WE MONITOR YOUR MACHINES

Optimizing productivity

innovating automation
To implement predictive maintenance, repair or replacement work, information about the condition of the sensors, process chain and workpieces is essential.

Continuous condition monitoring of machines while they are running provides information in real-time and ensures proper control and utilization of the production processes. This lowers costs while at the same time optimizing productivity.

Machine monitoring enhances machine operation while also directly improving development and design. The monitoring function also enables personnel deployment to be optimized.
Injection molding

PRECISE AND ROBUST FOR COMPLEX REQUIREMENTS

Injection molding is characterized by high expenditures for tools and a requirement for the most economical processes possible. Your tools need to be optimally deployed and utilized so they work efficiently and do not fail. This is where Mold-ID from Balluff comes in: the autonomous system enables condition-based tool upkeep without the use of cumbersome tool logs. It identifies every single tool including the wear parts and stores all the relevant information automatically so that it can be recalled at any time. This means Mold-ID is individually retrofittable regardless of manufacturer or location.

MONITORING, DOCUMENTING AND OPTIMIZING INJECTION MOLDING PROCESSES

Injection molding subjects machines and their components to severe loads. Unexpected machine failures result in high costs. Machine monitoring from Balluff ensures consistently high quality and reduces downtime. Our pressure, flow and temperature sensors provide continuous monitoring, documentation and optimization of your injection molding processes. Their robust and extremely precise technology promotes maximum availability of your equipment, while their precision enables you to manufacture the highest quality products.
DECENTRALIZING INSTALLATION TECHNOLOGY

Traditional star wiring from the machine controller to the individual sensor is complex and costly. Fieldbus modules are significantly simpler and more economical to use. Designed for all commonly used fieldbus systems, they enable the use of many controller types using the same wiring topology. With IO-Link they are also ready for Industry 4.0 – the exchange of data across all production levels.

RESISTING CORROSION

Coolants and lubricants that are used in machining are generally highly aggressive, attacking your machine and its components. Balluff sensors and connection technology reliably resists this harsh environment.

MONITORING TOOL CLAMPING

Tools which are not perfectly located in the motor spindle cannot machine workpieces correctly or with consistent quality. Series BIP inductive positioning systems from Balluff provide the information for correct clamping of your tools. Combined with Balluff BSP pressure sensors, a second channel can also check the plausibility of the sensor signals in hydraulic clamping systems.
Modern manufacturing demands maximum transparency. This is the only way to meet the high requirements for flexibility and quality while keeping costs at a minimum. This is why RFID is a key technology for tool tracking. But it’s not only the tools themselves that need optimal management; the finished workpieces also need to be uniquely identified, classified and tracked. Our 13.56 MHz HF system BIS M has been established as a standard. The system can read and write two-side coded corner tags or data screws attached directly to the pallet or workpiece.

**IDENTIFYING TOOLS IN THE MAGAZINE**

BIS C RFID systems in low frequency or BIS M in high frequency from Balluff always provide the CNC controller in milling machines and machining centers with the correct tool data. Reliability identified and transmitted parameters form the basis for optimal tool management. Unlike with error-prone, manually kept tool logs, data is continually recorded when loading and unloading the tool so that continued use of the tool can be controlled. The actual tool dimensions are stored, for example, so that they can be automatically read into the tool table for the CNC controller.

**MATCHING AND TRACKING WORKPIECES**

Modern manufacturing demands maximum transparency. This is the only way to meet the high requirements for flexibility and quality while keeping costs at a minimum. This is why RFID is a key technology for tool tracking. But it’s not only the tools themselves that need optimal management; the finished workpieces also need to be uniquely identified, classified and tracked. Our 13.56 MHz HF system BIS M has been established as a standard. The system can read and write two-side coded corner tags or data screws attached directly to the pallet or workpiece.
QUALITY ASSURANCE AT THE ROLLING STAND

BIS M Industrial RFID systems from Balluff enable automatic recording and identification of the rollers. RFID tags can be directly attached to individual rollers. This allows you to verify whether the right rollers are being used or if roller pairs actually match. Reworking of the rollers can also then be documented. The RFID handheld reader stores important information and is used for mobile communication from any location.
Drive technology

HIGH ENERGY EFFICIENCY AND QUALITY

By using the series BIP inductive positioning systems from Balluff you can perform clamping distance monitoring even when the clamping mechanism rotates. These systems detect the position of metallic discs which travel laterally past the sensor. We offer positioning systems for different travel distances to meet your precise needs. Data can be processed flexibly using IO-Link, switchpoints or the analog interface. An additional temperature output helps in reliable diagnostics.

OPTIMAL POSITION FEEDBACK FOR LINEAR DIRECT DRIVES

The highly precise, dynamic and real-time capable BML magnetic encoder systems from Balluff provide optimal position feedback with the greatest possible energy efficiency for the best possible control quality – even in high-dynamic applications. Using the BML Configuration Tool also makes available many additional parameters and diagnostics functions, such as condition monitoring.

DETECT END AND INTERMEDIATE POSITIONS WITH EASE

Inductive mini-sensors from Balluff detect end or reference positions in linear drives. Their small form factor lets you integrate them in locations that otherwise are too tight for sensors, and improves the power density of your drive units. The low weight of these non-contact, wear-free and contamination resistant sensors increases the dynamics.
Automation involves critical applications with high requirements for quality, long service life and diagnostics capability. This is why our Heartbeat® power supplies were developed: A Heartbeat® status LED tells you locally what the present load and utilization situation is, the degree of device wear as well as the remaining service life of the power supply. The IO-Link interfaces allow all the essential parameters to be read and evaluated in higher level diagnostics systems.

SMART SAFETY

With this universal interface from Balluff you can integrate industrial safety technology easier than ever. The secure Protisafe I/O module is the first to join automation and safety technology via IO-Link. This combination provides machine safety in a single system: IO-Link provides both the sensor and actuator details and the safety information. The latter is sent directly through the master to the controller. Using Protisafe over Profinet guarantees safe communication with the controller.