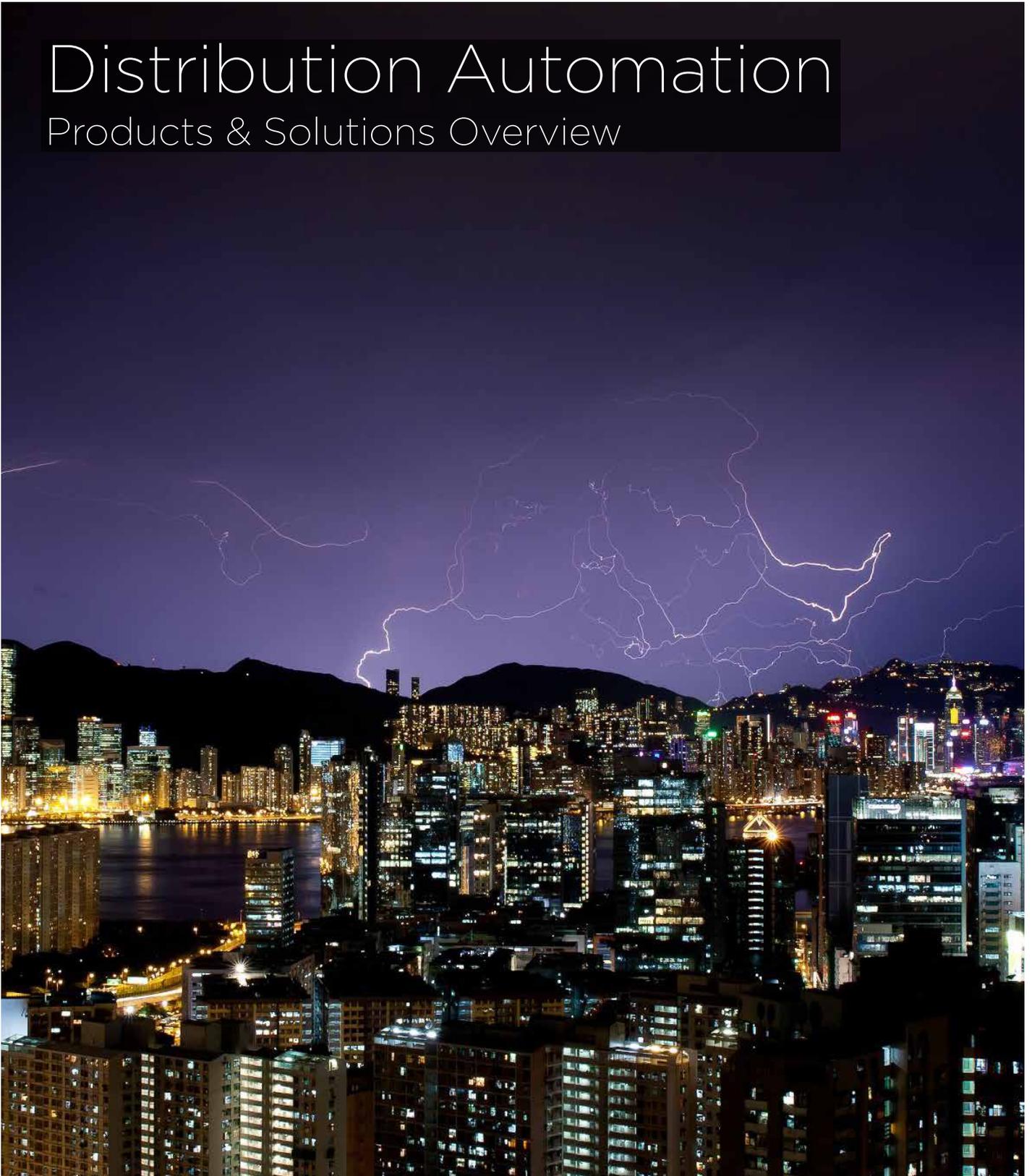


arteche

Distribution Automation

Products & Solutions Overview



This document may be subject to changes. Contact ARTECHE to confirm the characteristics and availability of the products described here.

Moving together

A decorative graphic consisting of numerous thin, white, wavy lines that flow across the bottom half of the page. The lines are arranged in a series of overlapping, curved bands, creating a sense of movement and depth against the solid blue background.

