

# Transparent Ready

## System approach

### Intelligent motor control center (iMCC) application



Prisma Plus iMCC switchboard



Okken iMCC switchboard

#### Presentation of the dedicated iMCC approach

**iMCC (Intelligent Motor Control Center)** control switchboards are low voltage switchboards dedicated to energy distribution, as well as control and protection of motors. They are used in continuous and semi-continuous processes, in which it is necessary to group the motor starters together in one place for operational and maintenance reasons.

The Schneider Electric switchboard systems (Prisma Plus, sold under the Merlin Gerin brand, and Okken, sold under the Schneider Electric brand) provide an optimized solution for mounting motor starters:

- Complete, fully-tested mounting kit providing the correct thermal, electrical and mechanical (protection, access) environment for the components and equipment
- Optimized stacking density, up to 48 starters per column
- Wide range of mounting types: fixed, disconnectable and removable.

#### Integration of motor starters in iMCC switchboards

iMCC control switchboards make the work of operation and maintenance teams easier by improving the availability of the process, via:

- Control of motor starters using wire-to-wire cabling or via remote I/O located as close as possible to the starters and connected on the network
- Protection of the motors using an intelligent electronic protection relay. This provides more precise protection of the motors (analysis of operating conditions and alarm thresholds before tripping, etc).

These two functions can be grouped together in a single product, the electronic protection module. In this case, the protection relay module manages and transmits all this control and protection information directly.

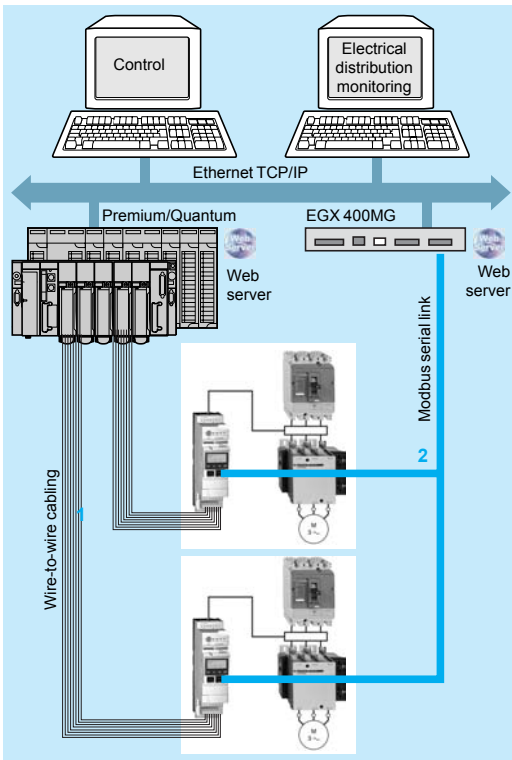
#### Advantages of iMCC switchboards

iMCC control switchboards provide a high level of process availability while ensuring the safety of property and personnel. This solution decreases the number of process stoppages and their duration, reduces maintenance, reduces and repairs costs and optimizes process productivity:

- Reduction of process stoppages as a result of detailed alarms and diagnostics that enable staff to react before the motor starter trips, or react more quickly if it does trip
- Rapid diagnostics due to the availability of more detailed information on the stoppage conditions
- Analysis of stoppage logs using statistics from the electronic protection module.

iMCC control switchboards make installations easier to create, by reducing engineering and debugging time:

- Rapid parameter-setting as a result of local or remote downloading
- Analysis of phenomena via alarms, detailed diagnostics and stoppage logs (statistics embedded in the electronic protection module).



## iMCC switchboards with wire-to-wire TeSys model U motor starters and embedded Web server

In this architecture the TeSys model U motor starters are connected:

### To the process control system 1

TeSys U motor starters are connected using a wire-to-wire link to a PLC or a controller providing maximum availability of the installation. Only the information necessary for control is wired.

