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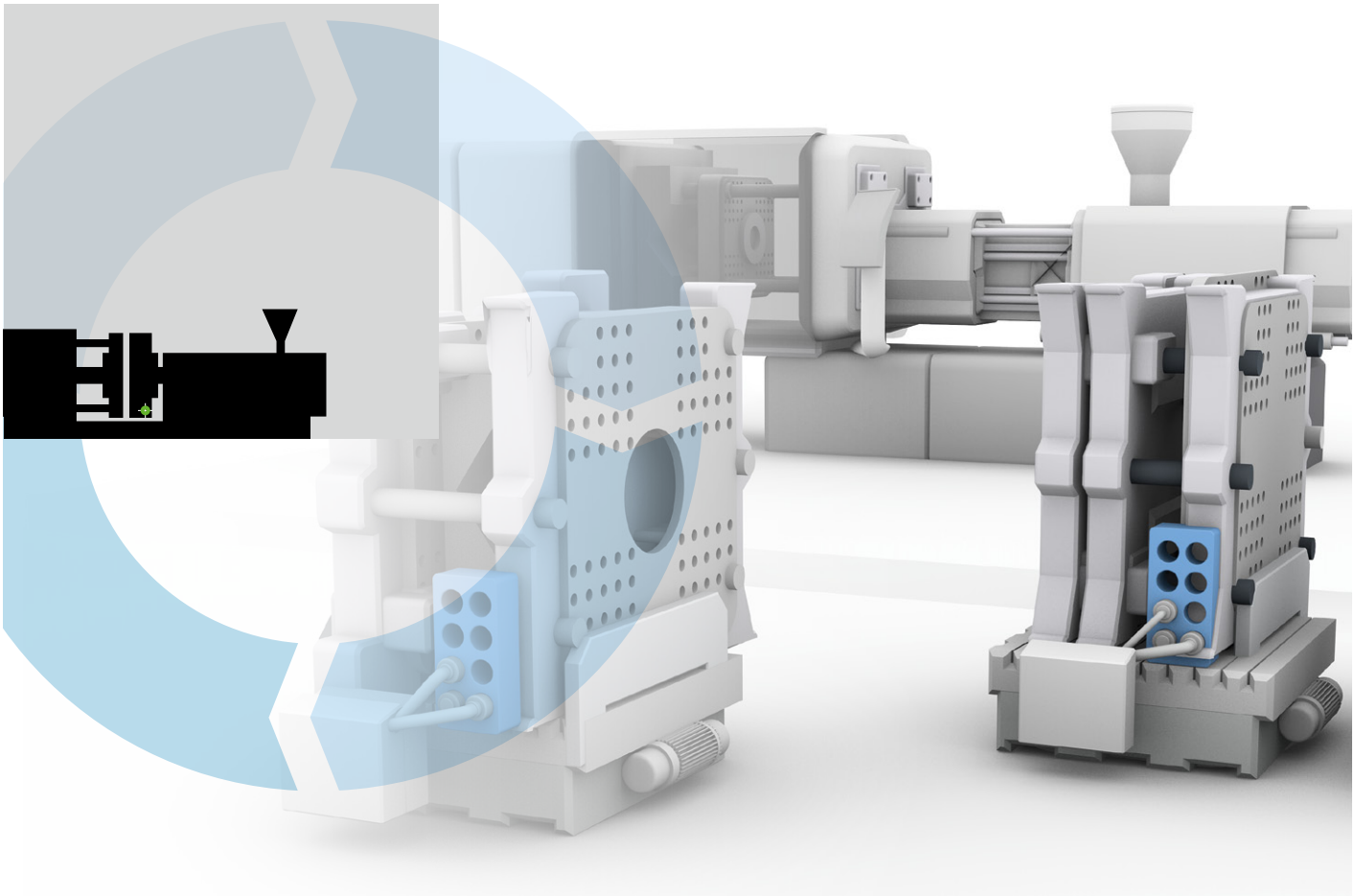
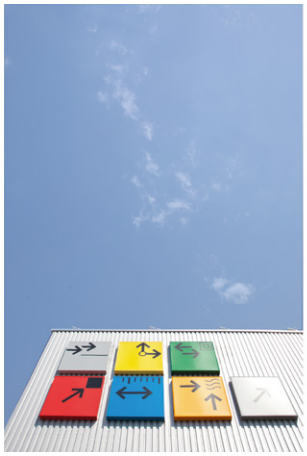
sensors worldwide

Mold ID

RFID ensures transparency in mold handling





With more than 90 years of company history behind it, Balluff GmbH is a globally leading sensor specialist and system provider. The full-range product line encompasses high-quality sensors and systems for distance measurement and identification, sensors for object detection and fluid measurement as well as top-of-the-line network and connection technology. With 61 locations, Balluff has a strong presence on every continent. The corporate headquarters in Neuhausen a.d.F. is located near Stuttgart.

