

Plug and Play with heavy-duty connectors makes it easier for BASF to replace control cabinets



PHOENIX CONTACT (Ireland) Ltd
C6 The Exchange
Calmount Park
Ballymount
Dublin 12
D12 XE18
Ireland
(01)2051-300



Plug and Play with heavy-duty connectors makes it easier for BASF to replace control cabinets

Overview

- Chemical company BASF has extensive infrastructure with a separate transmission network and several hundred transformer stations.
- The old protective relays need to be replaced with new control and protective devices in the medium voltage switchgears.
- BASF chose a Plug and Play concept with connectors from the HEAVYCON EVO product range.
- This significantly reduced the time needed for the control cabinet replacement process.



The second largest BASF production site in the world is located in Antwerp

Customer profile

The BASF Antwerp site consumes approximately three percent of the whole current in Belgium. At a chemical factory of this size, the availability and reliability of the power supply is the top priority. The production site is connected to the high voltage network via several connections.

Application

A proprietary 36 kV network distributes the current to various production systems via the 6 kV and 10 kV line network. Each middle voltage switchgear is continuously monitored by various current and voltage measurements. The voltage can be switched to the electrical consumers individually. Though these measurements and switching operations seem simple at first glance, they should not be underestimated.

"Each middle voltage switchgear has primary and high voltage parts and a control cabinet that houses the control devices and protective devices," explains Dirk Van Bogaert from the Department of Electrical Power Supply and Infrastructure at BASF in Antwerp. "The control devices from some older 6 kV systems are currently being replaced. During this process, the production units must be not disconnected from the network for an extended period." If a unit is switched off, the time window for changes is greatly limited.



Employees responsible for modernization: Björge Joachim, Dirk Van Bogaert and Koen Meersman (from left to right)

Solution

A solution was developed together with engineering partner PA Solutions. This solution can be used to replace a control cabinet in just four hours. "Measuring transducers are used in the primary part of the middle voltage switchgear in order to measure current and voltage," explains Van Bogaert. "The currents and voltages there are reduced to 1 A and 100 V. Then, these signals must be guided to the corresponding control cabinet with other signals."

Each control cabinet must be supplied with power and equipped with sensors that are connected via a circuit. "We use a Plug and Play system designed for control cabinets so that we can implement changes quickly," explains Koen Meersman, Electrical Engineer at PA Solutions. "We only just started working with connectors recently," explains Van Bogaert. "Just five years ago, we only used screw connections."



The locking latch makes the connection easier and more secure

One of the challenges in modernization was to combine different signal types in a single plug connection. This is another reason why BASF chose the HEAVYCON EVO connector. The connectors transfer analog measuring signals from current and voltage measurements and other control signals, all of which must not be mixed up and must not affect one another.

HEAVYCON EVO has a modular design. Several modules can be combined with various contact types in a connector without impairing each other's functioning.

For this project, Phoenix Contact also assembled some of the cables that were connected to the available terminals in the primary part during modernization.



Combination of various contact types in a single connector

"The advantage of the Plug and Play concept with a ring structure is that the two plug connections of the adjacent control cabinet can be interconnected using a connecting piece if a box is removed," says Meersman. "This is how we achieve the ring structure and redundancy."



HEAVYCON EVO connector for connection at the control cabinet

Summary

The module system prevents the connectors from getting mixed up, which was extremely important. "Another advantage is that the connector housing is waterproof and dustproof to prevent a short circuit. If a connector is disconnected and set down in the general vicinity, a cap protects the remaining

connector side," explains Van Bogaert. "Our main concern was to ensure that the connectors are just as reliable as the screw connections that were previously used. The levers on the plugs enable an easy, stable connection. Thanks to the modular system, we were able to combine all signals in a single connector to prevent any errors from occurring during installation."

Phoenix Contact 2017 © – all rights reserved
phoenixcontact.com