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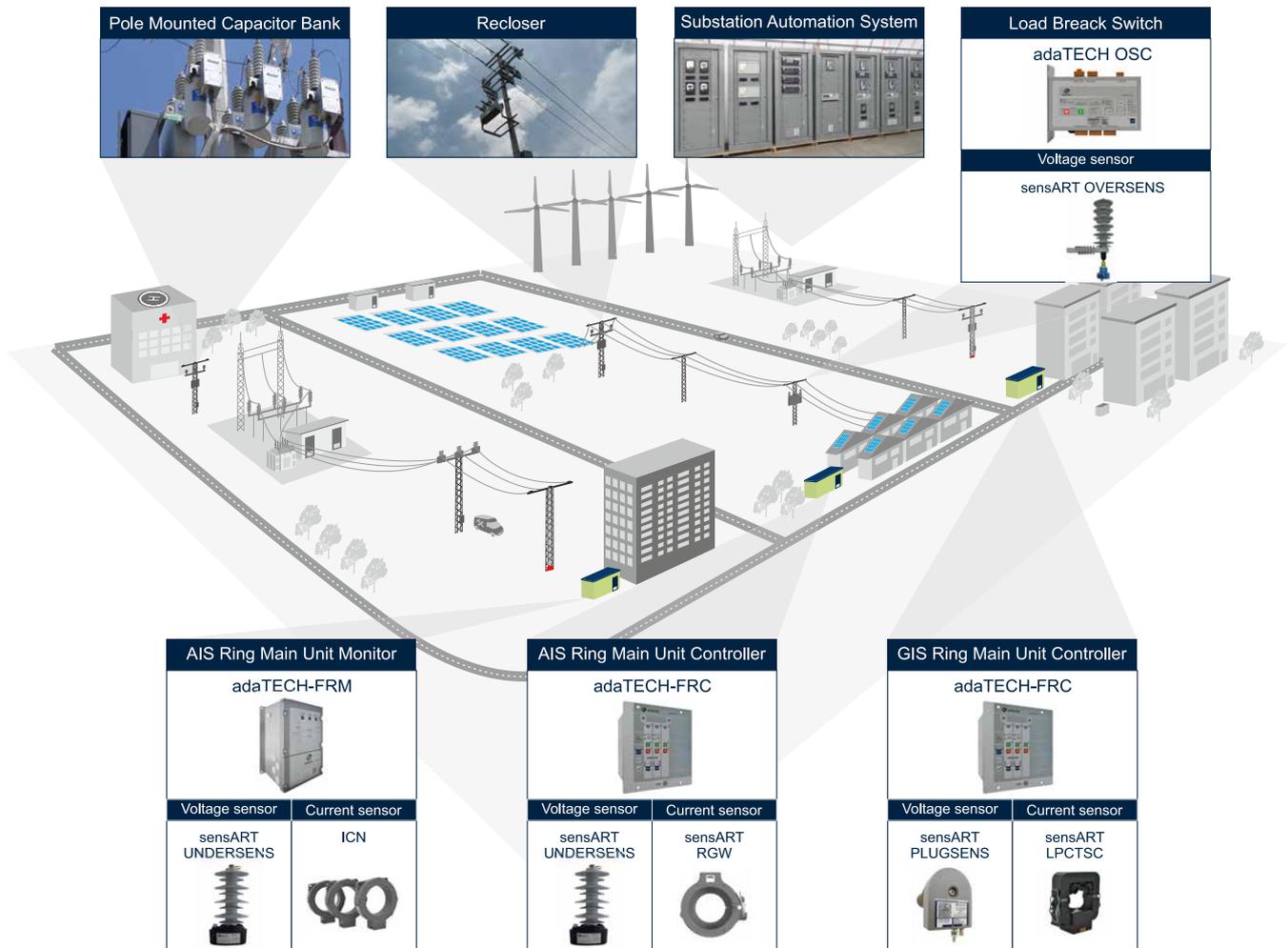
- › Secondary distribution substation / Ring Main Unit Monitoring - adaTECH FRM
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1. Smart Grid portfolio overview

The operational management of electricity distribution network is complex due to its diverse sizes, weather conditions and topologies. The appropriate monitoring, automation and remote control are fundamental to improve planning, thus losses can be reduced and maintenance optimized, allowing a quick response to any incident and, therefore, improving the efficiency and quality of the final service.

