

## Success Story

### Central data acquisition and processing with C-Gate

Connected welding production at Viessmann Berlin

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**HAIGER/BERLIN – Visualisation, analysis and continued processing of the operating and welding process data – the C-Gate of Carl Cloos Schweisstechnik GmbH records and processes all data in a central system. As a launch customer, Viessmann Werke Berlin GmbH tests the integrated information and communication tool in their own production. "With the new C-Gate we can connect our robot systems and improve our production processes," says Bernhard Rothkegel, programmer at Viessmann in Berlin.**

For many years now, Viessmann has been in a partnership cooperation with the welding specialist CLOOS from Haiger, Hesse. The internationally leading manufacturer of heating, industry and cooling systems intends to automate and digitalise its production processes further. Meanwhile, 11 CLOOS robot systems for welding different components are in use at the production site in Berlin. Both CLOOS and Viessmann push the topic Industry 4.0 in production at present.

### Digitalisation of the production as future project

It is Viessmann's target to digitalise the production process for medium-sized heating boilers completely. In spring 2018 the two project partners first came to an agreement concerning the requirements and priorities for the introduction of the C-Gate. The focus shall be on the monitoring of the systems for a fast error reaction and the documentation of waiting times for optimisation of the production run. "We mainly look at the overall equipment with availability, capacity and quality factors and the component-related key data," explains Bernhard Rothkegel. Already in June 2018, Viessmann could install the C-Gate in three CLOOS robot systems at the Berlin premises.



Photo 1: The C-Gate contains a dashboard with many functions for different reference groups.

The new C-Gate by CLOOS consists of the system-related hardware and the software modules production, quality management and service. As first step, CLOOS offers the software module production that Viessmann uses at present. With this module, users can illustrate the performance and the efficiency of their robot systems, localise shortages and increase the efficiency. The production module allows a comprehensive online monitoring of the robot systems with a detailed reporting about availability, capacity and quality.

"Thus, the user early recognises possible weak points in the production run and can considerably reduce system breakdowns or waiting times due to set-up and other downtimes," emphasises Ralf Pfeifer, Manager IT and Organisation at CLOOS. He is the leader of the interdisciplinary

CLOOS team which is intensively working on the development of Industry 4.0 solutions in welding production.

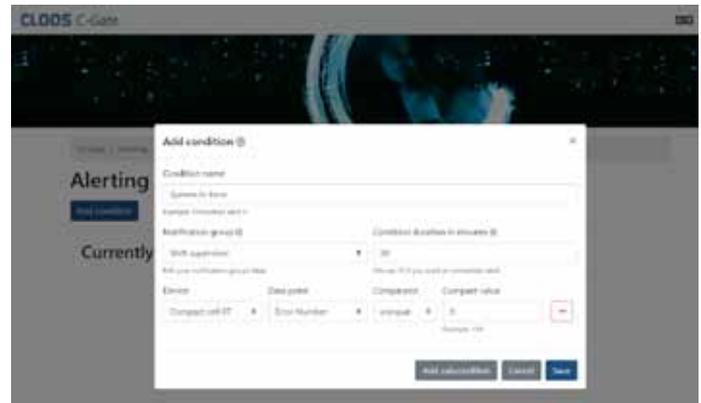


Photo 2: The alerting function allows the automatic generation of warning messages to individually selected recipient groups.

### Many functions for different reference groups

The system availability and the system capacity are determined in addition to the current state of the system. The part counting records which component types are produced by the robot systems in which quantities and in which time. These values are combined and form the OEE, the overall equipment effectiveness. Possible errors are recorded on a time basis. Furthermore, the alerting function generates an automatic e-mail as soon as an error occurs. In addition, an automatic e-mail is sent to a selected recipient group 20 minutes before a component is finished.

All data and functions are available via interfaces. Viessmann uses these interfaces to consolidate and display the data in a separate dashboard or visualisation tool. The C-Gate itself disposes of a dashboard and evaluation routines which are pre-set particularly for the process of welding production.

At Viessmann, different reference groups have access to the information. "While the production line manager is especially interested in the current system state, quantities and waiting times, the middle management wants to know in particular the overall equipment efficiency and other key performance indicators," explains Rothkegel. "The different reference groups can call and dispose of the data."

The use of the new C-Gate allows the demand-based management of the welding data in order to increase the machine and system productivity. "The documentation of error times and frequencies allows us to react faster and to reduce possible downtimes," Rothkegel states happily.



Photo 3: The production module offers extensive planning and evaluation possibilities.

### Fair co-operation for customer-oriented development

Every three weeks there is a telephone conference where all project participants keep themselves up-to-date. "Occasionally we are in regular contact via e-mail, telephone or personally to quickly find solutions for upcoming challenges," says Rothkegel. "We maintain a very fair and open co-operation with the C-Gate development team at CLOOS."

"Due to the continuous exchange we are able to optimally develop the C-Gate further," adds Pfeifer. "With extensive evaluation possibilities and statistics about key performance indicators we support our customers on their way to connected production."

The C-Gate can be integrated into existing Industry 4.0 environments. Using standardised interfaces, the data can be passed to higher-level, IT-based solutions, such as MES and cloud applications and other systems. Viessmann also wants to link the C-Gate with a master process control system. The concrete implementation shall be made within a mid-term period.

The pilot systems are located in a production hall where several Industry 4.0 projects are running in parallel. "If everything goes well, we would like to equip further CLOOS systems producing the boiler type CI1 with the C-Gate", resumes Rothkegel. "In the long term, further production sites as for example the company's headquarters in the Hessian Allendorf could be integrated in the future project."

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