

More than just OK

Okken:

Low voltage switchboard
for electrical distribution
and motor control





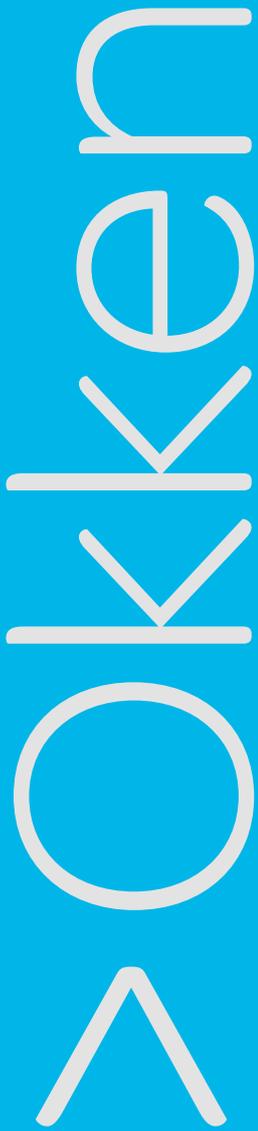
OKKEN





Safe, reliable,
efficient,
easy to
maintain,
durable,
open-ended....





A question of balance

Low voltage equipment must comply with a whole set of requirements linked to increasingly sophisticated applications and to changing standards, while also offering increased **productivity** and a rapid **return on investment**.

Okken strikes the right balance between:

- > a **high level of performance**, both in electrical distribution and motor control,
- > **open-endedness** to continually satisfy your specific needs but also follow major market trends,
- > **safety** of people and installations, even in the most demanding conditions,
- > **reliability** both short and long term, guaranteeing availability and a constantly high level of performance,
- > **ease** and **speed** of implementation and maintenance.

**Okken does all that...
And much more!**

Your installations evolve...

Your investments must satisfy a two-fold objective: meet your present needs and ensure you make the necessary upgrades so as not to be outdistanced by your competitors. In terms of electrical distribution and motor control, only installations made up of modular switchboards allow you to successfully meet these challenges.

Our solutions too!

For the past 15 years thousands of Okken switchboards have been put into service world-wide. With their completely new modular design, they have never ceased to evolve to anticipate your needs. The new 70-M cubicle marks a major step in this evolution.





Okken: simply modular and open-ended

In a constantly changing industrial and economic world, you need to be able to upgrade your installations at all times.

- > The modularity of the Okken functional switchboards means you can modify or upgrade them with ease to adapt to your changing processes and increase performance. The withdrawable drawers let you make these upgrades while the equipment is energised, without cutting switchboard supply and in complete safety.
- > The switchboard is designed with free slots to add new functions or extra motor feeders, even at the last minute.

> For your motor feeders



Okken 70-M: The compact and powerful cubicle

The 70-M cubicles satisfy the motor control needs of the most demanding processes. By concentrating more equipment and functions in the same space, Okken reduces the overall number of cubicles. You thus optimise installation cost and reduce civil engineering costs, while also reducing the space reserved for electrical distribution equipment.

An innovative solution...

- With a 70-M cubicle of the same size, you can now install more motor feeders.
- The 70-M cubicle lets you combine functions, for example incomer and feeders.
- It is adapted to all electrical room configurations.
- A pre-studied solution, it incorporates all Schneider Electric tried and tested products for all motor applications...

... rugged and reliable...

- Creation of new withdrawable drawers with larger useful volume was made possible by:
 - Schneider Electric's know-how in LV equipment design in very small volumes,
 - Use of Schneider Electric last generation products,
 - Perfect electrical and mechanical consistency and the electromagnetic compatibility of all components.



- The drawers are equipped with a real test position accessible automatically by simple displacement, thus guaranteeing power upstream and downstream insulation for maximum operator safety.

... and secure

- All the devices are locked to prevent incorrect manoeuvres.
- The drawers can be plugged out with power on, without stopping the switchboard and without risk to the operator.
- On the front face, the switchgear position mechanical indicators are 100% reliable.

Your activity evolves...
With Okken, nothing
stops you from adding
new motor feeders.

Okken: safety on an everyday basis

Safety is a major issue not only to guarantee installation durability but also and above all for operators and maintenance personnel working on a switchboard.

Nothing left to chance

- > The Okken LV switchboards incorporate the best safety and protection systems, preventing on-load operation to guarantee safer operation and maintenance.
- > Live parts are protected by screens guaranteeing an IP20 degree of protection.
- > The withdrawable drawers have 3 positions: connected, test and disconnected.
- > The operator interfaces for switchboard configuration and setting are directly accessible on the front face.