Arteche offers comprehensive solutions for varied topologies, both in urban and rural grids, to improve system operation. Its deep experience in electrical distribution allows Arteche to develop reliable equipment, both for underground and overhead lines.



2. Distribution Operation

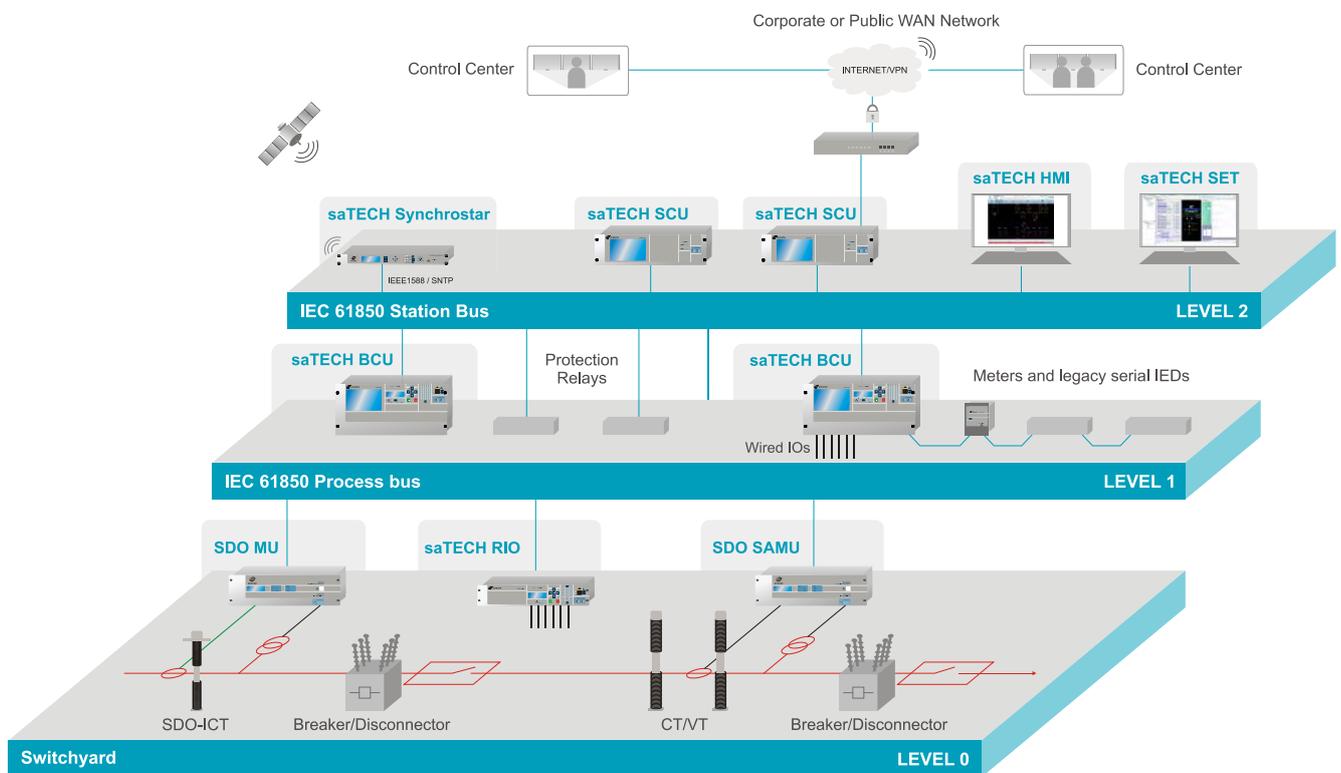
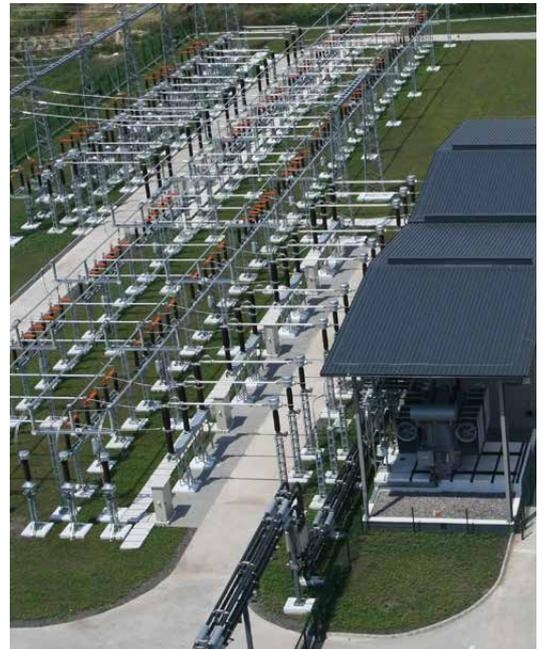
Distribution Substations

