Dashboard for a buffer and distribution system

ICS fit® HMI

CUSTOMER PROFILE

Together with our sister company ICS Mechanical Eng. AG we supply buffer, handling and conveying systems for the food and non-food industry worldwide.

STARTING POSITION

For a chocolate manufacturer in Switzerland, we had the privilege of supplying a complete distribution system, from the transfer from the molding plant to the distribution to three packaging machines. Thanks to the centrally located gondola buffer, the production can be decoupled from packaging, thus increasing the overall performance.

The large number of servo drives, actuators and sensors poses a major challenge for the customer's operational maintenance. To support maintenance, a dashboard application was developed that records the most important drive data, displays it graphically, evaluates it further and calculates the key indicators relevant for the customer. With the help of a dashboard, the maintenance team can check the system at any time and view the data relevant to them from anywhere.

CUSTOMER BENEFITS

In addition to maintenance, individual dashboards can also be combined and designed for other user groups. Via rule engine, data can also be combined and evaluated, which enables a user-specific reporting system. Thus, for example, information about faults or conditions can be sent to defined users or forwarded to third-party systems such as maintenance tools, where they are finally further evaluated with appropriate software (predictive maintenance).

In parallel with the display and processing of relevant production and operational data, the focus is on flexibility, ease of use and individuality. In order to gain a benefit, the customer himself chooses which tools he needs and where:
· visualization of the recorded values
· evaluation of drive data
· power and energy measurement
· alarm and message system
· freely definable rules
· freely definable dashboard interfaces
· data supplier for maintenance tool
· device-independent access to the plant
· tools for maintenance and production
· support during operation
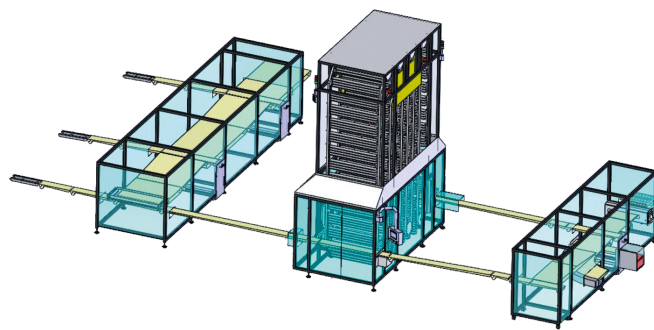
User-oriented process monitoring

ICS ACS

CONCEPT/SOLUTION

A motion controller from Schneider (PacDrive) was used to control the logic and drive part of the system. This controller combines classic motion applications with proven PLC functionalities and offers a wide range of interfaces. In this project, the desired drive and production data are sent via OPC UA to the dashboard application, which is based on "ThingsBoard.io". ThingsBoard.io is an open-source tool, available free of charge in its basic version and still providing all required functionalities. A paid version was deliberately omitted, as it offers extras that are rather unimportant for us, such as free design of frame, logo and graphics.

Special value was placed on the independent expandability. The goal was to develop a tool that can be set up independently by the customer and configured user-specifically. To achieve this, an application based on ThingsBoard.io was implemented, which can be operated device-independently in a docker installation.
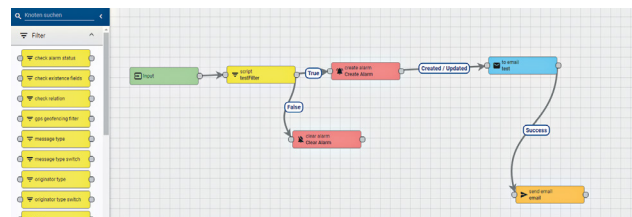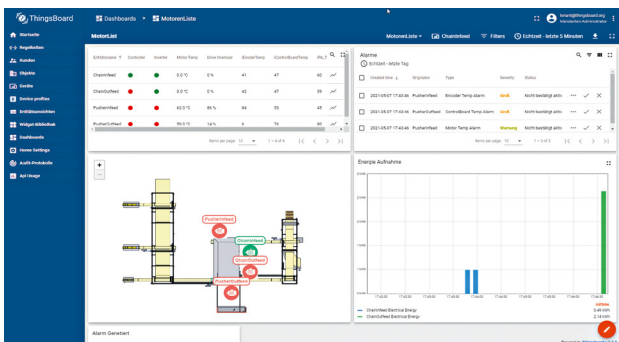
IT advantages:
- Open Source
- customized
- completely web based
- device independent (OnPremise/Cloud)
- connectors for various technologies (OPC, MQTT, BACnet, ODBC, Http, etc.)
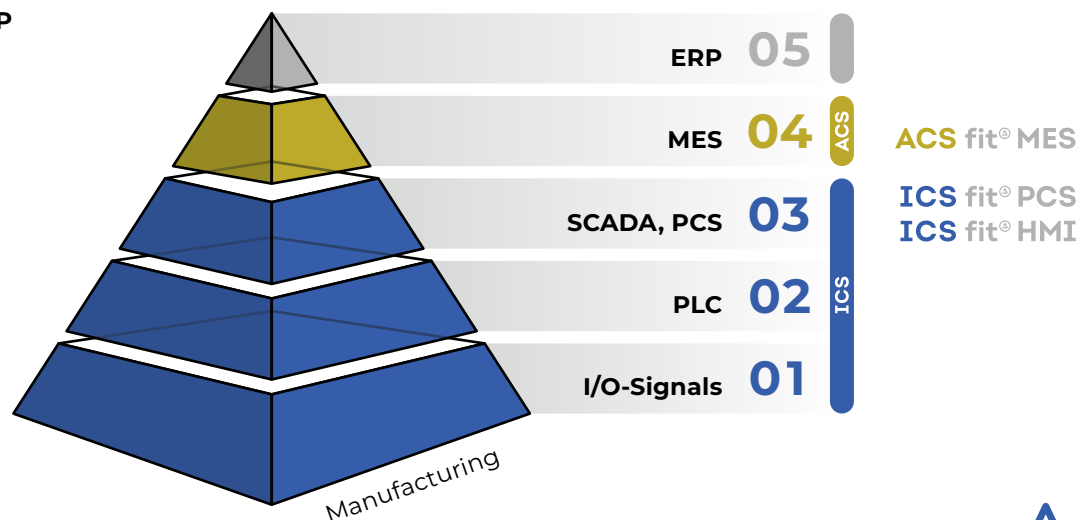- operation in microservice infrastructure

Customer benefits:
- independent compilation of the desired dashboards and charts
- large selection of widgets and other freely available components
- creation and editing of rules
- definition of message classes
- definition of users and authorizations
- configuration of alerting rules
- creation of additional trend curves
- data exchange via MSG command

Main challenges:
- cost-effective and expandable solution
- device independent operation
- capture of high data volumes
- scalability
- clearly structured but freely configurable
- configurable even without IT know-how

ONE-STOP-SHOP

ERP	05	
MES	04	ACS fit® MES
SCADA, PCS	03	ICS fit® PCS / ICS fit® HMI
PLC	02	
I/O-Signals	01	

Manufacturing

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