

# PUBLIC ELECTRICITY DISTRIBUTION

Helping you to meet the challenge of energy demand and response



# Your challenges

SOCOMEK is an expert manufacturer and solutions provider whatever your requirements and whatever the field: transport operators, network operators or specialists in electrical distribution.

## Tackling the increasing demand for energy and its decarbonisation

The world demand for primary energy is expected to grow by 40%\* between 2007 and 2030 owing to demographic trends and improvements in the standard of living.

### Key concerns:

- improving grid capacity
- coping with peaks in energy consumption.
- integrating decentralised energy production.

\*Source: IEA International Energy Agency

## Assuring continuity of the power supply

Preventing interruptions to the power supply is one of your critical missions. To achieve that, you need to invest and innovate in order to meet the challenge of network continuity.

- Securing energy availability.

## Responding to the opening up of the electricity market

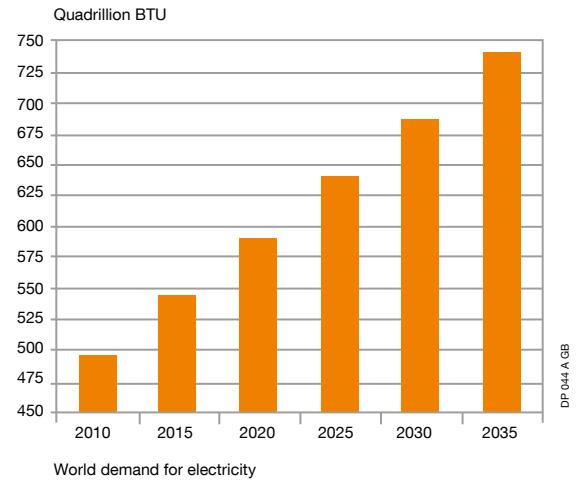
The switch to a competitive market has led to new challenges:

- optimising operational expenditure (OPEX) and reducing non-technical losses.
- satisfying customers via the supply of high quality energy.

## Integrating new technologies associated with smart grids

To meet the growing demand for energy, the optimisation of electrical distribution infrastructures is becoming essential and the grids of tomorrow have no other choice than to be intelligent and interactive.

- Installing monitoring equipment on the entire network, including low voltage grids.
- Integrating new energy storage systems.



DP 044 A GB



DP 045 A



DP 046 A



DP 047 A

# Our promises

## + Continuity

### Assuring the "right" supply of energy

- Maximum energy availability.
- Reductions in downtime and minimising maintenance work.

## + Safety

### Assuring the safety of installations and operative personnel

- Provision of solutions covered by manufacturer warranty that are certified, approved, tried and tested... and durable.
- Development of EDF-approved solutions

## + Profitability

### Adjusting investments for optimum profitability

- Response to needs for customised designs
- An expert offer of scalable and modular solutions.

## + Simplicity

### Assuring efficient maintenance and verification operations to save time

- Rapid installation and maintenance operations.
- Ergonomic solutions to help reduce operator errors.
- Design and certification of the solution.

## + Innovation

### Optimising investments in the network and maximising the integration of renewable energies

- Improved LV grid monitoring for less cost.
- Adaptation of the choice of communication technologies depending on local constraints.
- Provision of tried-and-tested energy storage solutions connected to the grid.

## = Power & Energy Performance of electrical grids



SYDIV 170 C GB

# Our adapted responses to your applications

Ever attentive to your requirements, SOCOMEC offers you services, products and customised solutions, whatever your constraints. As a French distribution switchboard manufacturer since 1965, SOCOMEC is a key player in the field of public electricity distribution. SOCOMEC's TIPI low voltage feeder pillars represent one of the best-selling products in the French market.



FIGD-URL\_115\_A\_GB

See the entire range of Public Electricity Distribution solutions on our website

## Delivery substation

Solutions for:

- Reducing non-technical losses via highly accurate HV and LV metering, for new-build or existing installations.
- Precise analysis of your customers' patterns of consumption.