Arteche is an acknowledged prestige company providing substation automation solutions with over 25 years of experience. As a benchmark, Arteche manufactures comprehensive solutions adapted to each project requirements.

The saTECH family comprises a wide range of intelligent electronic devices (IEDs), modular both at hardware and software level, thus covering any existing substation configuration.

Key Features:

- › IED modularity and scalability (HW and SW).
- › Comprehensive system design for substation monitoring, control and automation under IEC 61850, DNP, IEC 60870-5-101, 104, etc.
- › Open, flexible, modular and scalable system, ideal for new and retrofit projects.
- › Data mining and collection for a better planning.
- › Data Encryption, User Access Control levels and Firewalls for a better Cyber Security.



Substation downstream

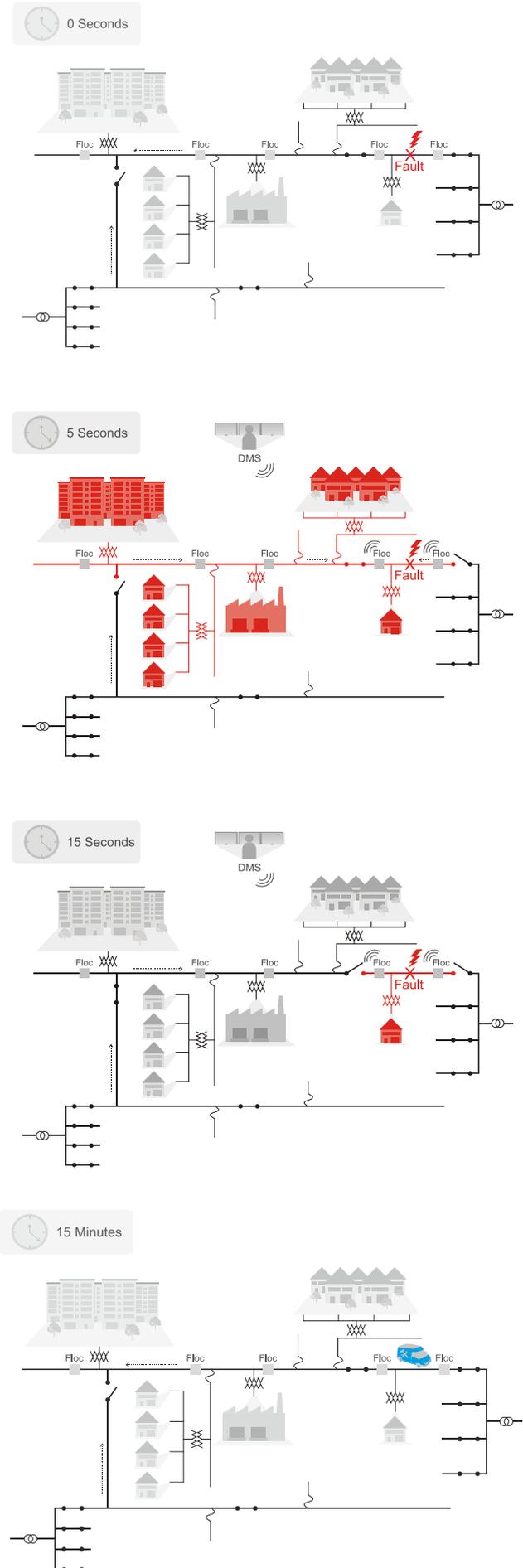
Each utility establishes its own network operation strategy that better responds to its needs and requirements, and, therefore, applies the adequate supporting technology and components. Arteche's Smart Grid products enables measuring, analyzing and communicating capabilities that can be processed either:

1. In a centralized manner: Collecting information from multiple points to a centralized control center or substation and, then, sending reconfiguration commands to the field devices elements with remote control, either automatically or supervised by an operator.
2. In a decentralized basis: intercommunicating field devices horizontally and establishing the reconfiguration strategy in a autonomous way, thus structuring the network into "segments" with reconfiguration capabilities.

