Tool Identification with Industrial RFID

The system

Tool identification in modern machine tools makes an indispensable contribution to defect-free and efficient production processes.

Extremely rugged and absolutely impervious to environmental effects, Balluff Industrial RFID systems are exceptionally reliable and dependable. This is guaranteed by their inductive principle of operation. Balluff Industrial RFID systems are therefore ideal for use in the harsh industrial environment of the machine tool.

You too can benefit from these powerful Industrial RFID systems for tool identification.

In addition to tool identification, Balluff Industrial RFID systems also offer significant advantages in unbroken documentation and automation of the entire manufacturing process. Parts can be easily kept track of – whether in the machining or assembly process. Each step in machining or assembly is stored on the data carrier to ensure traceability for providing the greatest process reliability and highest quality.

A wide variety of
- Data carriers,
- Read/write heads,
- Processors and
- Accessories are available. Simply make your choice based on the features you need. And you will benefit from the ease of installation.

Data exchange between the data carrier and the write/read head is non-contact and therefore static-free. The data and power supply for the data carrier are by inductive coupling, the write/read head also serves as antenna. The inductive principle of operation guarantees the robustness and long life of the data transmission in guarantee a secure working software.
Optimal tool utilization
• Balluff Industrial RFID allows you to fully exploit the capabilities of your tool magazine.
• Complete and permanent tool data traceability.
• Unambiguous association of tool and tool data.
• Data can be retrieved at any time.

Electronic data transmission
• Tool data transmission is fully automatic. Tool data are acquired and automatically transferred to the machine memory.
• Complete data traceability: tool life monitoring, machine operation and tool handling.

Cost savings
• Balluff Industrial RFID ensures production quality and efficiency. Tool life monitoring and data acquisition offer significant savings potential.
• Tool data are automatically updated: data only have to be entered once.
• No incorrect entries, no forgetting of data.

Cost optimisation
• One-time investment cost: 6,200 € (not including resulting production downtime).
• Annual savings with Balluff Industrial RFID 22,170 € (not including resulting production downtime).

Table: Tool Identification with Industrial RFID

<table>
<thead>
<tr>
<th></th>
<th>Tool Identification with Industrial RFID</th>
<th>Conventional handling</th>
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<tbody>
<tr>
<td></td>
<td>Machine runtime (years)</td>
<td>250 days/year</td>
</tr>
<tr>
<td></td>
<td>2-shift operation</td>
<td>2-shift operation</td>
</tr>
<tr>
<td></td>
<td>Tool changing assuming 2-shift operation</td>
<td>0.3 minutes × 25 tool changes</td>
</tr>
<tr>
<td></td>
<td>Lost utilization: 8%</td>
<td>7,000 € cost/year</td>
</tr>
<tr>
<td></td>
<td>Tool utilization: &lt; 92%</td>
<td>104,000 € cost/year</td>
</tr>
<tr>
<td></td>
<td>Avg. tool price: 150 €</td>
<td>1750 min × 4 €/min</td>
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<tr>
<td></td>
<td>Avg. tool price of the tools</td>
<td>150 € per tool</td>
</tr>
<tr>
<td></td>
<td>New tool: &lt; 500 pcs./year</td>
<td>(340 pcs./year × 150 €)× 8%</td>
</tr>
<tr>
<td></td>
<td>Total annual savings with Balluff Industrial RFID 108,370 €</td>
<td></td>
</tr>
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</table>

Table: One-time investment cost

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<tr>
<td></td>
<td>Costs of conventional handling = 1750 min × 4 €/min = 7,000 € cost/year</td>
<td>Costs of conventional handling = 200 min × 4 €/min = 800 € cost/year</td>
</tr>
<tr>
<td></td>
<td>Costs of Balluff Industrial RFID = (340 pcs./year × 150 €) × 8% = 10,700 € cost/year</td>
<td></td>
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<tr>
<td></td>
<td>Total one-time investment cost = (1750 min × 4 €/min) + 7,000 € cost/year = 11,440 €</td>
<td>Total one-time investment cost = 7,800 € + 800 € cost/year = 8,600 €</td>
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Table: Annual savings with Balluff Industrial RFID

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<td>Annual savings = (340 pcs./year × 150 €) × 8% = 22,170 €</td>
<td>Annual savings = 24,000 € cost/year</td>
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20 years of Balluff expertise in Industrial RFID.