Tested switchboards

Okken is a totally tested switchboard as per standard IEC 61439-1/2, thus guaranteeing electrical installation and operation safety. All tests are certified by ASEFA and LOVAG.

Tests conducted

- Temperature rise limits
- Dielectric properties
- Short-circuit withstand
- Protection circuit efficiency
- Clearance and creepage distance
- Mechanical operation
- Degree of protection

Innovation and experience...
A clever balance to offer you an efficient and reliable switchboard for sensitive applications.

> For power distribution



Okken 70-2: the high security cubicle

Thanks to standard type-tested modules, Okken guarantees operators high security combined with continuity of supply and outstanding installation reliability.

The Polyfast® system: a Schneider Electric exclusivity

- In event of internal arcs, the partitioned terminals of the Polyfast® system ensure electrical insulation of connections by creating a shield between the circuit-breaker upstream connections and the double contact clamps on the main busbar.



Excellent internal arc withstand

Okken technology reduces internal arc risks thanks to:

- Use of the Polyfast® system,
- 3 confinement levels:
 - at the functional unit (AS3439-1),
 - at the column (IEC 61641 v2),
 - at the switchboard.

Polyfast system: flexible and open-ended



> Disconnectable rule for motor control:

- simple and economic,
- functionalised for motor feeders up to 32 kW,
- customer connection: forms 2a, 3a and 3b.



> Disconnectable Polyfast® for electrical distribution:

- secure and economic,
- functionalised for distribution feeders up to 630A,
- direct customer connection on device (form 2b).



> Plug-in Polyfast® for electrical distribution:

- secure and open-ended,
- functionalised for distribution feeders up to 630A,
- customer connection by separate terminal pads and clamps (form 4).

Guarantee faultless continuity of supply

At all times you must be able to rely on electrical energy availability to guarantee continuity of supply of your production tool. Okken offers an extremely high level of reliability even in the most difficult conditions.

Increased resistance to harsh environments

For installations in seismic areas

- > Okken 2G and 5G offer excellent mechanical resistance guaranteeing continuity of electrical supply.
- > The 2G version benefits from a reinforcement framework and a floor fastening base for even greater switchboard rigidity. This is the version recommended for most sensitive applications.

Nuclear applications

- > The 5G version exhibits even better characteristics for the most critical applications and in particular nuclear power plants.

For installations in corrosive environments

- > As standard, Okken proposes a variety of protection levels (IP30, IP41 and IP54) to satisfy the needs of applications such as cement works, iron and steel industry, etc.
- > For applications such as water, paper mills and refineries, conductive parts such as busbars and clamps receive a specific anti-corrosion surface treatment (tin, nickel, etc.).
- > “Anti-corrosive” Okken limits short-circuit risks due to damaged copper and coatings, thus extending your equipment life time.

Marine applications

- > Its specially adapted characteristics mean that Okken satisfies the requirements of off shore, FPSO and marine applications. Okken is Det Norsk Veritas (DNV) certified.

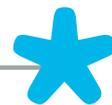
Minimise downtimes

Be informed to anticipate

- > The overall reliability of an Okken solution minimises maintenance. Using the information available on operation of the various switchboard equipment, you can schedule maintenance to suit your production loads.
- The possibility to work on live switchboards in complete safety increases the continuity of supply of your installations.

Schneider Electric inside

- All the components of an Okken switchboard are designed and produced by Schneider Electric.
- The guarantee of investing in equipment that is perfectly optimised, combining a high level of performance with tried and tested reliability.
- The certainty of rapid return on investment.