The information provided by field devices improves network operation and outage management. Real time data can be recorded and stored to enhance the knowledge of the network's behavior and performance based on multiple factors, like load, power quality, seasonality, environmental and social conditions, thus improving planning.

In urban areas, electricity distribution is mainly done by ring underground networks with switching nodes, called Ring Main Units, that allow multi-way power supply and enables grid reconfiguration and outage management.

Arteche offers a complete solution adapted to different strategies, both for urban and rural networks. Its deep experience in power distribution allows it to develop equipment with advanced, reliable and easy instalation for underground and overhead lines.



3. Urban Networks Node Controllers

Secondary distribution substation / Ring Main Unit Monitoring - adaTECH FRM

The adaTECH FRM is a real time monitoring device that includes features like directional fault detection and local / remote alarms, which allows a quick response to any incident, improving thus the efficiency of the system. Measurement of active and reactive power and disturbances, and sequential events recording allow to improve the planning strategies. All the information is integrated on one single and compact device.



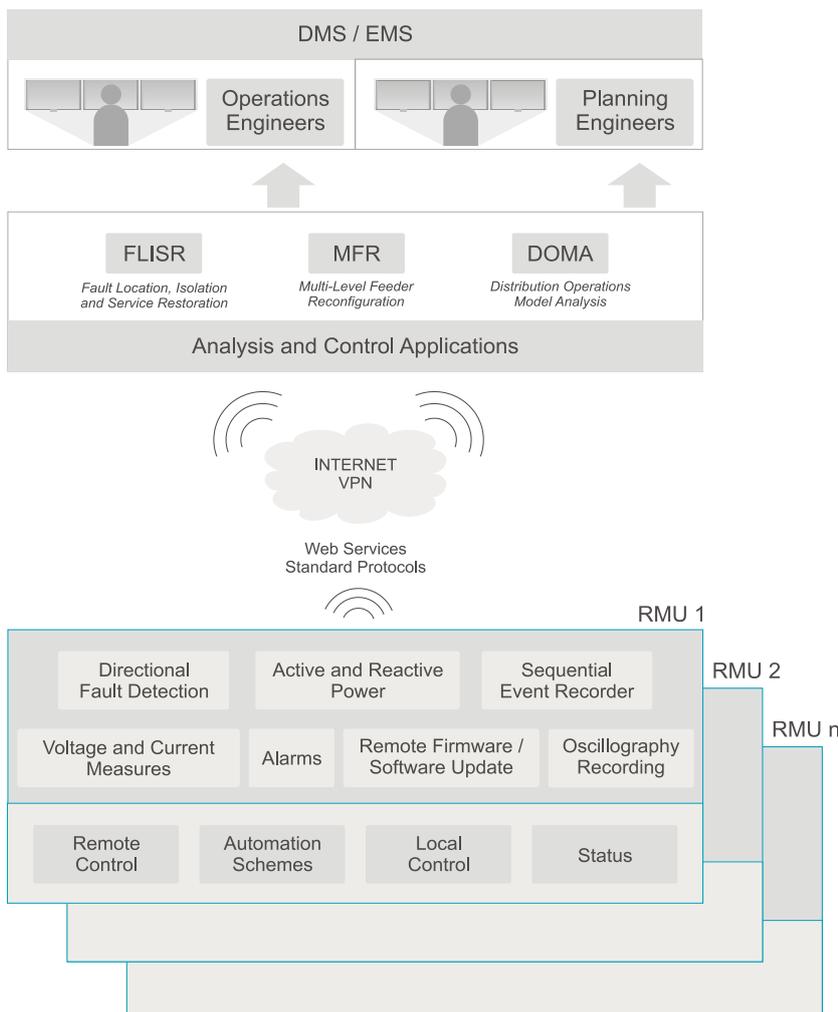
adaTECH FRM.

