It was never easier and more reliable to collect a lot of significant production and machine data from drilling and routing machines for PCB processing. In just a few minutes these CNC machines are connected to the many different components of the powerful SM IIoT Platform, which is optimized for our CNC series 8x.00 and 9x.00. The collected data are accessible to other IT systems and CNC machines can communicate with other machines. Besides, connections to other software such as MES, ERP and CAM are easier than ever before via the different system components and APIs based on international standards. As a result, also by means of the graphical user interface, it is no longer a dream to analyze problems, optimize the production process and thus maximize profits.
**OPC UA**

The worldwide used Industry 4.0 protocol makes it easy to process data in compliance with standards. All provided variables, events and functions are well-structured and can be accessed by a self-descriptive information model. A connected system can subscribe to the required data and is informed directly about changes to this data. The integration of CNC machines into heterogeneous production environments does not require the creation of additional protocol adapters.

---

**HISTORICAL DATA ACCESS VIA OPC UA HA**

The evaluation of data over a longer period allows a better detection of problems and the implementation of improvements. The historical production data saved locally in your company are accessed via OPC UA Historical Access (HA) of the OPC UA Standard. This allows external applications to perform the required data queries and analyses in an easy and standardized way.

---

**MQTT**

The slim, lightweight and standardized communication protocol MQTT has become one of the most important standard protocols for the Industrial Internet of Things (IIoT). It keeps bandwidth at an absolute minimum and can deal with an unreliable network. MQTT is based on the publish/subscribe paradigm. Connected systems will be automatically informed about change of data they have subscribed to. This enables easy broadcasting of messages from one publisher to many subscribers.

---

**REST API AND FILE API EASY CONNECTION**

To enable other IT systems, such as ERP and MES systems, to work with the data from the CNC machines, the standard-compliant REST API can be used. Using simple http requests, the data can be processed in JSON format. In addition, data processing via CSV, XML or JSON files is available via the File API.

---

**SENSOR INTEGRATION ENRICH CNC DATA**

Sensors additionally connected to the machine can supply further values which complement the data of the CNC system. Data such as temperature or pressure can be merged at any point with the existing data model to create a consistent view of the entire machine. All data of the model are available as usual for evaluation via the various interfaces.