CASE STUDY

34.5 / 230 KV Magdalena II Substation Project (Mexico)



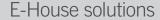




The 34.5 / 230 kV Magdalena II substation project is a perfect example of the application of a compact installation, which houses all the control, protection and measurement panels in a prefabricated container.

E-House solutions guarantee the same functionality as conventional substations, reducing both the location space and installation and assembly time. Additionally, the allocation of all the equipment in a prefabricated building shelter allows easy transport and relocation, if necessary.

The control system supplied is based on a fiber optic ring topology under the IEC 61850 standard, with control and protection equipment of the INGEPAC™ product range.





Applications

- · Integration of renewable generation substations
- · High and medium voltage substations



Unloading of the pre-fabricated hut with a crane



Overview

SE Magdalena II

Pre-fabricated hut

Pre-fabricated control building type SHELTER of 14 m x 4 m x 3 m (L x W x H) built using a combination of carbon steel structural profile, rigidly joined by micro-wire welding and steel sheet. The pre-fabricated container is equipped with interior and exterior lightning, grounding system, cooling vents, fire control system, staris, air conditioning, trays, control cabling, fiber opti and desk.

230 kV line cabinet

 $2300 \times 800 \times 800$ mm control and protection panel for 230 kV line INGEPACTM EF CD - Data acquisition module (MCAD)

INGEPAC™ EF LD - Breaker fail protection L90 and SEL411L - Line protection relays SEL735 meter Switch

230 kV transformer cabinet

 $2300 \times 800 \times 800$ mm control and protection panel for 235 kV transformer INGEPACTM EF CD - Data acquisition module (MCAD)

2 x INGEPAC™ EF TD - Transformer differential protection INGEPAC™ EF LD - Breaker fail protection

2 x INGEPAC™ EF MD - Multifunction relay Switch

Disturbance fault recording

 $2300 \times 800 \times 800$ mm panel for Digital Fault Recorder 3 x Tesla 4003 - Digital Fault Recorder

Switch

DAG (Generation Automatic Trip)

2300 x 800 x 800 mm panel for DAG INGEPACTM EF CD - Data acquisition module (MCAD) for ancillary services INGEPACTM DA PT - Protection relay GPS 3 x Switch

Engineering services

- · Control, protection and measuring cabinet engineering
- · Control system configuration under IEC 61850 standard
- · Cabinet's FAT
- \cdot Control system preoperative and functional tests
- · Third party relays' integration
- \cdot Transport, loading and unloading of pre-fabricated hut with a crane
- \cdot Control and protection commissioning
- · Start-up of the Substation Assistant
- · Training course

Highlights

- · Reduced installation, transport and assembly time
- · Shorter SAT time due to the equipment being supplied, assembled and tested at factory
- · Reduction of the civil engineering works and commissioning at site
- · Easy project management and maintenance
- · Shorter overall delivery time