Ring Main Unit Control - adaTECH FRC

The adaTECH FRC is a monitoring and control IED that allows a comprehensive installation management. This device has all the adaTECH FRM's functionalities and incorporates remote control over switching equipment, including logic control schemes and interlockings.



adaTECH FRC.



Devices optimized for a fast and secure commissioning, example of colour codes for error-free wiring.

4. Overhead Networks Node Controllers

In rural areas, the distribution network is based on overhead lines due to their simplicity and scalability potential. However, due to their nature, these lines are exposed to environmental conditions and are often subject to unexpected faults. To make up for this exposure, rural networks are equipped with switching equipment such as reclosers and load break switches. This equipment allows a granular grid management, protects the power grid against transient faults and ensures minimal service disruption, improving the quality of the service.

Arteche has developed a full range of products (sensors and IEDs) specialized in managing this sort of equipment that allows to implement multiple Distribution Automation strategies with the ultimate target of improving the quality of the service, decreasing maintenance time, and facilitating the service restoration with a minimal disruption, causing clients the least inconvenience.

Key factors:

- › Fault location.
- › Outage management.
- › Remote monitoring and alarm.
- › Remote Automation.
- › Distributed Feeder Reconfiguration and Service Restoration.
- › Distribution Operation Analysis.
- › Open Communication support.
- › FLISR Services Support.
- › Volt/VAR/WATT Control.

The adaTECH OSC (Overhead Switch Controller) is a compact device specially designed to monitor a telecontrol Load Break Switches (LBS) safely, quickly and efficiently.

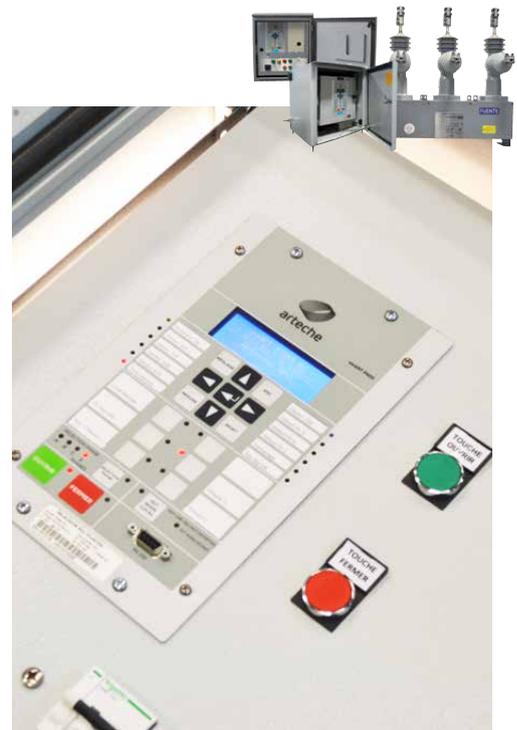
The adaTECH OSC provides advanced monitoring capabilities, fault passage indication, primary equipment status monitoring, sequential event recording, active and reactive measurement and other advanced features to enable a comprehensive system management.



› Pole Mounted Capacitor Bank



› Pole Mounted Recloser



› Detail of recloser control panel



› adaTECH OCS

5. MV Sensors: sensART

Reliability, accuracy, compact design and normalized references are the key to implement the most demanding automation and control applications, such as fault location and isolation, load balancing, system reconfiguration and remote data acquisition to improve analyzing and planning.

Arteche's MV sensors represent a step forward in the current and voltage measurement in MV electrical systems, being compact, accurate reliable and easy to install, without requiring field calibration. Their constructive characteristics fit both new and existing installations requirements.

Voltage Sensors

Resistive voltage sensors offer the following advantages:

- › **Reduced dimensions and weight.**
- › **Standardization:** large dynamic range with a single reference.
- › **Direct compatibility with the electronic equipment:** Through low energy analog input (LEA).
- › **Safety and reliability:** no ferro resonance phenomena, avoiding the risk related with dangerous surges.

sensART PLUGSENS: resistive voltage sensors for plug bushing and GIS switchgears.

sensART PLUGCOM: resistive voltage sensors and PLC/BPL coupler for plug bushings and GIS switchgears.

sensART UNDERSENS: resistive voltage sensor for indoor air insulated installations.

sensART OVERSENS: resistive voltage sensor for overhead lines and outdoor air insulated installation.