0.2 s Current transformer

## HV substation

Solutions for:

- Securing LV electrical supply for both control-command systems and substations.
- Improving the safety of installations and operative personnel.



Auxiliary units

AU with ATYS



Rectifier charger

SHARYS IP

## Energy storage

Solutions for:

- Optimising investments in the grid.
- Massive integration of renewable energies.



Power Conversion System and Storage

**SUNSYS PCS<sup>2</sup>**

## Services

Pre-project phase:

- Help with the design and realisation of customised solutions.
- Realisation of required qualification tests (IEC 61 439 experts).

On-site:

- Commissioning.
- Equipment maintenance.
- Supervision.

## Smart MV/LV Distribution substation

Solutions for:

- Protection, distribution, measuring and monitoring of the LV electrical grid.
- Securing the electrical supply and minimal maintenance.



**DIRIS Digiware**

## Terminal distribution

Solutions for:

- Protecting the LV network in distribution cabinets.
- Ensuring high-accuracy metering.



Load break switches

**SIRCO**



Fuse-combination switch

**FUSERBLOC**



**TIPI with DIRIS**

# The SOCOMEC difference

Expertise and offerings adapted to public electricity distribution, guaranteeing optimum performance of the electrical grid.



Solutions for secure electrical supply in HV substations

SOLUTIONS	FUNCTIONS	BENEFITS
<p>Auxiliary units with ATYS changeover switch.</p> 	<ul style="list-style-type: none"> <li>• LV supply continuity for substation auxiliary equipment.</li> <li>• Distribution and protection of power supply for AC and DC equipment.</li> </ul>	<ul style="list-style-type: none"> <li>• Assured electrical supply continuity.</li> <li>• Enhanced safety for installations and operative personnel.</li> <li>• Manufacturer warranty assured by conformity to IEC 61 439 as well as RTE and ERDF approvals.</li> <li>• Optimum operating performance owing to the use of automatic transfer switches.</li> <li>• Commissioning facilitated by modular solution that can be adapted to any installation.</li> <li>• Maintenance and checking operations of circuit breakers possible owing to IP20 panel frames.</li> <li>• Flexible configurations that can be adapted to current or future requirements.</li> </ul>
<p>Current transformer short-circuiting device</p> 	<ul style="list-style-type: none"> <li>• Protection of operative personnel working on high voltage measuring circuits via the short-circuiting of secondary circuits on current transformers.</li> <li>• Protection of high voltage installations by preventing possible voltage rise caused by induction.</li> </ul>	<ul style="list-style-type: none"> <li>• Assured safety for installations and operative personnel.</li> <li>• Enhanced safety for operative personnel via visual check of the device status before beginning any electrical work and via the indicator on the transparent case.</li> </ul>
<p><b>SHARYS IP</b> rectifier-chargers</p> 	<ul style="list-style-type: none"> <li>• Safety of low voltage DC electrical supply to the substation's control/command equipment.</li> </ul>	<ul style="list-style-type: none"> <li>• Reliable and robust solutions.</li> <li>• Scalable solutions to meet requirements for redundancy and power upgrades.</li> <li>• Cost-effective operation (high efficiency, low maintenance).</li> <li>• Hot swap replacement of modules without any interruption to the supply.</li> <li>• Suitable for any type of battery.</li> </ul>
<p><b>DELPHYS MP/DELPHYS MX/MASTERYS IP + UPS</b></p> 	<ul style="list-style-type: none"> <li>• Securing the electrical supply to the power transmission system's dispatch centre (grid monitoring system).</li> </ul>	<ul style="list-style-type: none"> <li>• High quality power supply.</li> <li>• High availability of energy.</li> <li>• Scalable solutions to meet requirements for redundancy or power upgrades.</li> <li>• Intuitive operation, remote communication and easy maintenance.</li> </ul>



