
CASE NOTE

Intelligent switchgear for water purification



Intelligent switchgear for water purification

— 01 The numerous high-tech components involved in the intelligent switchgear assembly.

Cutting-edge SACE Tmax XT molded-case circuit-breakers, an emerging presence in switchgear solutions for water purification installations, guaranteeing high performance, reliability and precise cloud-based management and monitoring.

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The expansion of a cooperative purification plant in Northern Italy is a momentous project that is fundamental for the protection of water quality in the rivers and lakes of one of the most industrialized areas of the Po Valley. This purification plant will treat wastewater from 26 municipalities belonging to two different provinces, servicing the needs of a basin with over 90,000 inhabitants.

The 'brain' of the electrical system that will manage the purification plant is a switchgear assembly that handles a complex system of tanks, pumps, mixers and compressors; it will allow, among other things, a convenient and detailed monitoring of the system and its components, as well as remote management via computer, tablet or smartphone.



Compact and easy to assemble



01 Switchgear assembly on the premises of CS Elettronica Industriale.

The switchgear was commissioned to CS Elettronica Industriale, a company from Brescia belonging to the Cablesteel Group, which boasts thirty years of experience in the design and construction of electrical installations and switchgear in the industrial, civil, commercial, alternative energy and water purification sectors. Fully certified with UNI EN ISO 9001: 2015, it has been operating in the sector since 1977 and is specialized in the production of power and control switchgear, on-board machine installations, control and management logics, and transformer cabins.

CS Elettronica Industriale has found the perfect partner in ABB, an industry leader with an extensive technological offering, proven track record and the most innovative products, which creates solutions that meet the most demanding standards and highest levels of reliability. All of the components making up the intelligent switchgear are 'made in ABB', including the enclosure structure, designed for System pro E power line distribution switchboards, and prized for its compactness and ease of assembly.



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02 The compactness of SACE Tmax XT molded-case circuit-breaker and the new Ekip Touch modules allows easy assembly.

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03 The new Sace Tmax XT molded-case circuit-breaker.

Particularly noteworthy is the presence of the brand new SACE Tmax XT molded-case circuit-breakers in sizes XT2 to XT7, the first installed in Italy, and SACE Emax 2 air circuit-breakers equipped with Ekip Touch protection trip units with embedded measuring functions, allowing remote monitoring of the main electrical volumes for efficient system management.

The latest generation of SACE Tmax XT molded-case circuit-breakers are the result of a complete revamp of the product line, guaranteeing improved performance and ease of installation. No details were left out in this comprehensive redesign of the entire production chain – from materials through to assembly processes – resulting in enhanced quality in all sizes from XT1 to XT7 and further improvements in safety. Moreover, with the new

Ekip series electronic trip units, operators can take full advantage of digital communication with the cloud, guaranteed by the ABB Ability™ Electrical Distribution Control System (EDCS) platform.

The embedded metering functions of the new Ekip Touch electronic trip units allow you to measure power and energy with Class 1 accuracy, thus avoiding the use of additional devices and at the same time reducing costs, space and installation time.

The Ekip Touch trip units guarantee Class 0.5 accuracy for voltage and current measurements and Class 1 accuracy for power and energy measurements, both in compliance with and certified to the IEC 61557-12 Standard.

Remote monitoring and supervision

Another advantage offered by the SACE Tmax XT product line is the perfect integration into any automation and energy management system in order to improve productivity, guarantee efficient consumption and allow remote maintenance.

In fact, Sace Tmax XT circuit-breakers can be equipped with communication modules capable of communicating via the Modbus, Profibus and DeviceNet™ protocols, as well as with the latest Modbus TCP, Profinet and EtherNet/IP™ protocols. For CS Elettronica, taking advantage of the EtherNet/IP™ protocol was a massive plus, as it allows a rapid configuration of the entire system without the need to add external converters, thus increasing the overall reliability of the solution.

Furthermore, the board is equipped with the CMS700 modular system, which enables precise and thorough monitoring of the energy consumption for each individual user. These units are flanked by the M4M network analyzers which offer advanced analysis functionalities and allow real-time measurement and analysis of electrical volume parameters.

The Ekip series electronic trip units, the CMS700 monitoring system and the M4M network analyzers are the distinctive advantages of the ABB offer, and are essential for achieving precise and in-depth monitoring and remote control of the electrical installation. Such features are in growing demand, and are consistent with the digitization process that is revolutionizing electrical plant engineering.

Of course, the advanced technology and high quality of the products were not the only reasons that led CS Elettrotecnica Industriale to partner with ABB. A key component of the partnership was the excellent relationship established by the agency Tecnoelle Srl that worked on this project in close collaboration with ABB personnel.





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01 The new CMS-700 control unit for monitoring energy consumption.

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02 The ABB Ability™ EDCS platform offers installation monitoring and control, even remotely via smartphone, tablet or PC.

State-of-the-art components



System pro E power

An innovative solution for main distribution boards up to 6300A with short-circuit current up to 120kA, meeting even the most demanding system requirements, whatever the type of installation, the level of protection required or the electrical and mechanical characteristics. The System pro E power switchboard range offers a complete solution for the distribution of electricity across infrastructures and industries, in accordance with applicable regulations. Typical fields of application include airports, subways, hospitals, industrial, educational and residential complexes, ports, tunnels, railways, and theaters. The System pro E power solution also guarantees full synergy with all ABB devices (such as miniature circuit-breakers, Tmax T and XT series molded-case circuit-breakers, SACE Emax 2 series air circuit-breakers), together with maximum ease of assembly and wiring.



