

KELCH QR: Efficient tool identification and data transmission

Smart Factory Services – simple and cost-effectively



KELCH has developed the KELCH QR tool identification system – a solution for integrated, process-reliable tool identification, which simultaneously transmits the tool data to the machine tool. KELCH QR is designed as a simple, cost-efficient solution, which enables businesses to benefit from Industry 4.0 Smart Factory standards without major additional expenditure. The following overview presents convenient methods, including label printing, post-processing and current systems, such as RFID code tagging and tool management systems, and shows how KELCH QR provides a time-saving, cost-effective alternative.



The KELCH QR code is read by a hand-held scanner

“Companies do not need to connect a new system to the machine tool nor install a new software solution for KELCH QR. Our solutions can be easily and immediately integrated into the existing system landscape within a few hours. Companies can retain their existing tool numbering structures, as well as their existing machine controls,” explains Viktor Grauer (B. Eng), member of the Executive Board and Head of Innovation Management at KELCH. The objective: to offer manufacturing companies an integrated, simply-retrofitted solution to optimise their processes and configure them to be process-reliable within the context of an Industry 4.0 Smart Factory.

Common processes in focus

There are many options available today for identifying tools in the production environment and transmitting this data process-reliably. Our overview shows the most common methods available today for identification and data transmission and assesses their process reliability and expenditure.

Label printing is used to identify the tool and also for data transmission. However, errors can be caused by transposed digits when the values are transmitted from the label into the machine control. In the event of major errors, for instance due to transposed digits when inputting into the machine control, there is a major risk that the machine spindle could be damaged.

Post-processing is a transmission method i.e. the measured or set values for the tools are transmitted to the machine. However, post-processing is not enough in production, as it offers no option for identifying the physical tool.

RFID technology has established itself as a process-reliable instrument for tool identification and tool data transmission. With this integrated system, every tool is equipped with an information memory in the form of an RFID code tag. This identification chip contains all the relevant information about the tool and can be read at any time. Operating errors, transposed digits or other errors are almost completely eliminated. This level of process reliability comes at a price, as every tool needs a chip and appropriate hardware and software at all points of use for reading and writing.

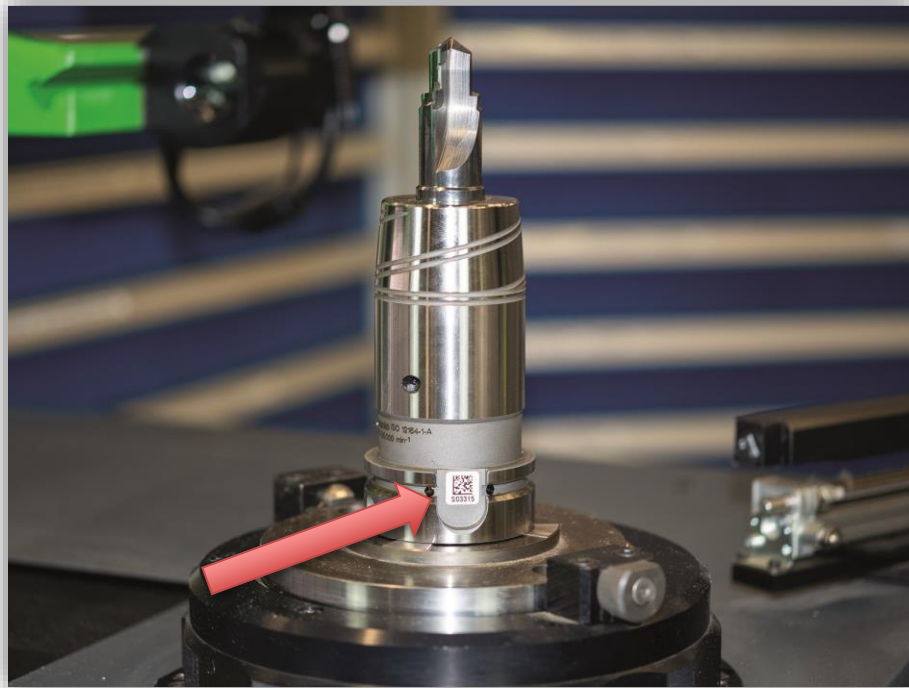
Tool management systems have developed in the past from being a complementary system for lowering costs and increasing efficiency to become a central administration and coordination system. However, an introduction and implementation period is sometimes needed to establish such a system.