Absolutely without contact and maintenance-free. Tools always carry communication in the tool management system. And they do it controller, our Industrial RFID systems ensure flexible and reliable management. Capable of integration in every commonly used machine standards. Today’s modern machine tools have little in common with Technical progress in machine tools is a success story that is setting

Which is just where Balluff Industrial RFID comes in. Our systems provide you with the analysis data you need to improve your production processes. And allows you to easily verify your consistently high-quality processes. Balluff Industrial RFID optimizes production quality and efficiency. Quality assurance

Monitored tool quality reduces scrap.

Reduce costs with Industrial RFID Tool Identification

Tool presetting

Simple integration into the tool holder.

New tool

Ready to use immediately

Tool crib

Data can be retrieved at any time.

Data are complete and error-free.

Tools are always at the ready.

Exact tracking of tools in the work process ensures efficient tool usage.

Exact inventorying reduces stock level requirements.

Company uses BallUFF industrial RFID management system. conventional tool management system assumes costs of 12,000 €/year. For our products alone, this leads to a total savings of 80,000 €/year.

The investment made was a modest 250,000 €, which saves 160,000 € per year. This equates to 640,000 € savings over 2 years.

Costs of conventional handling:

New tool: 500 pcs./year

Tool utilization: 65%

Avg. tool price: 150 €

Operator hourly cost: 64 €

Downtime costs: Machine hourly cost

Downtime: 10 minutes

Quantity: 175 pcs./year

Costs with BallUFF Industrial RFID:

New tool: < 500 pcs./year

Tool utilization: < 92%

Avg. tool price: 150 €

Operator hourly cost

Downtime costs: Machine hourly cost

Downtime: 10 minutes

Quantity: 20 pcs./year

Total annual savings with BallUFF Industrial RFID: 108,370 €

Annual savings with BallUFF Industrial RFID: 6,200 €

= (500 pcs./year × 150 €) × 35 %

Annual savings with BallUFF Industrial RFID: 17,500 €

= 1.3 minutes × 25 tool changes

Annual savings with BallUFF Industrial RFID: 26,790 €

= 1750 min × 4 €/min

Annual savings with BallUFF Industrial RFID: 1,560 €

= 0.3 minutes × 25 tool changes

Annual savings with BallUFF Industrial RFID: 3,200 €

= (340 pcs./year × 150 €) × 8 %

Total savings with BallUFF Industrial RFID: 8,217 €

= (20 pcs./year × 150 €) × 8 %

Total annual savings with BallUFF Industrial RFID: 108,370 €

= (250 days/year × 12 machines × 250 days × 64 €/h

Annual savings with BallUFF Industrial RFID: 80,000 €

= (20 pcs./year × 150 €) × 8 %

Annual savings with BallUFF Industrial RFID: 1,000 €

= 0.3 minutes × 25 tool changes

Tool and data entry

Unambiguous association in the tool magazine is ensured.

Tool data are permanently and uniquely associated with the tool.

Data are always correct, since manual entry mistakes are eliminated.

Paperless tool information with Industrial RFID

Data are stored by the BallUFF Industrial RFID system. With absolute reliability. Save time and profit from these benefits:

Machine downtime is significantly reduced.

Greater machine uptime, since data entry requires less time.

Tool life monitoring

Tool data can be recalled at any time – even after removal from the tool magazine.

Unambiguous association in the tool magazine is ensured.

Data can be retrieved at any time.

Data are complete and error-free.

Tools are always at the ready.

Exact tracking of tools in the work process ensures efficient tool usage.

Exact inventorying reduces stock level requirements.

Annual savings with BallUFF Industrial RFID: 17,500 €

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Tools are always at the ready.

Exact tracking of tools in the work process ensures efficient tool usage.

Exact inventorying reduces stock level requirements.
You’ll optimize your production processes. And profit from over 20 years of experience.

Increase the uptime of your machines with Balluff Industrial RFID.

Tools always carry the same data. The communication in the tool management system is always correct. And always up-to-date. Because the data are continuously updated when the tool is loaded and unloaded. In modern production facilities this ensures maximum tool utilization and high machine uptime.

Convince yourself of the advantages of paperless information that always stays with the tools and is always readily available.

