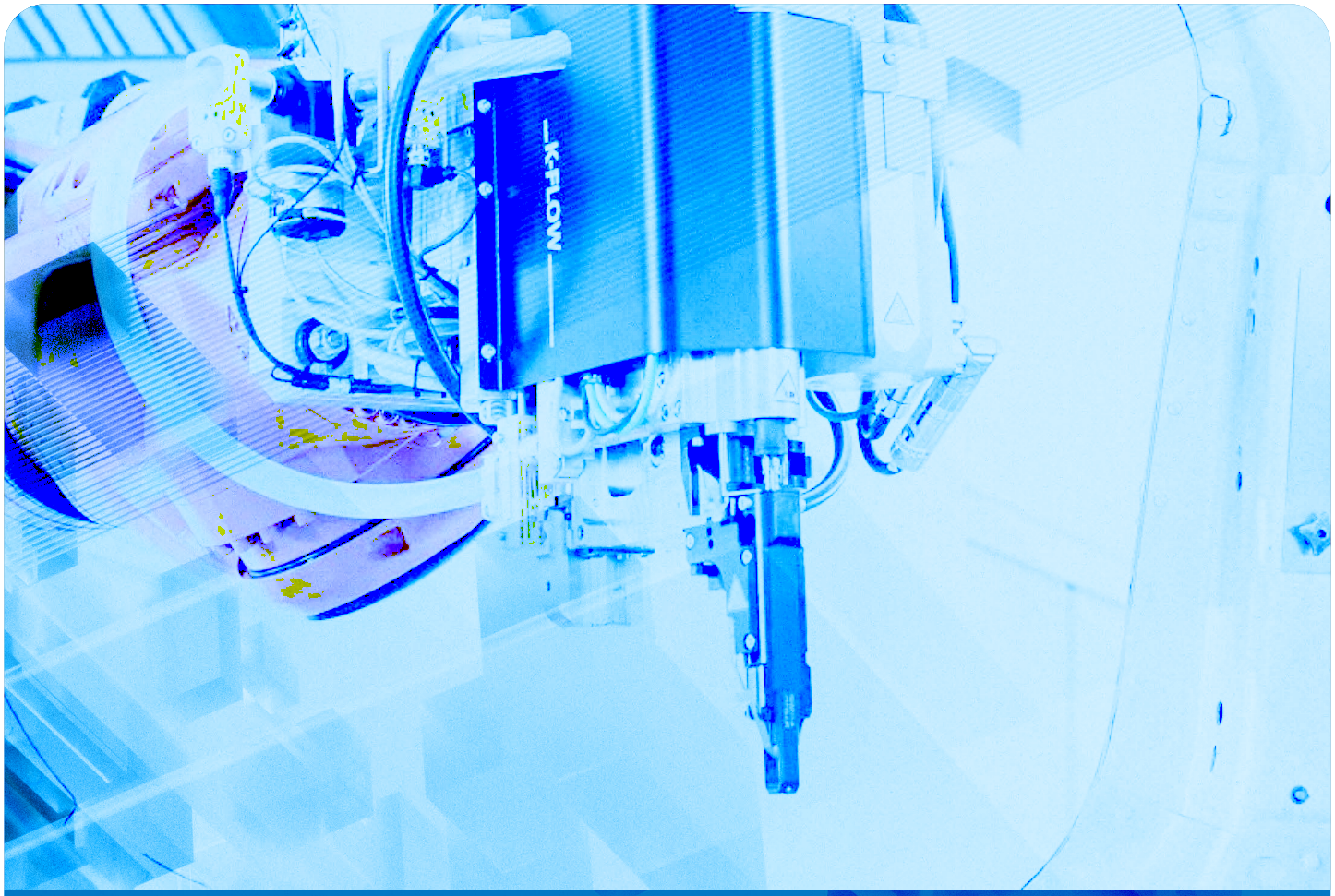


mySCADA

Standardization of Qualitative Data in Manufacturing

18 production lines **80 000 messages/day** **7+ GB of data/day**

Customer:

Škoda Auto a.s.
Since 2021

ŠKODA

LONG-TERM COLLABORATION WITH ŠKODA AUTO

Škoda Auto is one of the leading automotive manufacturers in Central Europe, producing over 1 000 000 vehicles annually. As a key member of the Volkswagen Group, the company emphasizes efficiency, quality, and the digitalization of manufacturing.

Our long-term collaboration includes delivering projects in highly automated production environments, where extreme demands are placed on data accuracy, availability, and real-time usability. The implementation of the standardization system confirms our ability to deliver robust solutions within modern industrial frameworks (Industry 4.0).