Reliable and interactive solutions for smart MV/LV distribution substations

SOLUTIONS	FUNCTIONS	BENEFITS
<p><b>TIPI</b> Low voltage feeder pillars (HN 63-S-61)</p> 	<ul style="list-style-type: none"> <li>• Protection of low voltage grids, with quadripole load break switch at the level of pillar incomers.</li> <li>• Distribution via quadripole disconnectable feeders for HN fuses and neutral link.</li> <li>• Metering and monitoring of the grid or substation, depending on requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Solutions covered by manufacturer warranty that are ERDF-qualified/approved, as well as being tried/tested and durable.</li> <li>• Increased safety for operative personnel thanks to IP2X protection for the pillar.</li> <li>• Power supply continuity optimised by the use of fuse feeders.</li> <li>• Reduced downtime and maintenance in substations (quick-connect cable terminals for back-up/emergency power source).</li> <li>• Scalable system with possibility to add measuring and supervision functions.</li> </ul>
<p>Special low voltage distribution switchboards with DIN strip, depending on customer specification</p> 	<ul style="list-style-type: none"> <li>• Protection of low voltage grid, with three-pole load break switch at the level of panel incomers.</li> <li>• Distribution via three-pole disconnectable strips for fuses.</li> <li>• Measurement and supervision of the grid or substation, depending on requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Covered by manufacturer warranty, certified to IEC 61439 and in conformity with customer specifications.</li> <li>• Adapted or customised solutions, depending on customer requirements and constraints.</li> <li>• Engineering support by our experts (design, specifications, tests).</li> </ul>
<p>HN fuses Blade-contact fuse links (HN 63-S-20)</p> 	<ul style="list-style-type: none"> <li>• Blade-contact fuse links assuring the protection of LV installations and distribution cables.</li> </ul>	<ul style="list-style-type: none"> <li>• Enhanced strength and durability.</li> <li>• Guaranteed protection of operative personnel (IP2X with insulated gripping-lugs).</li> <li>• Solutions covered by warranty in terms of qualification, approval and traceability.</li> <li>• Limited consumption warranty.</li> </ul>
<p><b>SIRCO/SIDER</b> Load break switches</p> 	<ul style="list-style-type: none"> <li>• Protection for LV distribution panel incomers.</li> <li>• IEC 60947-3.</li> <li>• Wide range of LBS with visual and visible breaking, plus wide range of accessories.</li> </ul>	<ul style="list-style-type: none"> <li>• Solutions covered by manufacturer warranty that are qualified, approved and tried/tested.</li> <li>• Appropriate protection with assured on-load breaking.</li> <li>• Product can be adapted to required configuration.</li> </ul>
<p><b>DIRIS Digiware</b> Multi-circuit plug &amp; play monitoring system</p> 	<ul style="list-style-type: none"> <li>• Metering, monitoring and energy quality analysis of all LV energy flows in substations or networks, for existing or new installations.</li> <li>• Multi-circuit real-time monitoring via a single current measurement module with individual current inputs.</li> <li>• Configurable alarms.</li> <li>• Wide choice of communication protocols.</li> </ul>	<ul style="list-style-type: none"> <li>• Cost effective and flexible solution, saving time and space.</li> <li>• Implementation is a quarter of the time vs existing technologies.</li> <li>• Up to 30% cheaper compared to existing metering technology.</li> <li>• Plug &amp; Play system making connection and configuration easy.</li> <li>• High accuracy performance for the global measurement chain (class 0,5 from 2% to 120% of I<sub>n</sub>).</li> <li>• Improved safety, with disconnection of the current sensor secondary under load.</li> <li>• Embedded web server.</li> </ul>
<p>High accuracy 0.2 s current transformers</p> 	<ul style="list-style-type: none"> <li>• High accuracy current measuring and energy metering for MV/LV distribution or delivery substations.</li> </ul>	<ul style="list-style-type: none"> <li>• Guaranteed optimum metering even with low loads (0.2 s from 1 to 120 % I<sub>n</sub>).</li> <li>• Flexible configurations and cost reductions with multirange closed or split-core CTs.</li> </ul>

# A cutting-edge test laboratory, the guarantee of an expert

Since 1965, the Pierre Siat power testing laboratory has applied its expertise to confirming the reliability and conformity of products and solutions manufactured by the SOCOMEC Group. Its services are also available to our customers.

