Wattstrasse 14
CH-9240 Uzwil

+41 71 955 04 50
www.ics-automation.com
info@ics-automation.com

Integration Maintenance-Software

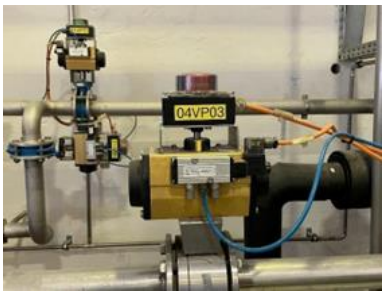
Customer profile

The customer is a Swiss producer of vegetable oil and textured vegetable proteins.

Starting position

The customer has been using an ICS process control system in combination with a number of Siemens PLCs for years. In addition to the production control, the system also covers topics such as traceability, ERP connection, data acquisition and infrastructure. Thanks to the high flexibility of the system, additional plant components, tools and third-party equipment are continuously being integrated or connected via interface. One of these extensions is the integration and connection of a maintenance software. In order to organize periodic maintenance and service activities, a web-based maintenance tool was evaluated by the customer. For its introduction, all control elements installed in the field must now be recorded and categorized in the tool. In order to reuse existing data, simplify future updates and define a uniform entry point, an interface between the ICS process control system and the maintenance software should be created.Furthermore, the customer has requested a connection or integration of the maintenance tool into the ICS process control system for the following reasons:

- Reuse of the existing data such as element description, element numbers, I/O configuration, etc.
- Central entry point for maintenance team via process visualization with advantages like:
  - Search function for easy location of elements
  - Ticket generation directly from the element dialog
  - Direct link to the maintenance software
  - Traceability thanks to messaging / audit trail
- Extended production data acquisition



Concept / solution

The web-based maintenance software is connected via a REST API. The data content is serialized as JSON. For the implementation of the service the following interfaces and functions were implemented:

Creation and updating of elements

The process control system imports all elements connected to the system at power-up. All elements of the type "Valve" are automatically marked for transmission. The elements of the type " Motor" as well as digital and analog signals can be marked manually if required. Based on this configuration, the elements with associated symbolism and description are transferred to the maintenance software. If a description changes, the element is transferred again and thus the description is updated automatically.

Creation and display of tickets

Via process visualization, tickets can now be created for included elements. For this purpose, the already known element dialogs have been extended. A description can now be entered via the ticket input field in the element dialog. After confirming the input, the ID and entered description are output as a message, transmitted to the maintenance software and thus a ticket is created.

Via user group, the corresponding authorizations can be organized and defined. This also determines which employee groups have a login in the maintenance software. If an employee with a login creates a ticket, the ticket is automatically opened in the browser after creation. Hereby, further details can be added or assigned to someone for editing.

Central entry point

Thanks to the integration into the process visualization, the maintenance software can now be reached on every operating station of the plant. In addition, the already familiar process visualization and the integrated element search function make it easier to find the desired element.

Process reliability and efficiency through reliable automation

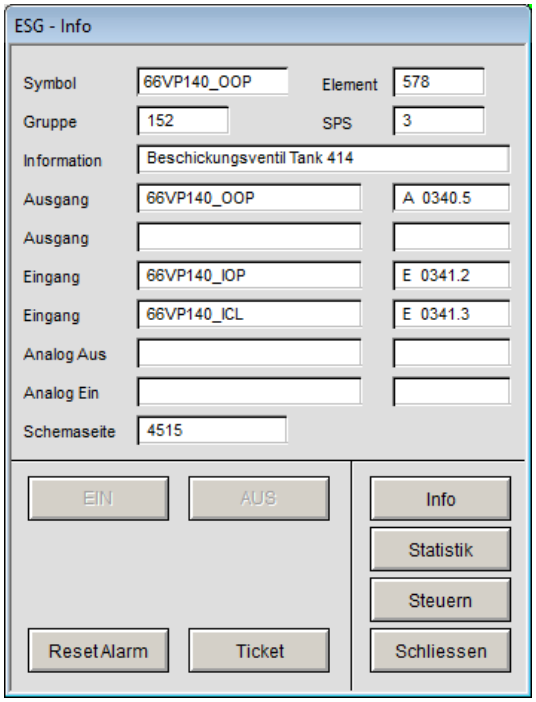
The **main challenges** for the modification / integration were:

- Time frame for realization and commissioning
- Interface definition with perspective on further extensions
- Creation of an adequate data structure
- Interface testing with the productive system of the maintenance tool
- Preparation of master data

Sequence of refurbishment

In a first step, the interfaces were checked with a software for API tests. In this way, the basic functionality could be tested. The next step was to test the creation of individual elements from the customer test system in order to check the communication and data transfer between the ICS process control system and the maintenance software.Finally, the creation of tickets was switched to the productive system in order to work with live data. After successful completion of this test phase, all remaining elements were finally created.

Any data had to be created before the turn of the year so that the customer could still categorize it in the maintenance tool. Punctually at the start of the year, the system was ready for use and went into production.



Customer benefits

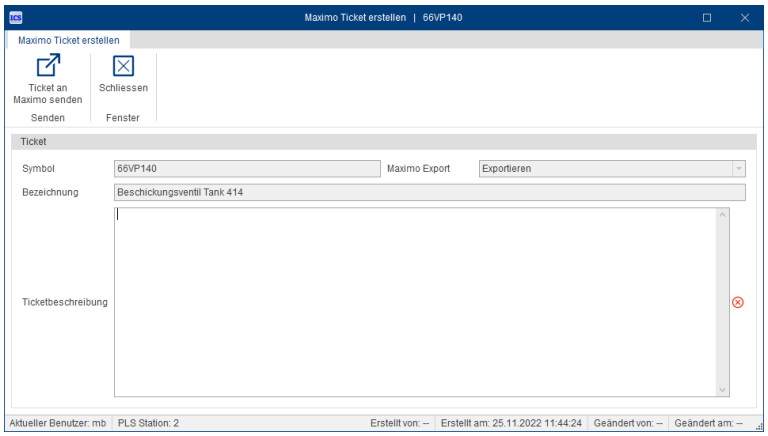
Thanks to the connection between the ICS process control system and the maintenance software, the customer now benefits from the following advantages:

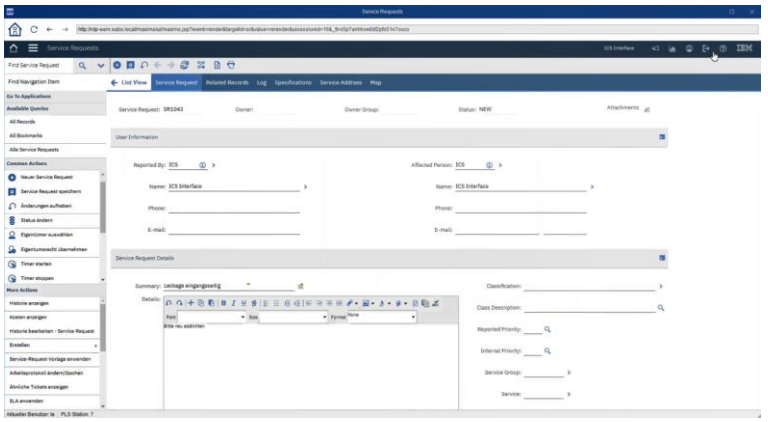
- Reuse of existing data
- Automatic update of changed element descriptions
- Automatic Import of New Elements in Case of Modifications / Extensions
- Creation of tickets via the existing visualization
- Simple operation and navigation
- Audit trail / traceability

Possible extensions

During the realization phase of the first functions, possible extensions were already discussed and considered where possible:

- Display of the last tickets on elements (history)
- Display of open tickets on elements
- Display of maintenance tasks on elements
- Transfer of operating data (run times, errors) to prevent downtime (data provider for predictive & preventive maintenance)





ICS Automation AG
Wattstrasse 14, CH-9240 Uzwil
+41 71 955 04 50 / info@ics-automation.com
www.ics-automation.com

acs ag
Haselweid 1, CH-9542 Münchwilen
+41 71 929 44 44 / info@acs-ag.ch
www.acs-ag.ch