PROJECT ASSIGNMENT

The objective of the project was to ensure:

- **collection of qualitative data from heterogeneous sources**,
- transformation and **unification** into a standardized format,
- **distribution** of data to higher-level systems.

Qualitative data is essential for:

- production quality management,
- process engineers and technologists,
- monitoring NOK parts, efficiency, and production cycle times.

Based on this data, decisions are made regarding:

- corrective actions to reduce NOK parts,
- optimization of production parameters.

PROJECT SIZE AND SCOPE

- **18 production lines**
- each line consists of **5–20 production stations**
- in total, mySCADA collects data from **190+ stations**
- **80,000 messages processed daily** (~7 GB of data per day), with most messages containing multiple measurements
- approximately **one message per second on average** (in reality higher, as machines do not run 24/7)

The project represents a large-scale deployment within critical manufacturing infrastructure.

DEPLOYMENT LOCATIONS

The solution is implemented in the following production plants:

- Mladá Boleslav
- Kvasiny
- Vrchlabí

AREAS OF DEPLOYMENT IN MANUFACTURING

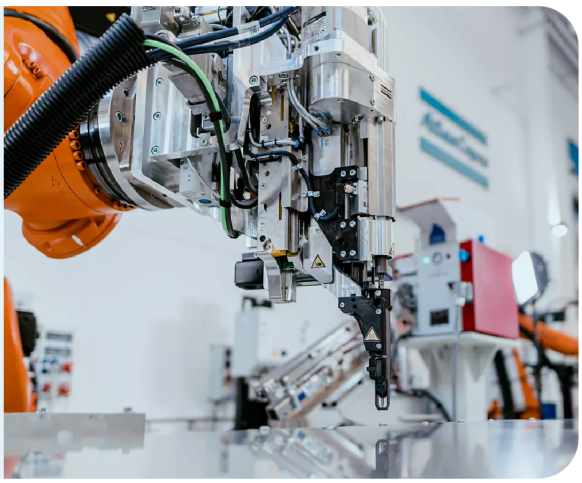
mySCADA collects data across a wide range of production processes:

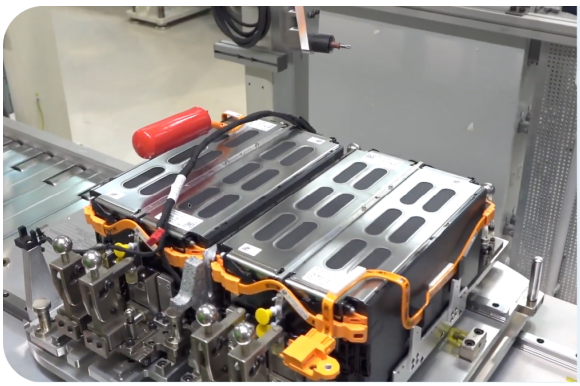
1.Tightening (Assembly Operations)

collected parameters:

- tightening torque,
- tightening angle,
- speed,
- process curves.

The data is used to evaluate joint correctness in real time.





2.Battery Testing

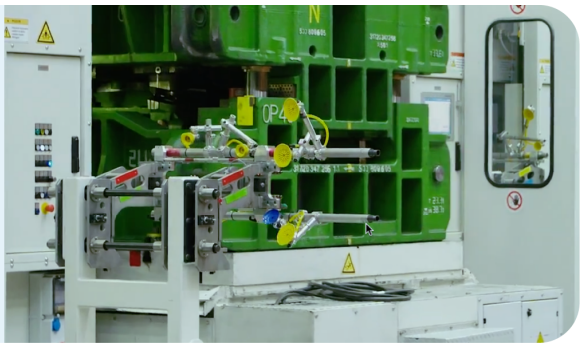
- monitoring of charging and discharging curves

