Siemens and BASF transform a unit at the Guaratinguetá Chemical Complex in an intelligent plant with digitalization of the entire production process

SIEMENS

Project involved the use of integrated engineering software COMOS to map the unit's activities, code processes and create the plant's Digital Twin, facilitating future updates.

Digitalization comprised more than 15,000 documents with information about BASF's Chemical Complex activities, generating engineering gains in production lines, reducing errors and downtimes in the plant.

Agro production unit is one of BASF's largest plants in South America.

In a market dictated by industry 4.0 technologies, companies that count on intelligent solutions for their production processes have a major advantage in relation to competitors. It was based on this scenario that Siemens and BASF carried out a major digitalization project at the Chemical Complex in Guaratinguetá (SP), an initiative that has generated several gains regarding the optimization of internal processes.

The challenge of the project was to migrate the old control system in one unit of the complex. Using the integrated engineering software COMOS, all processes in the BASF plant were mapped and digitalized. The initiative allowed for the development of a Digital Twin of the unit to facilitate the management of production lines and also future updates with the use of new technologies. At the site, roughly 500 process changes occur annually, which information was not previously registered, and are now supplied in an easy manner to managers and technicians at the Complex through digitalization and traceability of data.

"COMOS is a multidisciplinary integrated engineering software that allowed us to interpret the entire logic of the existing control system and update it to a conventional engineering language. With this, the customer gained the assurance necessary to begin migrating the entire production process and equip it with industry 4.0 intelligent solutions," said Julio Cunha, Head of Chemicals at Siemens.

> As a company that has innovation in its DNA, we focus very strongly on automation and digitalization in our plants. ”

Fabrício Feijó
Agro Process Technology Manager at BASF

The second part of the digitalization project of BASF's Chemical Complex unit involved integrating the data from the COMOS platform with the SIMATIC PCS 7 distributed control system, which generated engineering gains through the collection of information from all areas. Benefits include a reduction in errors and process downtimes, greater reliability in the system and nomenclature standardization of roughly 8 thousand pieces of equipment at the unit. Comparatively speaking, this task, which would normally take around four months, was done in just one and a half months (well under half the time) with solutions from Siemens, generating time and, of course, cost savings for BASF.

"As a company that has innovation in its DNA, we focus very strongly on automation and digitalization in our plants. With the implementation of this project, we made the Guaratinguetá Complex unit even more agile, reliable and efficient. Digitalization is an integral part of our business and allows us to be better prepared to satisfy the demands of our customers," said Fabrício Feijó, Agro Process Technology Manager at BASF.

In addition to integrating BASF's Chemical Complex with Industry 4.0 solutions, the digitalization project generated sustainability benefits. All "As Built" engineering documents, which previously were produced and filed in paper format, now have all their information digitalized and centralized in a single digital database: COMOS. **"Now, all engineering documents are "As Is", generating greater security and reducing risks for our customers,"** said Emerson Antonio – BASF South America Automation Manager. This is a pioneer project in South America and first of its kind to be done in all of BASF, which has more than 360 production units in roughly 90 countries.

"Following this implementation, additional BASF units have also begun to utilize the COMOS engineering software and the BASF engineering team is now analyzing the feasibility of new projects using other modules available in the tool," said Thiago Pellini – Key Account Manager at Siemens.

The BASF Chemical Complex in Guaratinguetá is the company's biggest unit in South America, with products that have more than 1,500 market applications, such as plantation protection solutions, sodium metilate, raw materials for adhesives, resins, paints, detergents, cosmetics, solutions for the automotive market, and others. At the unit where this project was developed in the Complex, BASF produces fungicide for disease control in fruits and vegetables.

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