- › sensART PLUGSENS and PLUGCOM in a SF6 cubicle.



› sensART PlugCom



› sensART PlugSens



› sensART UnderSens



› sensART OverSens

Sensors for overhead lines

Low power current sensors offer a reliable alternative for protection, measurement and monitoring medium voltage grids. Its high performance and compact size allow an optimized MV switchgear design, improving thus the protection, measurement and monitoring functionalities. Their main features are:

- › **Standardization:** large dynamic range with a single reference.
- › **Linearity behavior:** keeps a high sensitivity over a wide range.
- › **Direct compatibility with electronic equipment:** Through Low Energy Analog Inputs.
- › **Compact size and lightweight.**
- › **Easy installation and commissioning.**

Phase current toroidal sensors ICN-2: for indoor service. Manufactured under UNE, IEC, VDE and IEEE.

Phase current split core: current sensor for indoor service. Manufactured under UNE, IEC, VDE and IEEE.

Neutral current sensors split core: for indoor service. Manufactured under UNE, IEC, VDE and IEEE.

Rogowski current sensors: offer high accuracy for a wide dynamic range with a linear behavior in different environments. The sensor's accuracy and performance largely depends on its construction quality.

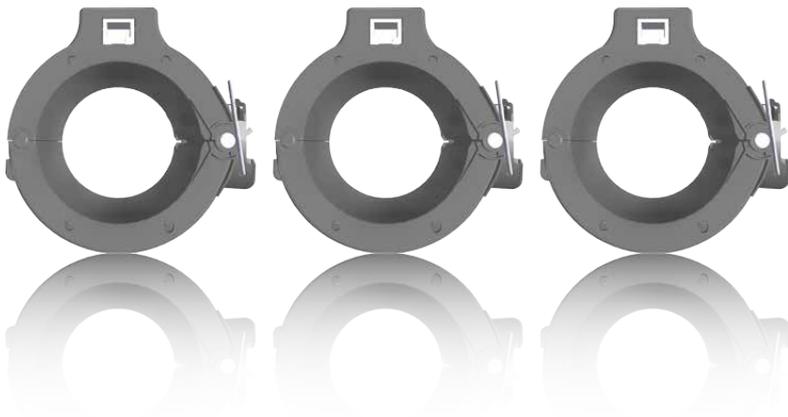
MV Sensors improves protection algorithms, selectivity and enhance IED functionalities.



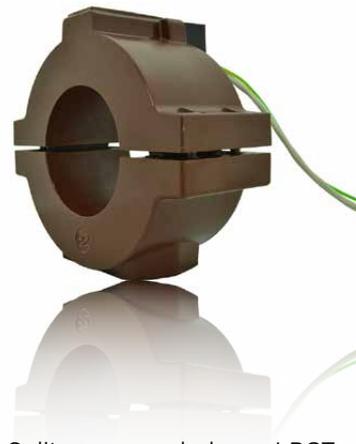
› Window-type LPCT ICN-2



› Split-core LPCT



› Rowosky current sensors



› Split-core zero balance LPCT

6. Medium Voltage PLC couplers comART

The PLC / BPL couplers allows to carry data on a conductor that is also used simultaneously for AC distribution. They enables an IP broadband network over existing power lines, an unexpensive way to deploy advanced services.

Designed to meet the most demanding requirements and to operate in different environments, Arteche's PLC / BPL couplers offer a high performance that make them appropriate for the following application:

- › **SCADA/ DMS / EMS field devices integration:** Remote management of field equipment (RMU, Reclosers, LBS, capacitor banks, voltage regulators).
- › **Distributed protection schemes:** Communications Channel to implement distributed tele-protection schemes like DCB, DCU, POTT and PUTT.
- › **General purpose and commercial communication services:** PLC/BPL is an robust IP-based technology with low latency and high bandwidth, supporting demanding applications and services, like video-surveillance.



› comART PlugCap



› comART UnderCap



› comART OverCap



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ARTECHE_CT_Distribution-Automation_EN
Version: 1.3