Feeder Automation System (FAS)

Allis Electric Co., LTD
AEC History

- 1968 Company established on Sep. 25.
- 1969 First factory completed on and started production.
- 1974 Hsinchuang factory completed and started production.
- 1984 Yangmei factory completed and started production.
- 2001 Investment in AEM Srl, Italy for the production of 3 phase uninterruptible power supply.
AEC History (cont.)

- 2002 Started official use of an Enterprise Resources Planning (ERP) system in January.

  Joint venture with Nippon Signal Co., Ltd. Japan to establish Nippon-Allis Signal Co., Ltd. in April for sales, installation and maintenance of railway signal system and related equipments

- 2003~2004 Yangmei and Hsinchuang factory accredited with OHSAS 18001 certification
Major Products

- Uninterruptible Power Supply (UPS)
- Switching Mode Rectifier (SMR)
- Battery Charger
- T&D Apparatus
- Switchgear
- Transformer
- Vacuum Equipment
- SCADA
- Engineering
Distribution Automation System Overview

LM: Load Management
AMR: Automatic meter Reading
OMS: Outage Management System
OMIS: Outage Management Information System
AM/FM: Automated Mapping and Facility Mapping
CIS: Customer information
TCS: Trouble Call System
Why FAS?

- The demand for electric load in recent years has been growing consistently in Taiwan. Besides supplying the load demand, the electricity service of distribution systems has to be reliable to meet the power quality of high-tech industry. For a fault contingency in distribution systems, the fault location has to be identified and isolated by operating the boundary line switches.

- Based on the situation, FAS plays an important role to reach the demand of the power quality. Taipower has launched the 6th Distribution Plan. It is going to make Taiwan become the most modern power system in the world.
Benefit of the FAS

- FDCC supervise and control the FAS automatically. It can provide the real-time information.
- It will shorten up the fault time and human resource. Operating the switch remotely.
- Without interrupting the power supply to user, Close-Loop FAS will isolate the fault zone automatically.
Brief History in Close-Loop FAS

- 2001 Established the First Close-Loop FAS in Taipei (22 FTU)
- 2003~2006 Established the Close-Loop FAS in HsinChu (22 FTU), Maio Li (18 FTU), Tainan (12 FTU), and Kaoshung (33 FTU)
- 2007 Established the Open-Loop FAS in Kaoshung (10 DS, 256 FTU)
Established Close-Loop FAS in Taiwan

- HsinChu: 12 feeders
- Taipei: 6 feeders
- Maio Li: 8 feeders
- Tainan: 8 feeders
- Kaoshung: 12 feeders
Feeder Distribution Control Center (FDCC)
FRTU: (Feeder Remote Terminal Unit)
FTU: Feeder Terminal Unit
Automation Switch
System View of the Close-Loop FAS
Protection in Close-Loop FAS

- **POTT: Permissive Overreaching Transfer Trip**
  Feature: Without interrupting the power system, System will isolated the problem zone automatically.

- **DCB: Directional Comparison Blocking**
  Feature: If communication failed, it will not interrupt the protection in FAS
Close-Loop FAS Configuration

- Workstation MMI (Sun Blade 150)
- Workstation ADM (Sun Blade 1500)
- Communication workstation TCS (Sun Blade 150)

(FIBER) DNP 3.0 over TCP/IP

- DDCC
- PRTU
- FRTU (SL800*2)
- Communication line DNP 3.0
- Underground 4way CB
- FIBER Cable * 12C

- FTU
- FCB
- MCB
- M.Tr
- ☆N.O.
FDIR in Open-Loop FAS

- FDIR : Fault, Detection, Isolation and Restoration
- Benefit : To increase the service reliability of distribution systems, a comprehensive distribution automation system in FAS is implemented by integrating the computer master station, the communication system and the remote controlling equipments. The master controlling station of FAS system to perform the function of FDIR can accelerate the process of service restoration for fault contingency.
Open-Loop FAS Configuration
Brief of FDIR in Open-Loop FAS
SUMMARY

- Our electrical and system engineering experts integrate products and technologies that meet various industrial standards to offer comprehensive planning, design, installation, testing, operating manual, training, and after service on FAS and power station monitoring. With our expertise, we are capable of analyzing and providing SCADA monitoring packages according to the user's specifications.