

Protection Data Collection and Analysis System (PDCAS)

Background

Customer:

Independent Power Transmission Operator (IPTO)

Website:

www.admie.gr

Region:

Greece

Industry:

Power Transmission

Sales Partner:

Protasis

Solutions

- SYNC 3000
- SYNC 2000
- PSES

Remote collection and analysis of data in digital IEDs located in interconnection 400kV tie-lines of the Greek transmission system. Data is collected, stored and analyzed in remote terminal stations installed at the IPTO National Control Centre in Athens.



Business Need

IPTO owns, operates, and maintains the electricity transmission system of Greece. The company was founded in 2000 and is a subsidiary of ADMIE Holdings S.A. IPTO being the Greek transmission system owner and operator has the obligation to monitor the performance and the reliability of the protection system.

The Greek transmission system is interconnected with the European grid by means of tie-lines, which connect certain boundary substations (Extra High Voltage Substations), with corresponding substations of the neighboring systems. The importance of the safe operation of these interconnections is high for the stability of the domestic system, the European system and for the operation of the electricity market. Therefore, events occurring at these lines and events generally at the substations where these lines are placed, must be accurate, fast, thoroughly analyzed and assessed, between the two involved operators.

Solution

In 2017, Protasis delivered the new Protection Data Collection and Analysis System (PDCAS) to IPTO. PDCAS collects, processes and analyses the disturbance records from the IEDs protecting the Extra High Voltage (400kV) overhead transmission lines that interconnect the Greek transmission system with those of the neighbouring countries (Italy, Albania, FYROM, Bulgaria and Turkey).

IPTO is member of ENTSO-E thus the disturbance records from the Interconnection lines are delivered to the neighboring TSOs as well as to the ENTSO-E for further evaluation in a timely manner and in standard COMTRADE - Common Format for Transient Data Exchange format (IEEE P37.111). PDCAS is based on Kalkitech Power Systems Enterprise Suite (PSES) at the control center and SYNC 3000 Substation Disturbance Record (DR) collector/data concentrator at each substation.

The system utilizes the decentralized architecture where in each substation one SYNC 3000 with several terminal servers (SYNC 2000) along with the required data network active and passive equipment (fiber optic cables, patch panels, Ethernet switches, routers) are installed.

The SYNC 3000 is equipped with drivers/adaptors which enables communication with many different types and brands of grid devices, including ABB, Siemens, Areva and SEL. The drivers based on licenses, collect disturbance data from various protocols including ABB SPA, Alstom Courier, IEC60870-5-103, IEC61850, SEL ASCII and Fast Message Protocols as well as various custom Modbus implementations. Furthermore, SYNC 3000 automatically transforms received disturbance records to COMTRADE format and name and merges files according to the IEEE-PES-PSRC report.

Results

By implementing SYNC 3000, IPTO has been able to achieve the following benefits:

- The disturbance records are automatically collected by SYNC3000 from multiple different IED types and vendors collecting standard and vendor proprietary communication protocols without human intervention.
- The new disturbance records are collected from the IEDs/ SYNC 3000 and the COMTRADE files are forwarded to the PDCAS server (equipped with PSES software) located in the National Control Center of IPTO through a secure connection.



Kalkitech Sales Partner - Protasis

Protasis SA is a Consulting & Engineering company and a Systems Integrator of Protection, Automation & Control Systems. Protasis - PSA department is structured into multiple interrelated teams, namely the engineering design, systems integration and led services teams. These teams consist of expert engineers that are committed to maintaining a high level of professionalism throughout engineering, design and project implementation activities.

IPTO PDCAS Architecture

