

MEDOW SUMMER MEETING 2014: A REPORT ON EFACEC VISIT

Mohammad Meraj Alam (ESR 7) & Ataollah Mokhberdoran (ESR 8)



All the members of MEDOW project made an industrial visit (EFACEC, largest electrical equipment manufacturing company in Portugal) on 3rd July 2014 in MEDOW summer meeting at Porto, Portugal. The manufacturing plant is located in Porto. During our visit we were given a small presentation about EFACEC and personal soft skill.

EFACEC operates in US, Brazil, Chile, India, and Europe with around 4000 employees. It has three important sector in which it does business.

1. Energy
2. Mobility
3. Engineering

Transformer manufacturing division:



It has three divisions and has four products. EFACEC manufactures shell type, core type transformers and mobile substation. Many products have been sold to countries like UK, Algeria, and Chile etc. They manufacture

1. Oil immersed transformer (50 kVA to 6300 kVA, 36 kV, OCTC)
2. Dry type (50 kVA to 10 MVA, 36 kV, OCTC)
3. Large distribution transformer (upto 20 MVA, 72.5 kV, OLTC)

Distribution has tap changers which are core type transformer. These tap changers are offline tap changers which can be changed manually. These taps are horizontal in position with a maximum of 5 taps per transformer. The coils are paper impregnated in order to soak oil and provide better insulation. There are distribution transformers manufactured by EFACEC which are bigger in size with OLTC (on-load tap changer).

Dry type transformers manufactured by EFACEC are immersed in epoxy resin. The secondary side is polymerized. The advantage is that it reduces the weight of the transformer because it does not use oil, but the disadvantage is that once the transformer coil fails to operate or any winding is damaged, then the transformer needs to be changed.

Shell type: EFACEC manufactures shell type transformers which are mostly three phase and single phase as well. The winding conductors are insulated by paper and placed one over another horizontally. After all the windings are stacked to make a full winding with the required number of turns, they are re-oriented to vertical direction and then placed into the iron core. Later on the transformers are sent to a dryer and then to testing. The transformer is dried for 33 hours in an oven to evaporate water, while big transformers are dried for 3-4 days in an oven. After successful testing, they ship the transformer to the destination country. There were transformers ready for Algeria, Angola, Spain, US, El Salvador and Chile.

Switchgear Section:



EFACEC also has a switchgear manufacturing plant. They manufacture switchgear for medium voltage and high voltage.

1. Medium Voltage switch gear
 - a. Primary distribution
 - b. Secondary distribution
2. High voltage switchgear
 - a. Transmission

EFACEC is an expert in equipment and solutions for Medium and High Voltage electrical networks. The EFACEC Switchgear business unit has more than 50 years of experience in the development, production and sales of solutions for electrical Transmission and Distribution systems.

Solutions for electric Power Applications

1. HV Switch-disconnectors (horizontal, vertical, pantograph)
2. MV auxiliary equipment

Solutions for electrical Distribution systems

1. MV/MV substations
2. MV/LV substations

Solutions for Industrial applications

1. A range of products suitable for almost every type of industrial applications, from production lines to process and heavy-industry.
2. Solutions for infrastructural systems
3. A range of products suitable for Airports, Railway, Harbour and Tunnel Construction applications
4. Products suitable for energy distribution of Hotels, offices, warehouses, hospitals and residential areas.

HV Switchgear

Horizontal type switch-disconnectors of centre break
Vertical type switch-disconnectors

MV Switchgear

Vacuum type circuit breaker
Air type CB