SACE Tmax XT molded-case circuit-breakers

The new series of SACE Tmax XT molded-case circuit-breakers has been designed to optimize data and connectivity, and to enhance ease of use and installation, performance and protection, and safety and reliability. The new product line offers better performance, greater protection and more precise measurements than equivalent units. The circuit-breakers are available in seven sizes, ranging from 160 to 1600A. SACE Tmax XT set the standards for modern installation management. Remote information on access, monitoring and control anywhere and at any time. Easy selection of accessories and intuitive design pave the way for ultra-fast updates, even with the most demanding installations. Furthermore, as operational requirements evolve, customers can download new functions from the ABB Ability Marketplace™, choosing among more than fifty different protection, metering and automation functions.



SACE Emax 2 and Ekip Power Controller

SACE Emax 2 air circuit-breakers up to 6300 A are designed for increased ease of use, safety and efficiency. They are the only switches able to protect electrical circuits while reducing energy consumption in line with the user's needs. These circuit-breakers are equipped with a protective trip unit and an integrated Ekip Power Controller that evaluates energy consumption through built-in multimeters measuring voltage, power and current; this load management results in reduced consumption of up to 20%. SACE Emax 2 air circuit-breakers combine high performance and compact dimensions, and can be completely integrated into the smart grids of buildings and industrial plants, thus allowing up to 30% time savings at the wiring stage.



ABB Ability™ Electrical Distribution Control System

ABB Ability™ Electrical Distribution Control System (EDCS) is a cloud platform that records, optimizes and analyzes the flow of energy within the energy supply system. Thanks to the cloud architecture developed together with Microsoft®, the system is accessible anywhere and at any time, thus ensuring the highest level of reliability and security. Through a web app interface, ABB Ability™ EDCS supports users around the clock in their monitoring, optimization and control activities via smartphone, tablet or PC. ABB Ability™ EDCS also offers multi-user access and the ability to compare performance simultaneously across multiple systems. In addition, the option to create profiles offers users a personalized experience based on the individual access levels required.



CMS-700 Circuit Monitoring System

The new CMS-700 Circuit Monitoring System control unit is an alternating current (AC) and direct current (DC) multichannel measurement system comprised of a control unit and an array of sensors, which enables easy monitoring of the individual lines of an installation. CMS-700 allows detailed monitoring of energy consumption by managing up to 96 sensors. This easy-to-install, versatile and efficient solution can be inserted into already wired panels. Through the integrated web server, the CMS-700 control unit permits easy access to data collection, analysis and download in order to optimize energy efficiency and energy management within the installation. All CMS-700 central units may be queried remotely through a variety of communication protocols.



M4M network analyzer

The M4M network analyzer range provides accurate real-time monitoring of the power quality key performance indicators to enhance reactivity to the events on the electrical system, helping to avoid any operational impact and uncoordinated maintenance. Available in two families, M4M 20 and M4M 30, ensure Class 0,5 accuracy according to IEC 61557-12 and IEC 62053-22 Standards, representing the perfect choice for submetering inside sub-distribution boards and power quality monitoring in main distribution boards and power centers.

Quality and skill for the Customer



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As CS Elettrotecnica Industriale underlines: “finding a technically and commercially competent partner with whom we can discuss the new functions, characteristics and unique features of the product, while simultaneously evaluating the economic advantages for the customer and the most convenient choices, has made it possible to consolidate a relationship founded on mutual trust. ABB convinced us because it was able to provide the functionalities requested by our customer together with a comprehensive service of assistance and technical support, thus ensuring an economic advantage over other competing offers.” A clear example of how the ‘human factor’, the

professionalism and the ability to listen to the customer, combined with product quality and a cutting-edge offer, are always a guarantee of success.

General information

Sector:

Water purification

Company:

CS Elettrotecnica Industriale Srl
CableSteel Srl Group (www.cablesteel.it)

Services:

Design and construction of electrical systems and switchgear for the industrial, civil, commercial, alternative energy and water purification sectors.

Design and assembly:

CS Elettrotecnica Industriale Srl
Via Cristoforo Colombo, 9/11 - 25080 – Nuvolera (BS)
Tel. 030 6897589
www.elettrotecnicaindustriale.com

ABB products involved in the installation:

ABB Ability™ Electrical Distribution Control System
SACE Tmax XT molded-case circuit-breakers
SACE Emax 2 air circuit-breakers
CMS-700 Circuit Monitoring System
M4M network analyzers
System pro E power distribution boards

ABB Agency:

Tecnoelle Srl

ABB Technical Promoter:

Mr. Danilo Ravasio

01 CS Elettrotecnica Industriale and ABB, where quality meets reliability.

02 detail of the ABB intelligent switchgear interior.

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ABB SACE
A division of ABB S.p.A.

ABB SACE Customer Service

To receive information on
Low Voltage products:
Toll-free number 800-55-1166 accessible
every day from Monday to Saturday
from 9:00 a.m. to 7:00 p.m.

For information on sales orders and
deliveries of Low Voltage products:

Customer Support 02 2415 2415
accessible every day
from 8:00 a.m. to 6:00 p.m.
Saturday and Sunday
from 9:00 a.m. to 5:00 p.m.