Balluff stands for application-specific customer solutions, comprehensive services, individual consultation and prompt service. Our staff of more than 2750 employees is committed to providing outstanding service worldwide.

Mold ID – Transparency in Mold Handling

Optimize the use of your injection molds. And enable condition-based maintenance.

Mold ID makes the use of injection molds traceable and ensures their optimal utilization. Each mold has to be clearly identified, because all relevant data—such as drawing number, last maintenance or service life—is saved to the mold and can be retrieved at any time. This makes incorrect assignments and missing forms a thing of the past. Production cycles are also counted, which enables preventive maintenance of the molds. This extends the runtime and supports reliable operation. It increases the productivity of the systems and improves the efficiency. Ensure transparency with Mold ID.

Mold ID is backed by an autonomous system. All machines can be upgraded individually, without the manufacturer and regardless of the location.

Another plus: You can access the Mold ID system from anywhere in the world using a standard web browser, smartphone or tablet PC. An app with functions protected by configurable passwords enables access to the data directly on the mold by using Near Field Communication (NFC).

The benefits to you

- Recording of the production cycles by an autonomous system
- All data is available directly on the mold via RFID
- Optimum mold change by visualizing the inspection intervals
- Through Mold ID ranging from time-based (preventive) to condition-based maintenance
- Worldwide access to the Mold ID system using a standard web browser
- Can be integrated into higher-level systems (e.g. MES) using a web service interface
- Reliable – Balluff apps for access to the mold

Contents

Mold ID – components

Data carriers
- For each mold
- Variant depends on the ambient conditions

Shot counter
Via inductive sensor for communication with the data carrier

RFID unit
For communication with the data carrier

Mobile end devices
- Read data
- For initializing data carriers
- For setting limit values
- For password protection

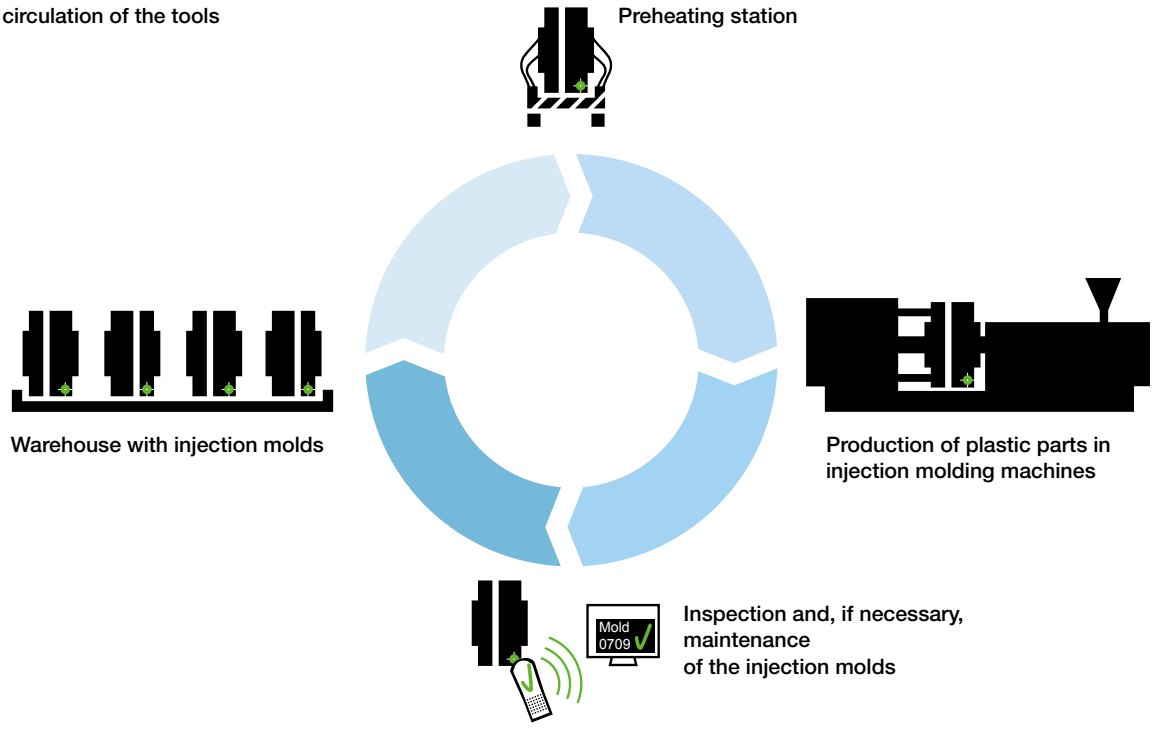
Mold ID unit
- Industrial PC
- Software
- Gateway to the company network
- Visualization with the SmartLight signal light

