0 solutions. Together with our expert consulting and service this makes us the preferred partner and enabler.

We provide assistance for the conception, development and realization of individual solutions in the most varied industrial sectors. Through these advanced concepts we increase the efficiency and profitability of your processes, making you more competitive.



Balluff: The Heartbeat for Industry 4.0 solutions

The basis of Industry 4.0 is the availability of all relevant data in real-time as well as the ability to create the optimal value from the data at any point in time. Balluff sensors and identification systems ensure this availability. With our networking technology and connectivity solutions, the data can be collected and transported to provide basic information from analysis to the higher level systems or cloud. That is our core competency: As a pace-setter, we create the prerequisite for Industry 4.0 solutions. Take a look at our application examples.

Application: Parameterization
Achieving the best results on a machine like a lathe requires a reliable grip on the workpiece and the tool. Here pressure sensors are used for clamping pressure monitoring, but they are also ideal for monitoring process media such as coolants, lubricants, hydraulic fluids and pneumatic components. IO-Link pressure sensors are parameterized via the controller, so that they can be installed directly where the action is. In the best position for measurements and perfectly matched to the machine design. This saves installation effort and ensures the highest machine availability. Replacing a sensor is plug-and-play, as the configuring is automatic with IO-Link.

Application: Traceability
Poka Yoke provides transparency and targeted error management in-process by making all data traceable. Typical weak points can be identified early and counter-measures taken. This provides production security, enables fast correction runs and prompt adjustments when requirements change. RFID systems record every process step – all the production parts used, all materials and process fluids including time, location and sequence. This execution-, process- and origin information are automatically documented and are available in real time.

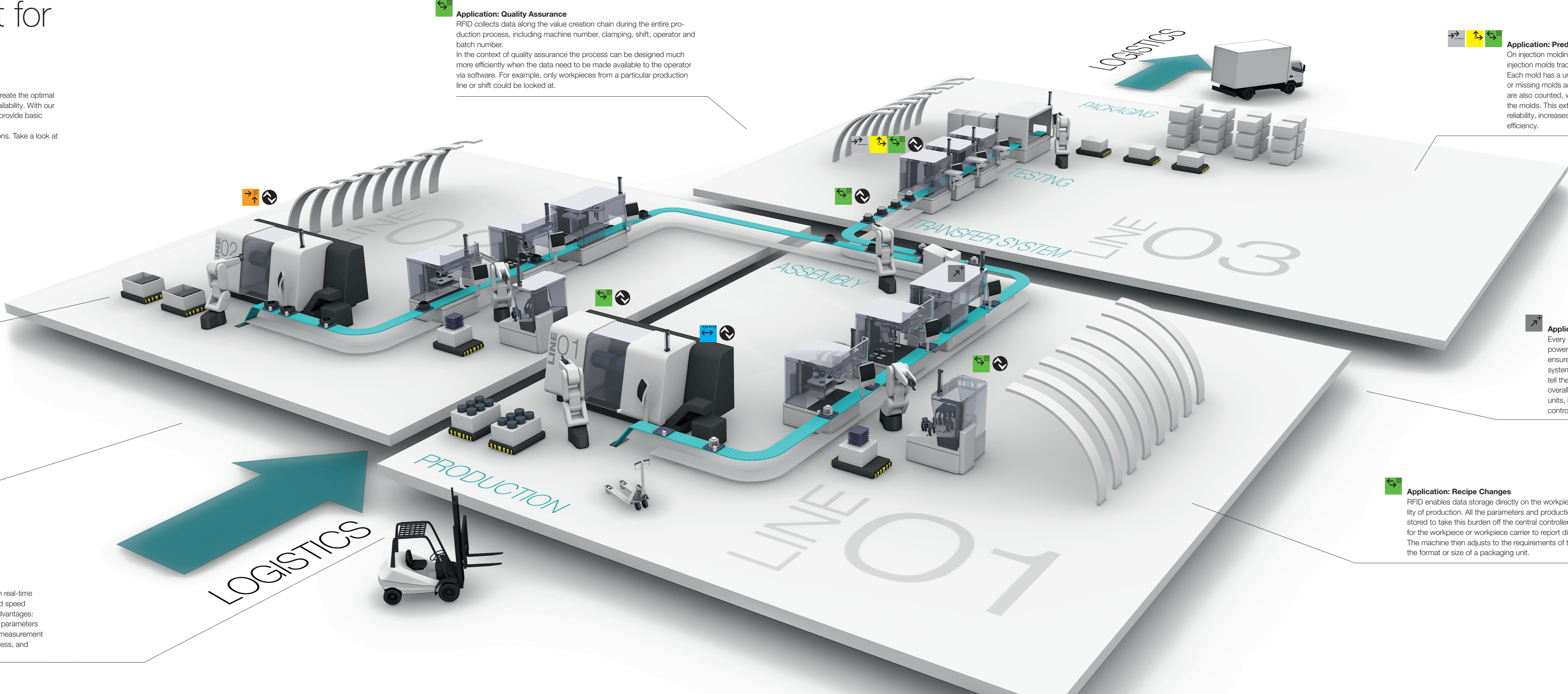
Application: Format Changes
BTL Micropulse transducers in rod and profile style with real-time Ethernet provide fast, precise and absolute position and speed measurement. In machine building this offers several advantages: incorporation into the control system and replacing the parameters using the defined protocols is simple and time-saving, measurement data is sent in real time and synchronized with the process, and plug-and-play makes replacement fast and easy.

Application: Quality Assurance
RFID collects data along the value creation chain during the entire production process, including machine number, clamping, shift, operator and batch number. In the context of quality assurance the process can be designed much more efficiently when the data need to be made available to the operator via software. For example, only workpieces from a particular production line or shift could be looked at.

Application: Predictive Maintenance
On injection molding machines Mold ID makes the use of injection molds traceable and ensures their optimal utilization. Each mold has a unique ID number, so that incorrect matches or missing molds are a thing of the past. Production cycles are also counted, which enables preventive maintenance of the molds. This extends runtime, contributes to operational reliability, increases the systems' productivity and improves efficiency.

Application: Condition-Monitoring
Every system in industrial automation needs reliable and clean power – Balluff offers high-performance power supplies which ensure trouble-free and efficient operation of equipment and systems. The integrated status indicator and the heartbeat signal tell the user when a unit needs to be replaced. This increases the overall availability of systems. Specially developed for controller units, Balluff power supplies can be perfectly integrated into your control package.

Application: Recipe Changes
RFID enables data storage directly on the workpiece and increases flexibility of production. All the parameters and production steps can be directly stored to take this burden off the central controller. This makes it possible for the workpiece or workpiece carrier to report directly on the machine. The machine then adjusts to the requirements of that workpiece, such as the format or size of a packaging unit.





Systems and Service



Industrial Networking and Connectivity



Industrial Identification



Object Detection



Linear Position Sensing and Measurement



Condition Monitoring and Fluid Sensors



Accessories

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