

Design and implementation of SCADA and Condition Monitoring Systems

Tools

- EPLAN
- Ladder Programming
- Función Block Diagram (IEC 61131)

Background

The implementation of SCADA and Condition Monitoring Systems (CMS) in the industry allows us to monitor the different production processes and determine their critical parameters to operate in optimum safety conditions. The implementation of these systems strengthens the data collection for creating drawings as well as an intelligent and efficient resource management.

SOLUTE is able to install SCADA and CMS systems in wind turbines, solar plants, factories or commercial buildings, by selecting equipment, designing drawings, time lines, calibration or starting up these processes, drawing on its know-how and experience in this area. The purpose of these types of installations is to monitor and control production processes, making them efficient and thus solving the greatest problems facing industries, such as down periods caused by machine malfunctions.

In a highly competitive industry it is essential to promote the automation of all productive processes as well as monitor and control all the machines involved in these processes.

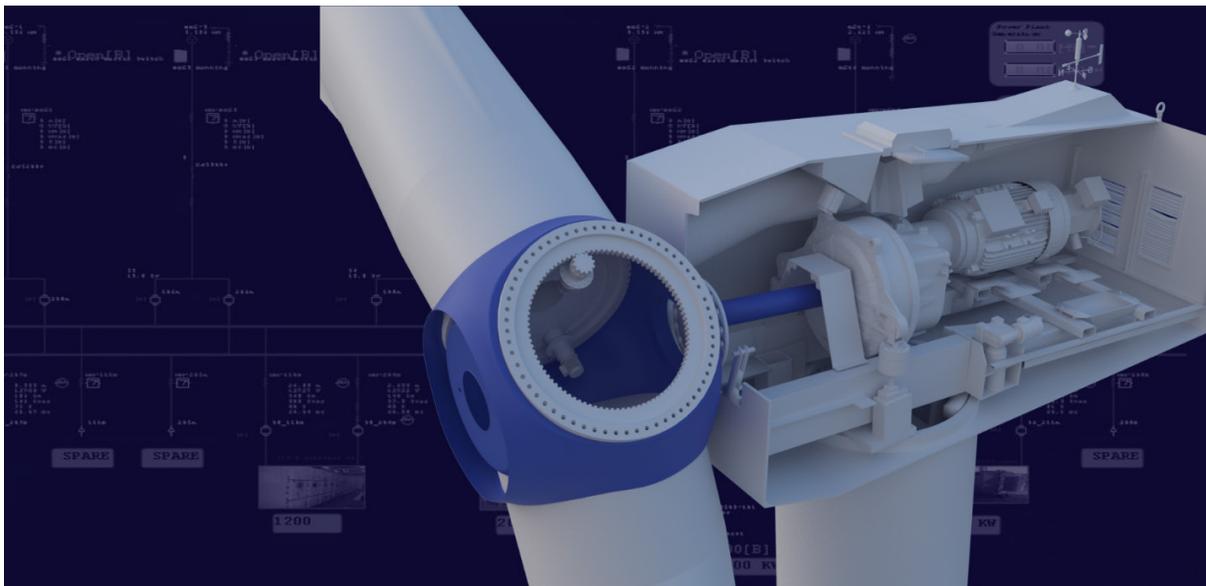
SOLUTE has extensive experience designing and developing SCADA systems, which it has applied at many onshore as well as offshore wind farms, solar plants, collection substations and the agricultural sector, as well as in designing and developing CMS systems, using different tools such as EPLAN, for designing electrical connections or assembling electrical panels and Ladder Programming for programming the different PLCs in accordance with standard IEC 61131.

With this extensive knowledge of the industry 4.0, the ability to successfully implement new and advanced solutions in SCADA and CMS for long and short distance communications based on the internet of things (IoT), data storage on the cloud and an intelligent management in SCADA systems is promoted.

SOLUTE's experience in this area is characterised by the installation of a CMS System for monitoring the vibrations produced by the gearbox in different wind turbines. This is added to the in depth knowledge of wind engineering, an area they have been working in since the company was established in 2006.

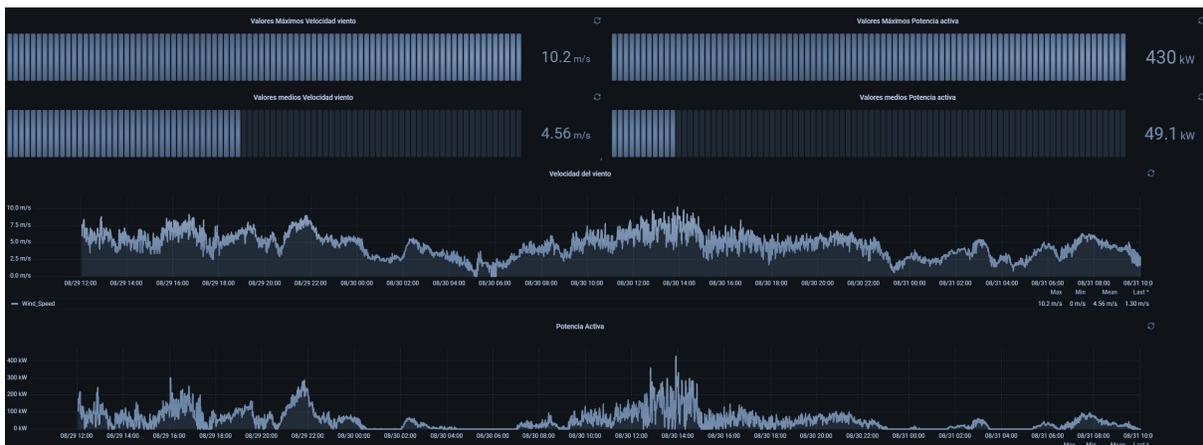
Methodology

After analysing the needs and requirements demanded by the customer, we identify the different elements involved in the project, including control and monitoring components, through the selection of essential parts for a CMS or SCADA system, the PLCs of different types and programming languages that are chosen based on standard IEC 61131.



Once this data is defined, we proceed to designing the electrical connections using EPLAN, which is an essential phase that will determine the connection and length of the different cables of the system and their arrangement inside the installation. Having reached this point, a proposal is drafted together with the different electrical drawings, a list of the different system components, and a detailed time line with all the steps required for the implementation phase. Once the proposed solution is validated, the final design, installation, commissioning, calibration and fault diagnostic, if required, are carried out.

The expected result is an efficient and non intrusive CMS system that will allow the operator to better know the equipment and maintain productivity in the long term. Also, in the case of SCADA systems, it aim is to be able to control and monitor the automated systems remotely, regardless of their location.



Results

The definition of a complete control and monitoring system comprised of different detailed connection drawings as well as a list of components comprising the installation and the project execution schedule with all the necessary steps for installing the proposed system/s.