

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.

E-House solutions



Applications

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



Unloading of the pre-fabricated hut with a crane

Overview

Pre-fabricated hut

230 kV line cabinet

230 kV transformer cabinet

Disturbance fault recording

DAG (Generation Automatic Trip)

SE Magdalena II

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.

2300 x 800 x 800 mm control and protection panel for 230 kV line
INGEPAC™ EF CD - Data acquisition module (MCAD)
INGEPAC™ EF LD - Breaker fail protection
L90 and SEL411L - Line protection relays
SEL735 meter
Switch

2300 x 800 x 800 mm control and protection panel for 235 kV transformer
INGEPAC™ EF CD - Data acquisition module (MCAD)
2 x INGEPACTM EF TD - Transformer differential protection
INGEPAC™ EF LD - Breaker fail protection
2 x INGEPACTM EF MD - Multifunction relay
Switch

2300 x 800 x 800 mm panel for Digital Fault Recorder
3 x Tesla 4003 - Digital Fault Recorder
Switch

2300 x 800 x 800 mm panel for DAG
INGEPAC™ EF CD - Data acquisition module (MCAD) for ancillary services
INGEPAC™ 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
- Control system preoperative and functional tests
- Third party relays' integration
- Transport, loading and unloading of pre-fabricated hut with a crane
- 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