Eaton’s new iMCC intelligent motor control center offers the perfect communication solution for the xEnergy switchgear series. The complete control wiring inside the drawer units of the iMCC and the wiring to the higher-level controller are replaced by a communication system. This brings clear benefits for the user thanks to the reduced wiring effort required. Essential detailed information from the drawer units can now also be transferred to the higher-level controller, thus enabling operators to significantly increase the reliability and availability of the motors. The xEnergy iMCC is thus ideal for use in industrial production processes that require a very high level of machine and system availability.

Eaton’s SmartWire-DT communication and wiring system is used for the communication inside the switchboard system. It replaces the previously required control wiring in the MCC drawer units as well as the cabling for the control and status information of the drawer units in the switch cabinet. Standard fieldbus systems such as Profibus-DP, CANopen, MODBUS-TCP or Ethernet/IP handle the transfer of data from the switch cabinet to the higher-level PLC.

By merging SmartWire-DT with xEnergy, Eaton is consistently driving the market trend towards intelligent switchgear and switchboards. Innovative switchgear such as the PKE electronic motor-protective circuit-breaker supply detailed operating and diagnostic information that cannot be transferred via conventional control wiring. This therefore enables the iMCC with the PKE not only to use digital signals to switch or detect switch positions or status information, but also analog values in particular, such as for the thermal load of the motor and the actual motor currents. This extended diagnostic information enables the implementation of predictive maintenance (condition monitoring) functions. For plant operators, this therefore makes it possible to detect faults in advance and implement measures to improve operational reliability and keep the downtimes of plants to a minimum.

If an iMCC drawer unit needs to be exchanged, the maintenance personnel simply have to pull it out of the MCC section and replace it with the appropriately preconfigured drawer unit. Modules specially developed for this in the xEnergy switchboard and in the drawer units that are specially developed for this ensure that the previously interrupted communication of an exchanged drawer unit is automatically restored. Three unambiguous switch position indications for “Operational”, “Test” and “De-energized” offer here increased safety during maintenance work.
SmartWire-DT enables panel builders and xEnergy partners to benefit from the simple mounting as well as the reduced and space-saving wiring of the drawer unit. As SmartWire-DT replaces both the control wiring inside the drawer unit (to operating elements, switchgear, circuit-breakers and other I/O modules) as well as in the cable connection compartment from the drawer units to the PLC, considerable savings can be made in terms of the time required for installation and commissioning. Space utilization inside the drawer unit is optimized at the same time and the material costs are reduced. Unnecessary hardware components are eliminated faster, and the engineering and commissioning of the iMCC and xEnergy switchboard are simplified. A more ordered arrangement inside the drawer units can also be designed and protected from any wiring faults. Assembly and testing are also convenient as all the relevant data is transferred via a fieldbus interface instead of via conventional control cables. The SWD-Assist planning and commissioning software enables the user to also fully test individual drawer units – without the need for a PLC.

The iMCC drawer units are available in two versions: As a basic model with a PKZ thermomagnetic circuit-breaker which indicates the state of the circuit-breaker, and as an enhanced version with the communication-enabled PKE motor-protective circuit-breaker.

Empty drawer units for custom applications are also available. The system can be extended at any time by adding new or other drawer units without any changes to the infrastructure. The data of these drawer units is also transferred simply via the installed SmartWire-DT communication system. The following xEnergy iMCC drawer units are currently available: DOL starter (0.06 – 160 kW), reversing starter (0,06 – 110 kW), star-delta starter (5.5 – 75 kW) and 3/4p power outgoer (16/20 - 400A).

Documentation, assembly manuals and instruction leaflets are available from our partner website www.xenergy-partner.com. Circuit diagrams and lists of the drawer unit outgoers are available from our partner website www.xenergy.com

Lean Connectivity in the iMCC drawer unit: The following diagnostic data is transferred from the PKE motor-protective circuit-breaker via SmartWire-DT to the control level:
- Short-circuit, overload, phase loss, test tripping
- Typical fault sources are identified quickly and the time required for troubleshooting considerably reduced.

iMCC enables operators to significantly increase system availability. Detailed information from the drawer units, such as overload prewarning, current value measuring and differentiated trip indication can be transferred to a higher-level controller via standard fieldbus gateways. A creeping motor overload can thus be detected and rectified in time before a failure occurs.

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