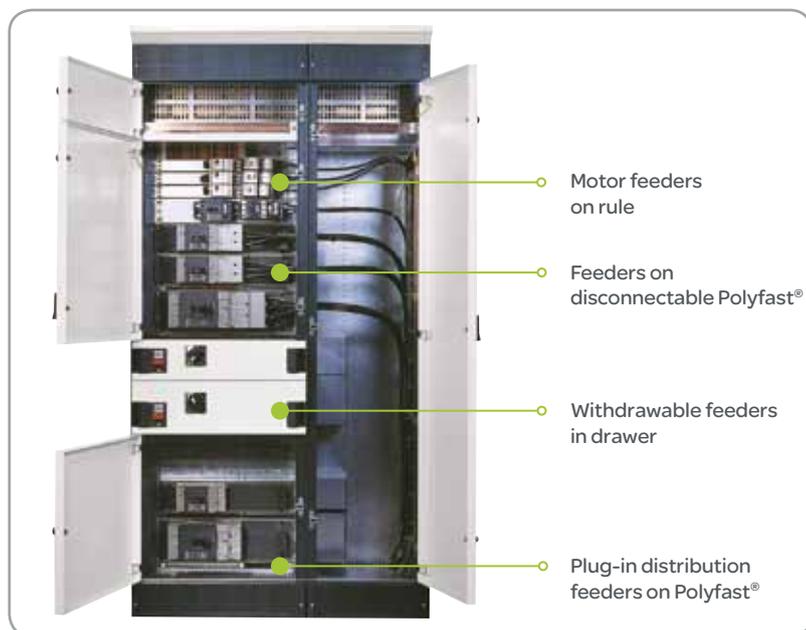


Thermal monitoring

Designed for Schneider Electric LV equipment, this system continuously monitors temperature rises by means of probes fitted at the centre of sensitive areas, such as busbars and drawer contacts. The thermal monitoring system reduces the likelihood of failure and decreases maintenance time.

A versatile switchboard adapting to your needs

The Okken system is a modular structured offer designed to produce LV switchboards for electrical distribution up to 7300A and for motor control up to 250 kA.



More flexibility to adapt to all configurations

- > Possibility to combine in the same column:
 - distribution feeders and motor control feeders,
 - different installation types: disconnectable, plug-in, withdrawable drawer.
- > Simplified last minute changes and additions.

To allow quick upgrading in complete safety

- > Busbar degree of protection IPx2.
- > Connections on busbar by IPx2 plug-in clamps.
- > Customer connection separate from the functional unit (form 4b)
- > Simplified addition of a new feeder or modification of an existing feeder



> Spare zone available for future equipments

Exceptional performance, outstanding reliability...

Okken offers you a comprehensive solution for an optimised global cost.

MotorSys™ iPMCC: more intelligence in your switchboard

MotorSys™ iPMCC is Okken's most advanced solution. Its architecture is open to the main industrial communication protocols. It can be easily and safely incorporated into the existing infrastructure of your sites.



Access information in real time

Essential to optimise control and monitoring of your process, make the right decisions at the right time, ensure traceability of production.

> With MotorSys™ iPMCC, all this information is available locally or remotely:

- motor operating status and time monitoring (alarms and tripping),
- parameter monitoring and management: statuses, measurements, diagnostics, histories,
- energy consumption.

Optimise motor performance

> The MotorSys™ iPMCC solutions ensure monitoring and protection of motors with a behaviour on failure in accordance with standard IEC/EN 60947-7-1.

They incorporate communicating electronic protection relays using motor protection models of unequalled accuracy.

> Motor and protection device configuration is accessible at all times, thus letting you quickly adjust their operation to your production rates.

Optimise the operation of your motors and save up to 15% on your electricity consumption.

Increase your energy efficiency...



Electrical energy accounts for a large part of your global production cost. Okken allows you to reduce the energy consumption of your equipment while also enhancing its performance.

Make energy savings

The Okken and MotorSys™ iPMCC solutions have an immediate and measurable impact on your electrical energy consumption.

> They include progressive starters and variable speed drives adapting motor operation to the loads required for a reduction in consumption peaks of 50% or more.

> They can be combined with capacitors to manage reactive power compensation and thermal withstand control, thus eliminating reactive power costs and extending the life time of the devices connected to the network.

> Measurements, particularly for useful energy consumption, help define and monitor motor load profiles and consumption, thus enhancing the performance of an energy efficiency plan.

... and protect the environment

Better use of the planet's energy resources is one of the areas in which we can reduce our impact on the environment. Designing and producing "eco compatible" products is another. This is Schneider Electric's approach.

Eco design and eco production

> Right from the start of product design, we take into account the materials required for its production and use those that have least impact on the environment both in their origin and in their production.

At each stage of product development, we have access to global assessment of its impact, thus letting us optimise choice of materials.

End of life treatment

> Choice of materials is also dictated by the ease with which they can be recycled. At end of life, all Schneider Electric product components and their packaging can be recycled.

No hazardous substances

> Our product design takes account of the various international recommendations and in particular the RoHS European directive. Okken does not contain any hazardous substances.



Offer overview

Its broad choice of cubicles allows Okken to satisfy all your requirements and the performance needs of your applications, even in harsh environments.