## A crucial link

Situated at company headquarters in Benfeld (Alsace, France), the Pierre Siat testing lab is a central pillar in SOCOMEC's commitment to ensuring quality: its contribution to the various steps involved in the development, qualification and certification of a product or solution is absolutely decisive.

## A global scope

The lab is totally independent and is recognised by the major worldwide certification bodies. It is a member of ASEFA and LOVAG and has accreditation from COFRAC, UL (CTDP), CSA (shared certification) and KEMA (SMT/WMT). In addition, it works in partnership with many other international certification authorities. The quality and safety requirements specific to each country are therefore completely covered.

## Expert, high-performance resources

With its 100 MVA short-circuit test station (lcc 100 kA rms for 1 second), three 10 kA overload test platforms and many other types of testing equipment in premises covering 1,500 m<sup>2</sup>, the Pierre Siat laboratory is today the second largest power testing centre in France. Areas of expertise cover electrical, electronic, mechanical, pneumatic and IT aspects.

## An extensive range of tests

The laboratory submits all SOCOMEC products and solutions (including those in enclosures) to multiple tests in the following fields:

- Functional: verification of component withstand capacity and operation.
- Dielectric: immunity to overvoltage, overcurrent.
- Mechanical: durability (endurance) and withstand to mechanical shock, etc.
- Environmental: functional or electrical tests under extreme conditions (temperatures, salt spray, etc.), vibrations.
- AC/DC endurance tests: under operating and controlled temperature conditions (arcs, LV/HV cut-off, etc.).
- Temperature rise.
- Electromagnetic compatibility (EMC).
- Metrology.
- Safety: inflammability, etc.

These tests are carried out during the design and production phases and therefore guarantee the long term reliability of marketed equipment.

## Customised testing services

Our testing resources and expertise are also available to partners seeking specialist support in the qualification and certification of their products and equipment.



CORPC 350 A

100 MVA instantaneous power alternator  
Test characteristics: 100 kA/440 V, 80 kA/525 V,  
50 kA/725 V 100 kA for 1 second, 50 kA for 3 seconds

1,250 kVA LV/HV transformer with:

- Available voltage ranges from 250 to 1100 V.
- Available current ranges: 2500 A/440 V,  
2000 A/550 V, 1500 A/725 V.



CORPC 355 A





APPLI 600 A

## Customer testimonial: Électricité de Strasbourg chose SOCOMEC



After 30 years of cooperation with SOCOMEC, I have seen many generations of products that have always given us entire satisfaction. Their solutions are adapted and robust and users consider them to be very ergonomic. To take one example, the mimic panel on their TIPI feeder pillar is very clear and easy to understand. Most importantly, with the advent of smart grids, SOCOMEC is proving to be a forerunner by offering measurement solutions in MV/LV substations. By monitoring changes in the transformer load, the measuring device helps to optimise the generating capacity and to reduce losses. It also helps the scheduling of power capacities of a genset when this is necessary, which is an essential feature. All these factors taken together explain why SOCOMEC has been one of the EDF's long-term suppliers since the 1960s.

**MICHEL WOELFFEL**  
Materials expert – Électricité de Strasbourg  
Specification manager for MV & LV distribution grids



**SOCOMEK, an original equipment manufacturer (OEM) of solutions conforming to IEC 61439**

### The new IEC 61439 in brief:

- Mandatory from November 2014.
- New approach for design and performance verifications.
- New tests, checks and documentary traceability, very useful for the operation and maintenance of the assembly.
- Definition of roles and responsibilities, especially those of the OEM and the assembly manufacturer.
- IEC 61439-5 section: covers the public distribution assemblies, stipulates verifications only by tests.



### SOCOMEK, an IEC 61439 specialist:

- A double responsibility: an OEM and a manufacturer of assemblies for its equipment and systems.
- Our equipment is tested and qualified according to this standard in the certified Pierre Siat laboratory.