Electronic data transmission

Sending tool data electronically is not only simple, it also provides maximum reliability. Communication in the tool management system is ensured completely on the production side. Effective data security thanks to the secure data transfer. The data are always correct. And always up-to-date. Because the data are continuously updated when the tool is loaded or unloaded.

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### Tool Identification with Industrial RFID

**Increase Productivity**

Balluff Industrial RFID systems provide you with the analysis data you need to improve your production. This reduces machine downtimes and increases the useful life of tools.

**Increase Efficiency**

Balluff Industrial RFID systems allow you to optimize your production. This reduces machine downtimes and increases the useful life of tools.

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<table>
<thead>
<tr>
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<tbody>
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<tr>
<td>Increase productivity</td>
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**Example**

- **Tool Identification with Industrial RFID**
  - Balluff Industrial RFID systems provide you with the analysis data you need to improve your production.
  - This reduces machine downtimes and increases the useful life of tools.

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**Example**

- **Tool Identification with Industrial RFID**
  - Balluff Industrial RFID systems provide you with the analysis data you need to improve your production.
  - This reduces machine downtimes and increases the useful life of tools.
Non-contact identification systems today allow manufacturers to automate work steps with high precision and reliability. The Balluff Industrial RFID systems offer a high level of reliability and independence from environmental influences and are therefore ideal for the harsh industrial environment of the machine tool. 

You too can benefit from these powerful Industrial RFID systems for tool identification.

In addition to tool identification, Balluff Industrial RFID systems also offer significant advantages in unbroken documentation and automation of the entire manufacturing process. Parts can be easily tracked, whether in the machining or assembly process. Each step in machining or assembly is stored on the data carrier to ensure traceability, providing the greatest process reliability and highest quality.

A wide variety of
• Data carriers,
• Read/write heads,
• Processors and
• Accessories are available. Simply make your choice based on the features you need. And you will benefit from the ease of installation.

For large assembly systems with many shunt points, data carriers can be used. Creating new possibilities while saving time. With a data carrier whose data are available from two 90° offset sides. No longer do the workpiece carriers have to be rotated for reading and writing.

Screw tags are ideally suited for harsh environments. Their rugged design ensures that screw tags enable parts tracking in production processes where coolants or chips are present in significant quantities. Washing equipment and vacuum driers also leave them unfazed.

For 100% quality and consistent defect prevention even on metal. Consistent high performance in any environment – regardless of the substrate material. The small form factor handles large quantities of data. And at long range.

At an engine production plant, a data carrier is installed on the workpiece prior to machining and assembly. All the process data can be minutely recorded, any defects precisely localized and analyzed. This ensures rapid response should in the worst case a recall be issued. Balluff Industrial RFID offers security.

Data exchange between the data carrier and read/write head is non-contact and therefore wear-free. The data and necessary power for the data carrier are inductively coupled by the read/write head. This means the data carrier requires no battery for power. The reliability of the data transmission is guaranteed by special checking software.

In addition, you can precisely monitor work steps which directly precede or follow the production process, and use them for optimized resource management. Balluff Industrial RFID lets you create transparency and reduce your costs.

Tool Identification with Industrial RFID

The System

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Product Identification with Industrial RFID

Non-contact data tracking

A problem in tool tracking. Balluff Industrial RFID systems solve this problem. The non-contact principle allows any number of workpieces to be handled and managed without any problems. In addition, you can monitor work steps which directly precede or follow the production process. The Balluff Industrial RFID System is easy to operate and saves you time.

In addition to tool identification, Balluff Industrial RFID systems can be used to monitor work steps which directly precede or follow the production process. This allows you to ensure better process planning and optimization, thereby reducing costs and increasing efficiency.

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Tool Identification with Industrial RFID

The System

Tool identification as a mandatory component of efficient and process-oriented production processes is becoming increasingly important. The system

Non-contact identification or monitoring enables machine tools to be used in combination with various operating systems.

Extremely rugged and absolutely impervious to environmental effects, Balluff Industrial RFID systems are extremely reliable and durable. They are designed to last.

You too can benefit from these powerful Industrial RFID systems for tool identification.

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90° angled data carrier

For large assembly systems with many shunt points. Create new possibilities. While saving time.

With a data carrier whose data are available from two 90° offset sides. No longer do the workpiece carriers have to be rotated for reading and writing.

Screw tag

Ideally suited for harsh environments. Their rugged design ensures that screw tags enable parts tracking in production processes where coolants or chips are present in significant quantities. Washing equipment and vacuum driers also leave them unfazed.

