



SIEMENS
Ingenuity for life

Save yourself work, time and costs with an integrated modular system

New standards, tightened legal provisions, increasing pressure of time and costs, as well more complex system solutions place increasing demands on control panel builders. That is why any support from the equipment manufacturer is worth its weight in gold. And that support is provided with an integrated modular system and an all-around support package.

Control panel building has long been one of the core issues in both electrical engineering and in automation. However, this area has experienced perceptible changes, particularly in

recent times. One of the reasons for this is that sustained modernization has penetrated all aspects of the practice of automation and drive engineering, as shown, for example, by the recent legal stipulation to use energy-efficient three-phase asynchronous motors. According to this, since January 17, 2017, three-phase asynchronous motors in the power output range between 10 HP and 500 HP must meet energy efficiency class IE3 to comply with EC Regulation 640/2009. And even if there are certain exceptions to this regulation, IE3 motors are mandatory for the majority of industrial applications.

Important: inrush current when starting energy-efficient motors

This has corresponding effects on control panel building. Something that previously remained of no significance was the influence of these particularly energy-efficient motors on the switching capacity of low-voltage controls due to their strong magnetization and low winding resistance. In this context, Siemens, frequently a one-stop shop for building, analyzed more than 5,000 motors from different manufacturers, testing some of them in the lab, and then calculated the influence of the inrush current. This occurs in the first and second half-wave after connecting the motor to the supply, and it can increase so strongly that under certain circumstances circuit breakers evaluate it as a short-circuit current and then trip.



predecessor standard is the increased obligation for verification and documentation of the devices and assemblies used. This will mean more work for users.

More efficiency in control panel building with "Planning Efficiency"

However, this work can be reduced with the right support from the right vendor. Siemens, for example, offers all the data and documents required for the Sirius Modular System over the Internet to facilitate engineering, installation and documentation for all users. The term "Planning Efficiency" encompasses all the aids with which the manufacturer supports control panel builders along the entire process chain, from the idea to installation, commissioning, service and diagnostics. The company emphasizes that with universal product data for CAE and CAD programs time savings of up to 80 percent can be achieved.

Configurators, for example, enable specific and fast selection of suitable products and complex systems for individual controls online in the Industry Mall, as well as offline in the Siemens Catalog CA01. Selection configuring and ordering are thus more intuitive and simpler. A conversion tool also lists the equivalent current products for discontinued products. The current products can then be transferred directly to the shopping cart and ordered.

In the next step, when creating the circuit and assembly diagram, control panel builders can also save time and costs with "Planning Efficiency." To this end, Siemens provides up to 12 data types for its products, with the purpose of optimizing the mechanical (CAD) and electrical (CAE) planning. The information that can be called up in the CAx Download Manager ranges from device circuit diagrams, connection diagrams and product master data, to dimension drawings, 3D models and manuals, operating instructions, certificates, characteristic curves, and more. For users of the "Eplan Electric P8" electrical engineering software, Siemens offers a special macro with which the overall time required for data integration can be reduced even further.

In short, depending on the motor, making angle, cable length and system rigidity, undesired and random tripping can occur as a result of the inrush current. For this reason, the entire Sirius Modular System of controls from Siemens has been designed for such a situation in sizes S00 to S12, so that these low-voltage controls have no problems in conjunction with the inrush current when operating with energy-efficient IE3 motors.

Compact size, high performance

This is just one additional aspect affecting state-of-the-art control panel building. Another important issue is planning of compact dimensions because the available space is restricted in many machines and plants. That is why vendors like Siemens are gradually optimizing their industrial controls. This is clearly shown, for example, in the new size S2. With its narrow width of 55 mm

(previously 70 mm), a maximum rated current of 80 A can be switched, and thus a motor up to 50 HP. This means 95 percent of globally supplied motor applications can be covered with sizes S00 to S2. Another decisive factor for users is that accessories for sizes S0 and S00 (already underwent innovation years ago) can also be used for the new switching devices of size S2.

These accessories also include the function modules of contactors for IO-Link and AS-Interface, as well as the corresponding logic modules. This perceptibly reduces the variance of these devices, at the same time simplifying inventory and control panel building.

Another advantage of the Sirius Modular System is evident with regard to the new IEC 61439 standard for low-voltage switchgear and assemblies that finally replaced the old IEC 60439 standard in the fall of 2014. Because an essential difference to the

Save time through fast documentation

As already mentioned, the new IEC 61439 standard elevates the significance of documentation. The "Documentation" function in the "Siemens Industry Online Support" helps you to create directive-compliant, clear and simple documentation. The manual configurator enables individual and standard-compliant creation of documentation by dragging and dropping information provided by the equipment manufacturer.

As well as full and structured compilation of the documents and information provided, your own content can also be added with the help of the notes function. After generating the documentation, automatic translation into the desired language is also possible. In conjunction with the update function, the documentation remains up-to-date.

Service and Support for that little difference

At the end of the day, Siemens acknowledges, with its extensive portfolio, that there is still potential for optimization at many points in control panel building. These possibilities are summarized, and they show that control panel builders benefit substantially from holistic solutions like the Sirius Modular System. The repertoire is rounded off with individual consulting, workshops and information about standard-compliant design of control panels in accordance not only with IEC standards, but also with UL specifications as required in the U.S. In this way, the processes required for designing and building control panels can be further perfected.

This is necessary because the pressure of costs will continue to increase, the demands placed on the state-of-the-art control panel will rise, and legislation will become gradually tighter. At the same time, customers expect more complex overall solutions that can be integrated simply into their machines and plants. This means that control panel builders must either provide a great deal of their own know-how and keep it continuously up-to-date or they make use of an integrated modular system with support functions as described above.

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