**With SOCOMEC, you are offered the best guarantee of performance for your system.**

# Why choose SOCOMEC ?



**SOCOMEC has been the long-term supplier of substation switch panels for the EDF Group<sup>(1)</sup> for almost 50 years:**

- 300,000 SOCOMEC fuses are used by EDF every year.
- Over 150,000 substations are already fitted with SOCOMEC equipment.

1. EDF Group: national energy utility in France



## **An industrial group**

- Founded in 1922.
- More than 3000 employees on five continents.
- Our core business: the availability, control and safety of low voltage electrical networks, with increased focus on our customers' power performance.



## **The spirit of innovation**

- Nearly 10 % of turnover is ring-fenced for R&D.
- A clear objective: to always be one technological step ahead.
- Our latest cutting-edge innovation: an energy storage solution.



## **A culture of independence**

- Family shareholders
- Control of the decision-making process.
- Respect for human values.



## **The vision of a specialist**

- SOCOMEC is an OEM (and not only a manufacturer of assemblies) as defined by standard IEC 61 439.
- The Pierre Siat power testing laboratory carries out the tests stipulated in IEC 61 439.
- Control over its core technologies.



## **A flexible manufacturing structure**

- Consultancy, service support and training.
- Teams located worldwide.
- Recognised expertise and customer focus.



## **Design and production of special / bespoke solutions**

- Technical expertise: we are on hand to help you define your specific requirements.
- Engineering resources and advanced power testing laboratory: SOCOMEC has all the necessary expertise to design, produce and qualify a bespoke solution for you that fully meets the requirements of public electricity distribution.
- Guaranteed quick response to the adaptation and delivery of our solutions.



## **Leader in electrical monitoring**

With the DIRIS, SOCOMEC has invented the most advanced multifunction meter on the market. For the last twenty years, thousands of end users, contractors and system integrators have placed their trust in our DIRIS solutions for:

- energy metering and management,
- monitoring of electrical installations,
- analysis of the quality of the energy supply.



MV/LV public distribution substation with SOCOMEC *TIPI* feeder pillar

APFLU 610 A

# SOCOMECC, a select partner of the **Nice Grid European consortium**



An innovative project for tomorrow's world coordinated by ERDF at the head of a consortium bringing together: Alstom, Saft, EDF, Armines, RTE, Netseenergy, Daikin, NKE Electronics and Socomec.



## Aim of the Smart Grid pilot project:

- The massive integration of decentralised renewable energy.

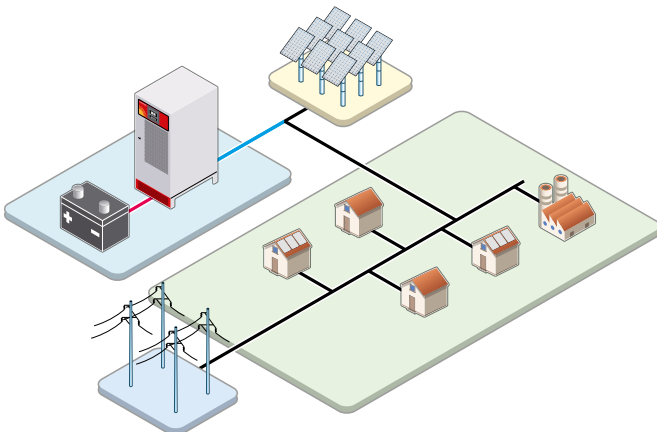


## The SOCOMEC solution to control the impact of solar power energy production on the grid

*SUNSYS PCS<sup>2</sup>* bidirectional converter and energy storage system for MV and LV networks.



SUNSYS 145 A



SUNSYS 096 A

Installed close to the PV power system, the *SUNSYS PCS<sup>2</sup>* first converts the PV energy available during the day in order to store it in cyclic batteries. This energy can then be reconverted on request and re-injected into the grid, especially during periods of peak demand. The *SUNSYS PCS<sup>2</sup>* energy converter also helps grid stability by injecting or absorbing active and reactive power in case of frequency and voltage variations.

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## YOUR DISTRIBUTOR