Molds are subject to wear and tear and must be regularly maintained as a result. The regularity of inspection often depends on the experience values of individual employees or handwritten notes that are not available to everyone.
In many cases, therefore, maintenance and inspection are frequently carried out only if the produced parts no longer meet the required quality standards or if the mold malfunctions.

The benefits to you with an autonomous Mold ID
- Fewer unplanned downtimes as the result of
  - continuous **counting** of the shots
  - automatic **documentation** on the mold
  - **visualizing** the mold status
  - **notice** for the operator about the next scheduled maintenance
- Transparency through the level of use of identically designed molds
- Overview of all molds currently running on the machines, through access to the systems over the company network via TCP/IP.
- Mobile reading out of the documented mold data via smartphone or RFID handheld, for example, during an audit or when selecting the correct mold.

Mold ID makes the mold usage transparent and creates the prerequisite for optimizing processes and monitoring your service and maintenance.

Typical circulation of the tools



Effects and Cost-effectiveness

Through the automatic documentation of the shots and the notes concerning timely maintenance of the molds, a Mold ID system contributes to the increased efficiency of injection molding machines and molds. This has a positive effect on your key performance indicators – for example, on the OEE (overall equipment effectiveness). This is because Mold ID ensures the availability and quality of the molds.

The sample calculation of amortization time or ROI (return on investment) on this page shows that different criteria influence the profitability. Therefore the various areas are calculated separately (V1 to V3). Taken as a whole, it becomes apparent that the investment in Mold ID pays off after a short time and saves money (V4).

Mold ID ROI calculation

Information	
Number of machines	25 Quantity
Number of molds	120 Quantity
Hourly rate of the machine	65.00 €
Costs for one employee per hour	35.00 €
Duration in minutes for the documentation after changing molds	5 min.
Mold changes per day and machine	3 ×
Expense for maintenance of a mold	5 hours
Number of preventive maintenance cases per year and mold	6 ×
Savings through shot-number-dependent maintenance instead of preventive, time-based maintenance	1 ×

Result	
Time for documentation on one day	375 min.
Documentation effort in one year	93,750 min.
Costs for the documentation per year	**54,688.00 € (V1)**
Savings per machine: Reduction of the unplanned downtime	0.25 hours
Savings per day	343.75 €
Savings per year	**85,937.50 € (V2)**
Time required for preventive maintenance of the molds today	3600.00 hours/year
Savings through shot-number-dependent maintenance	600.00 hours/year
Savings for maintenance	**21,000.00 € (V3)**
One-time investment	**125,282.50 €**

	Input field
	Result/fixed

ROI calculation	V1 – Documentation	V2 – Downtime	V3 – Maintenance	V4 = V1 + V2 + V3
ROI = Investment in €	€125,282.50	€125,282.50	€125,282.50	€125,282.50
Savings in € per year	€54,687.50	€85,937.50	€21,000.00	€143,395.83
Amortization after	**3.44 years**	**1.46 years**	**5.97 years**	**0.87 years**