Application									
Distribution (PCC)	■	■	■	■		■	■	■	
Motor (MCC)					■	■	■		
Function									
Incoming cubicle	■	■			■				
Distribution cubicle	■	■		■	■	■			
Type									
Disconnectable	■	■	■	■			■		
Withdrawable	■	■	■		■	■	■		
Fixed								■	

* Specific applications: DEP Shell, Marine, Seismic and nuclear

Schneider Electric "Best in class" products



Power circuit protection and control

> **Masterpact, Compact NS and Compact NSX**
A range of circuit-breakers for LV DC protection, control and disconnection of circuits and loads.



Energy consumption and quality metering

> **PowerLogic PM 800**
A range designed for management of your energy: metering, quality, availability.



Motor motion control

> **Altivar 31, 61, 71 and Altistart 48**
A range of variable speed drives and progressive starters for very simple variable speed control, offering a wide choice of installation powers, applications and protection.



Motor protection and monitoring

> **TeSys T, TeSys U and TeSys D**
A broad range of relays, controllers and motor management systems covering all your needs, from the simplest to the most advanced.



Process automation

> **Quantum, Premium and M340**
A range of programmable logic controllers for process control, including communication, diagnostic and data storage functions.

Technical data



General data

Applications	Distribution Motor control Reactive power
Service Index (IS)	211 to 333
Reference standards	IEC 61439-1/2 IEC 60529
Climatic resistance - damp heat withstand - dry heat withstand - low temperatures - salt spray	IEC 60068-2-30 IEC 60068-2-2 IEC 60068-21 IEC 60068-2-11
Installation	Indoor
Environment	Type 2

Mechanical data

Cable inlet	Top/bottom
Access	Front/rear
Degree of protection (IP)	22/31/41/54
Impact withstand index (IK)	10
Form	2b/3b/4a/4b
Withdrawability	FFD/WFD/WFW/WWW
Dimensions: Height Width Depth	2200/2350 600/650/900/1000/ 1100/1150/1300 600/1000/1200/1400
Average weight	650 Kg
Panel coating	Polymerised epoxy/polyester powder (SPO3) > 50 µ
Framework	Galvanised
Panel colour	RAL 1000

Electrical data

Rated insulation voltage (Ui)	1000 V
Voltage rating (Ue)	690 V AC
Rated frequency (F)	50/60 Hz
Rated impact withstand frequency (Uimp)	12 kV
Auxiliary circuit rated voltage	230 V AC max.
Surge category	IV
Degree of pollution	3
Rated current (In)	6300A
Horizontal busbar rating	7300A
Vertical busbar rating	4000 and 2100A
Horizontal busbar: Rated 1s short-term current (Icw) Rated peak current	50/60/100/150 kA rms 110/176/220/330 kA peak
Vertical busbar: Rated 1s short-term current (Icw) Rated peak current	50/80/100 kA rms 110/176/220 kA peak
Rated conditional short-circuit current (Isc)	Up to 150 kA
Protection of people against internal arcs IEC 61641	100 kA rms 0.3 s
Earthing system	TT-IT-TNS-TNC
Power incoming and outgoing limits	Up to 6300A
Motor control feeder limits	Up to 250 kW 400 V

Associated proximity services

Throughout the world, our 6 000 Schneider Electric Services experts and local partners are available to listen to your needs.

They propose a comprehensive and unique Okken support service offer for enhanced reliability of your equipment:

- > Validated tools and architectures.
- > Proximity services for the installed base: component availability, assistance and troubleshooting
- > Advice and guidance for maintenance and renovation.
- > Customised vocational training, on site or in one of our fifty training centres.

Services with high added value

You can rely on the Schneider Electric services to help you increase your performance throughout your installation life cycle.

Over and beyond the services associated with the Okken offer, Schneider Electric proposes comprehensive services in the sectors of auditing and consulting (engineering expertise, installation audits, energy audits, global energy efficiency solutions, etc.), and solution engineering (project management and implementation, site modernisation, customer projects either customised or for critical applications, process simulation, energy management, etc.).

 **Make the most of your energy**

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Due to possible changes in standards and equipment, the features described in this document in the form of text and images are subject to confirmation by Schneider Electric.

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The Okken panel-builder network guarantees you optimum proximity service

- > Okken can be supplied by the Schneider Electric Equipment Units or by licensed partner panel-builders.
- > These partners, selected for their expertise, are trained and regularly audited by Schneider Electric to guarantee top quality equipment.

Partner licenced

by

Schneider
Electric