PC-based control in decentralized wind power generation

Open and modular controller for distributed power generation systems

Feeding power into the energy grid from renewable sources can result in strong fluctuations of network loads. These require intervention by the grid operators, in order to avoid power failures as well as voltage or frequency variations. German company ee technik GmbH has been involved in planning and designing electrical infrastructures of large wind farm projects for many years. They use a DEA controller (distributed power generation system controller), which, based on the openness and high level of integration of the control technology from Beckhoff, can be flexibly adapted to individual applications.
In power generation systems, special controllers direct the active and reactive power output, based on the current requirements of the network operator. Depending on how the actual values deviate from the specifications of the network operator, such a controller determines the respective set point value specifications for the individual power generation units. The challenge is that manufacturers of power generating plants have not yet come to an agreement on a standard protocol to exchange such data. Lack of standardization tends to necessitate a complex system of terminals and IT systems, in order to meet the requirements of the network operator at the grid connection point. A vendor-independent controller, offered by ee technik GmbH, based in Böklund, Germany, provides an efficient solution for the problem at hand. This controller for distributed power generation systems (DEA controller) is open for all common systems and enables the higher-level control of each individual power
A DEA controller can be used wherever generating units from different system manufacturers share a common grid connection point, e.g. in situations with a shared medium-voltage transmission line or a substation for high-voltage connection.
On the software side, each interface of the DEA controller is implemented as a modular function block with identical input and output interface. On the hardware side, various EtherCAT Terminals enable interface configurations that are optimized for the respective application.