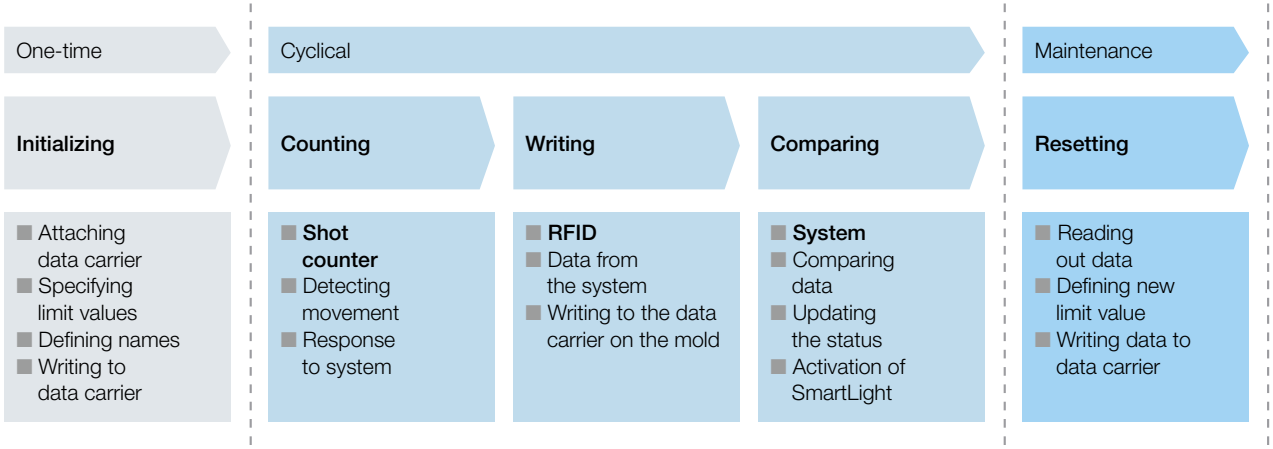
Contact us

You can receive a white paper about Mold ID and an customized, non-binding calculation of Mold ID usage with your numbers at no cost by writing to this address: **mold-id@balluff.de**

We look forward to your inquiry!

Application description

The functions of Mold ID can be divided into various phases. Examples of these phases are shown here.



Initializing

- **Attaching data carriers:** The data carriers are attached to the mold taking into account the installation instructions. Adhesive or screw-on designs can be selected to match the mold (size, accessibility, machining options, etc.).

- **Defining limit values:** You can define the limit values for the respective mold. This requires defining two values:
  – Number of shots until the next instance of maintenance (red lamp)
  – Number when to issue a warning (yellow lamp)

- **Defining names:** A unique name can be assigned to the mold, for example, the mold or drawing number supplemented by one number. This enables molds of the same design to be differentiated from one another.

- **Writing to data carriers:** The data carrier is written with the previously defined limit values. Additionally, the shot counter for the mold is initially set to "0". This value can no longer be reset.

Cyclical

- **Counting:** Each production cycle (shot) is detected by the sensor installed on the machine. The number of edges that belong to a shot can be configured with the software. The counted edges are reported back to the system.

- **Writing:** The system records the data and writes the information directly to the data carrier on the mold. This ensures that no information is lost when the mold leaves the machine. Then the data carrier contains the actual values—not estimated planned values from the ERP system.

- **Comparing:** The system monitors limit values and visualizes the status via SmartLight. If the shot counter is within the defined values, the lamp lights up green. The system switches over to a special display mode if the value for the "Warning" is reached. The lower part of the lamp remains green. The upper part is incrementally filled with yellow. If the maximum value is achieved, the lamp turns red.

Maintenance

- **Resetting:** If the mold reaches the previously defined limit, maintenance or repairs are performed on it according to the schedule. Before it can be used again, the limit values have to be adjusted and written back to the data carrier. The counter for all parts produced with this tool cannot be tampered with. The limit values for warning and maximum can be individually defined.

SmartLight signal lights for displaying operating states

A mold was detected

Warning level

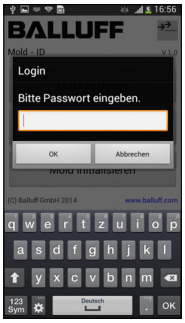
Maximum level exceeded Maintenance required

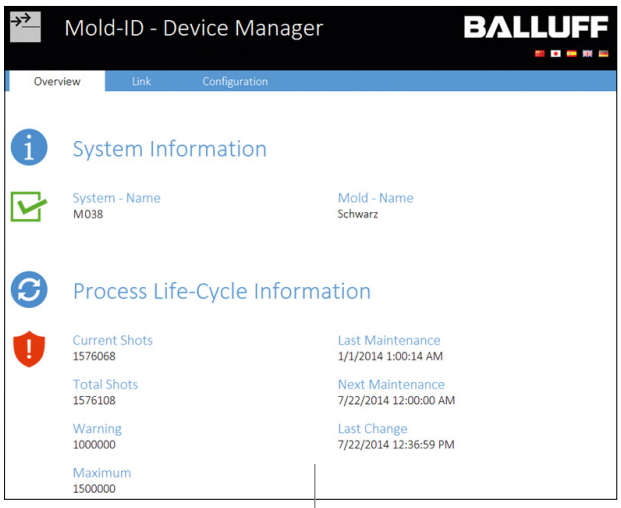
Neutral status Self-diagnostics

Explorer status

No mold detected in the system

Technical error





With a smartphone you can read out the data directly on the mold using **Near Field Communication (NFC)** and the Mold ID app.

Overview
Detailed information about the mold and the system

BALLUFF

sensors worldwide

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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