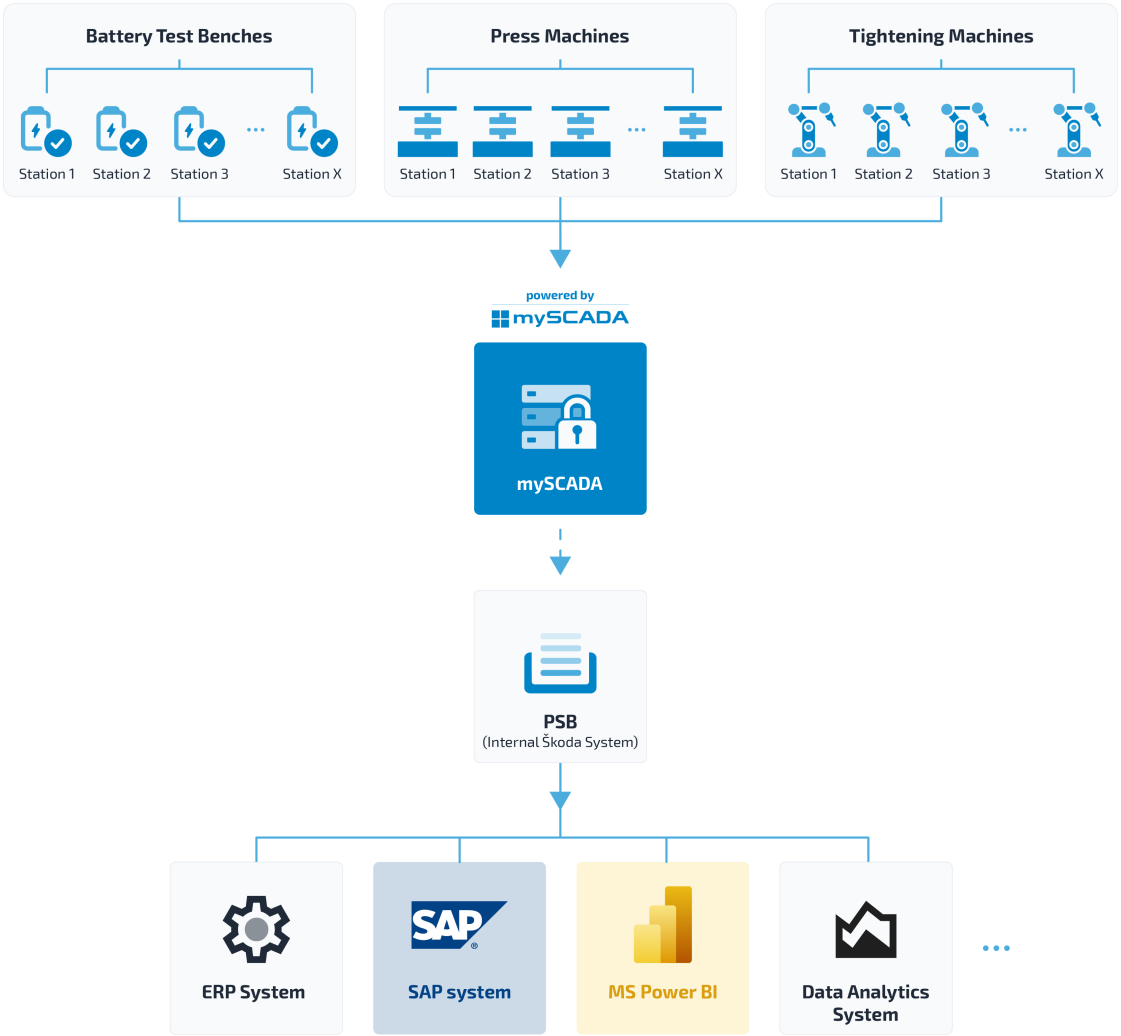
Based on this data, the quality of individual battery components is evaluated.

3.Pressing

- monitoring of pressing operations

The data serves as a basis for corrective actions aimed at improving production efficiency.





Picture 1 – System architecture diagram

1. Extended Use (Laboratory Environment)

The ecosystem also includes a so-called *fastening laboratory*:

- execution of sampling inspections and validation tests,
- verification of measured data accuracy,
- validation of tool and process reliability.

ANALYSIS AND FEEDBACK

Standardized data from standardization system enables detailed retrospective analysis:

- technologists analyze process curves,
- identify deviations and increases in NOK parts,
- respond immediately to production issues.

DATA SOURCES AND INTEGRATION

The production environment includes a wide range of equipment from various manufacturers (e.g., Bosch Rexroth, Atlas Copco):

- handheld tools
- semi-automated and fully automated machines/stations
- complex custom-built machinery

Machine data comes in various formats and structures (e.g., JSON, XML) and is obtained through different methods:

- HTTP / HTTPS communication (push model)
- REST API (pull model)
- MQTT
- IBM MQ
- file transfers (file server / FTP)

DATA STANDARDIZATION

Key added value of standardization:

- **unification of data from heterogeneous sources,**
- **transformation into a standardized data format,**
- elimination of differences in encoding and structure.

Output:

- standardized **JSON format**
- distribution via **IBM MQ** to higher-level systems

Connected systems:

- analytics platforms,
- ERP systems (e.g., SAP),
- reporting and business intelligence tools.

SOLUTION BENEFITS

- **unified view of qualitative data** across production
- **rapid identification of issues** and their root causes
- **increased production** efficiency
- **data-driven decision-making** support
- readiness for advanced analytics and Industry 4.0