### For monitoring and diagnostics of Electrical Distribution 2

The TeSys model U motor starters (1) are connected via a Modbus serial link to an EGX gateway/server (see page 48298/2). This connection make available on Ethernet TCP/IP, all information available on the TeSys model U intelligent motor starter, thus improving diagnostics and optimizing availability. This information can be accessed locally or remotely by authorized persons only, for example an electrical installation manager, on any PC that has a simple Web browser.

This solution offers the following advantages:

- The amount and relevance of the information, provided at minimal cost
- No need for a user license on the client station (PC), and ease of use.

## iMCC switchboards with prewired TeSys model U motor starters and embedded Web server

In this architecture the TeSys model U motor starters are connected:

### To the process control system 3

Each TeSys model U motor starter is connected by a dedicated LU9 R●● or 490 NTW 000 ●● cable to an Advantys STB automation island equipped with STB EPI 2145 parallel interface modules.

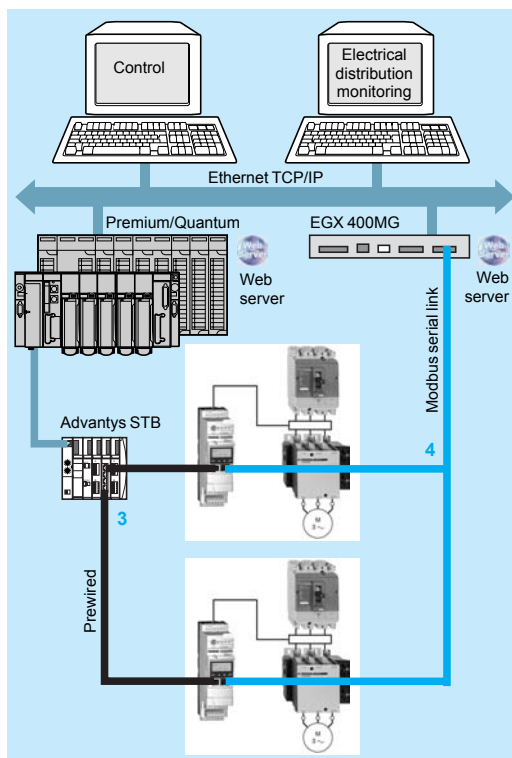
Each Advantys STB EPI 2145 module can be used to connect up to 4 TeSys model U controller-starters, each represented by 3 discrete inputs and 2 discrete outputs. The STB EPI 2145 module takes TeSys model U motor starters in non-reversing or reversing configuration.

This solution has the advantage of reducing wiring and thus the inherent risk of faults. It also enables control systems to be connected to a Transparent Ready architecture via the Advantys STB Ethernet TCP/IP network interface module, STB NIP 2212 (see page 48295/3). This module is easy to replace in the event of a fault using the FDR replacement service (see page 48290/7).

Connection to other networks or fieldbuses is also possible via Advantys STB network interface modules (CANOpen, Modbus Plus, Fipio, Profibus DP, INTERBUS, or DeviceNet).

### For monitoring and diagnostics of Electrical Distribution 4

This is carried out, in a similar way to the wire-to-wire architecture above, via Modbus serial link to an EGX gateway/server in order to make all the information concerning the TeSys model U motor starters available, using Web pages.



## Okken iMCC switchboards with Eagle motor protection system

Eagle is an intelligent motor protection system for critical processes, in particular in the chemical and petrochemical industries. It is installed in Okken, a high dependability switchboard, and is available from Schneider Electric referenced partners.

The Eagle system consists of:

- A relay card to protect the motors, and monitor and control the starters and incoming electrical distribution feeders
- A support for installing 12 or 24 relay installed in the cable duct in order to avoid accidental temperature rise and interference. This solution also enables the cards to be replaced without stopping communication, saves and automatically reloads the parameters of the relay cards when they are replaced
- Bus and power supplies that can be redundant (2 ports per relay)
- A software package for rapid programming of the data concentrator PLC and designing the embedded server Web pages.

(1) To be equipped with multi-function protection unit LUC M●●BL. These protection unit connected to Modbus serial link.