FERRO

For 100% quality and consistent defect prevention even on metal.

Consistent high performance in any environment – regardless of the substrate material. The small form factor handles large quantities of data. And at long range.

Pallet identification

The large variety of models in the Balluff Industrial RFID system makes pallet identification absolutely reliable in any surrounding. Balluff Industrial RFID systems make their contribution – in improving automation, preventing process interruptions and in process-oriented quality assurance.

At an engine production plant, a data carrier is installed on the workpiece prior to machining and assembly. All the process data can be minutely recorded, any defects precisely localized and analyzed. This ensures rapid response should in the worst case a recall be issued.

Balluff Industrial RFID offers security.

Data exchange between the data carrier and read/write head is non-contact and therefore wear-free. The data and necessary power for the data carrier are inductively coupled by the read/write head. This means the data carrier requires no battery for power. The reliability of the data transmission is guaranteed by special checking software.

Product Identification with Industrial RFID

Reliably track parts

In addition, you can precisely monitor work steps which directly precede or follow the production process, and use them for optimized resource management. Balluff Industrial RFID lets you create transparency and reduce your costs.

Controller

Read/write head

Processor

Connection cable

Interfaces

Data carriers

Object Detection

Linear Position Sensing

Industrial Identification

Industrial Networking and Connectivity

Mechanical Accessories

Learn more about the broad product range of our Industrial RFID Systems in our brochures, on CD-ROM, DVD-ROM or online!

www.balluff.com
Tool Identification with Industrial RFID

The System

Tool-specific identification in modern machine tools enables an effective and economic control of the process. In the production of entire classes of parts, the automation of process steps significantly enhances the work rate. Industrial RFID systems offer a non-contact method of tool identification that is absolutely impervious to environmental influences and absolutely reproducible. The inductive method is the basis for the functionality of the Balluff Industrial RFID systems. The high data rates and the high level of reliability are guaranteed by the inductive principle of operation. In harsh industrial environments, Balluff Industrial RFID systems are the ideal solution.

You too can benefit from these powerful Industrial RFID systems for tool identification.

Product Identification with Industrial RFID

Non-contact tool identification

With Industrial RFID systems, tool-specific identification is ensured by a non-contact method. Industrial RFID systems are absolutely impervious to environmental influences and absolutely reproducible. The inductive method is the basis for the functionality of the Balluff Industrial RFID systems. The high data rates and the high level of reliability are guaranteed by the inductive principle of operation. In harsh industrial environments, Balluff Industrial RFID systems are the ideal solution.

You too can benefit from these powerful Industrial RFID systems for tool identification.

A wide variety of

- Data carriers,
- Read/write heads,
- Processors and
- Accessories

are available. Simply make your choice based on the features you need. And you will benefit from the ease of installation.

90° angled data carrier

For large assembly systems with many shunt points. Create new possibilities. While saving time.

With a data carrier whose data are available from two 90° offset sides. No longer do the work-piece carriers have to be rotated for reading and writing.

Screw tag

Ideally suited for harsh environments. Their rugged design ensures that screw tags enable parts tracking in production processes where coolants or chips are present in significant quantities. Washing equipment and vacuum driers also leave them unfazed.

FERRO IDENT

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Pallet identification

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Data exchange between the data carrier and the read/write head is non-contact and therefore wear-free. The data and necessary power for the data carrier are inductively coupled by the read/write head. This means the data carrier requires no battery for power. The reliability of the data transmission is guaranteed by special checking software.

In addition to tool identification, Balluff Industrial RFID systems also offer significant advantages in unbroken documentation and automation of the entire manufacturing process. Parts can be easily kept track of – whether in the machining or assembly process. Each step in machining or assembly is stored on the data carrier to ensure traceability for providing the greatest process reliability and highest quality.

User-friendly, reliable, safe and non-contact,

the Industrial RFID system is the cost-effective solution.

At an engine production plant, a data carrier is installed on the work-piece prior to machining and assembly. All the process data can be minutely recorded, any defects precisely localized and analyzed. This ensures rapid response should a recall be issued. Balluff Industrial RFID offers security.

Reliably track parts

In addition, you can precisely monitor work steps which directly precede or follow the production process, and use them for optimized resource management. Balluff Industrial RFID lets you create transparency and reduce your costs.

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More efficiency through improved processes