QR code: efficient on every process level

The demands on production are frequently quite simple: increasing process reliability and avoiding the most cost-intensive solutions with long integration times. Customers do not necessarily want to read off the service lives of the tools from the machine and so a full-blown RFID system is often oversized. The IT landscape can often be the limiting factor when using post-processing. No access to a shared drive, concerns about IT and fail-safety and, above all, the worry that every machine operator needs to know how to correctly import an ACTUAL data file (also known as an offset file) into the machine on the control: they all represent obstacles for timely, smooth implementation. Smaller companies, in particular, often see no point in introducing a complete tool management system.

KELCH GmbH has addressed this problem and now offers a solution that significantly increases process reliability as well as tool identification, whilst keeping costs low. With the KELCH QR, the

“QR Code” medium acts as a tool identification instrument and provides process-reliable data transmission – and does so on several levels.



The setting process starts automatically once the code has been read.

Step 1: Identification of the tool on the tool presetter

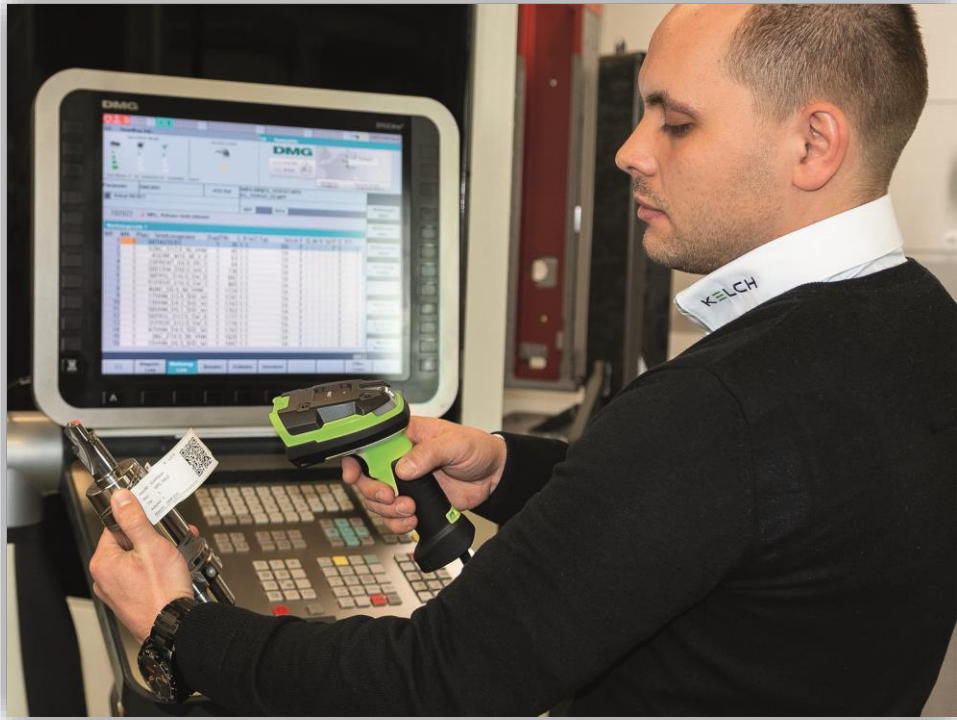
A simple QR code fixed to the tool holder only contains the unique identification number of the complete tool. It is read by a hand scanner and the setting process can start fully automatically.

Step 2: Measurement and data set generation

The measured values of the tool and all machine control-related information are printed on a label encrypted as a QR code. The tool data is also printed in plain text on the label to enable it to be identified without a scanner at all times.

Step 3: Transmission of the data to the machine

This label is conveniently read on the machine control by a hand scanner. An additional portable module enables all data to be automatically input into the control. Input errors are therefore completely eliminated. The system is fully independent of the control as the input can be simulated in every controller and executed by the add-on module. The only prerequisite is an open USB connection on the control. It can also be flexibly used for multiple machines.



The KELCH QR code includes the unique ID number of the complete tool.

The result:

- Tool identification at any time without the need for auxiliary equipment
- Generation of the QR code to identify and transmit data using the existing, cost-effective equipment (printer)
- Process-reliable data transmission without input errors using a commercially available scanner
- Increased convenience e.g. time savings: Scanning in place of typing
- Independent of the machine and control
- Costs reduced to a minimum
- No cost-intensive adaptation or retrofitting needed on the tool presetter or in the machine.

KELCH QR is suitable for all tool presetters with EASY software from version 7 onwards and kOne software, and is therefore independent of the type of device. Older unit models can therefore also support this system.

KELCH advisers are happy to support companies with the correct configuration and also offer engineering services for reliable realisation.