SAC solution of smart distribution automation system
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- Introduction of SAC
- Integration Solution
- Master station Solution
- Terminal Solution
- Technical Route
Introduction of SAC

- SAC locate in NanJing, affiliated to China HUADIAN Corporation. SAC concentrates in market requirements of electric and industry by providing automation services such as development, engineering, manufacture and sales.

- SAC has powerful product technology, manufacture technics and distribution channels. The sale networks spread all over the country. We construct whole product and technique services system, provide comprehensive power products and reliable automation solutions.
Core-competitiveness

- R&D
- Product management
- Increase
- Quality
- Manufacture
- Sales & Services

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Panorama of distribution automation
SAC integration solution

<table>
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<tr>
<th>Outer Sys</th>
<th>GIS</th>
<th>OMS</th>
<th>PMS</th>
<th>EMS</th>
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<tr>
<td>Control Center</td>
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<td>Platform</td>
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<td>SCADA</td>
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<td>Extension Functions</td>
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<td>DPAS</td>
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**substation**

- Data network

**communication**

- Optical Network
- PON
- ONU
- Switchboard
- 2G/3G/4G

**Term**

- DT
- FTU
- DT
- TTU
- DT

**Primary Device**

- 配电房
- 柱上开关
- 箱式变
- 变压器
- 环网柜
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Conventional master station hardware structure
Hardware structure based on cloud platform
Integration structure of cloud platform

master station System

Platform  SCADA  Extension  DPAS

Virtual Server Layer

Collect Server  DB Server  SCADA Server  WEB Server  Interface Server  Work Station

Virtual Cloud Platform

Calculating  Storage  Network  Management

Physical Server Layer

Server1  Server2  Server3  ServerN
Software structure

Outer System in Area III/IV
- GIS
- OMS
- PMS
- 95598

Outer System in Area I/II
- EMS
- Energy system

**master station system**

**Information exchange Bus**
- Data agent
- Server register
- Model manage
- Style manage
- InteractManage
- Info exchange

**Information exchange Bus**
- Forward Isolation
- Backward Isolation

**Platform**
- UNIX/Linux/Windows
- GUI
- IEC 61970/61968 CIM
- SafeArea Isolation
- Layers&areas
- Real database
- Authority

**SCADA**
- Modeling&Map
- CIM-G
- PDR
- Network topology
- IWEB Services
- multiple-section

**Extension**
- FA
- GIS-exchange
- Auto-mapping
- Model-combine
- OMS
- Operation Ticket

**DPAS**
- SE
- 3-phase LF
- VVR
- Loop Analysis
- SafetyCheck
- SC
- Load Forecast
Functional feature 1
Dynamic modeling technology based on the metadata and meta-rule
Functional feature 2
Multiple nodes, high scalability, flexible deployment
Functional feature 3
Feeder automation (FA)

- Technology features:
  - Object-oriented modularized program architecture;
  - Hierarchical processing system of C/S structure;
  - Local fault handling;
  - Self-defined fault trigger conditions;
  - Fault handling in parallel;
  - Fault tolerance of fault handling;
  - Extensional restoration;
  - Feeder safety check.
Functional feature 3
Feeder automation (FA)
Functional feature 4
Advantages of cloud platform

- **All in one**: calculation, storage, network, cloud platform, high integrated system management, space is reduce by 50%

- **Smooth expansion, simple maintance**

- **HA, redundancy & load balancing**

- **Distribution according to needs, Flexible, High efficiency**
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Terminal product structure

- **Low End**
  - One remote terminal of distribution
  - Fault indicator

- **Middle End**
  - Two remote terminal of distribution
  - DS-6700 series

- **High End**
  - Three remote terminal of distribution
  - DS-3250 series
  - RTU-500 series
### Terminal type list

<table>
<thead>
<tr>
<th>Series</th>
<th>Model</th>
<th>Type</th>
<th>Function</th>
<th>Application Scene</th>
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<tr>
<td><strong>HC series</strong></td>
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<td></td>
<td>DSL3251</td>
<td>FTU</td>
<td>three-remote, two-remote</td>
<td>10kV switch on the pole</td>
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<td>DSL3252</td>
<td>DTU</td>
<td>two-remote</td>
<td>10KV ring main unit, switchingstation</td>
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<td>DSL3253</td>
<td>Shell FTU</td>
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<td>10kV switch on the pole</td>
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<td>DTU</td>
<td>Smart dispersed FA</td>
<td>10KV ring main unit, switch on the pole</td>
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<td><strong>LP series</strong></td>
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<td>DS-6712</td>
<td>Shell FTU</td>
<td>two-remote</td>
<td>10kV switch on the pole</td>
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<td>DS-6713S</td>
<td>DTU</td>
<td>two-remote</td>
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<td>DS-6715</td>
<td>DTU</td>
<td>two-remote</td>
<td>10KV ring main unit</td>
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<td><strong>SD series</strong></td>
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<td>RTU500</td>
<td>DTU/FTU</td>
<td>Smart dispersed FA</td>
<td>10KV ring main unit, switchingstation</td>
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</table>
DSL3250 series of power distribution terminal

DSL3251 FTU Feeder Terminal Unit

DSL3252 FTU Feeder Terminal Unit

Terminal products that were developed for primary equipments like ring main units, small switching stations, substations, switches on the pole, breakers can realize the mid-end and high-end information acquisition, control, send functions of the lines, it also has advantages such as fault detection, fixed position, isolation and power restoration of non fault areas.
DS-6700 series of power distribution terminal

Terminal products that were developed for primary equipments like Ring main units, small switching stations, substations, switches on the pole, breakers can realize the mid-end information inspection functions of the lines, it has advantages such as fault detection, protection, control, interconnect and communication.
RTU500 series of power distribution terminal

Terminal products that were developed for occasions like ring main units, switching stations, substations can realize the high-end information acquisition, control, send, gateway functions of the lines, it has advantages such as fault detection, location, isolation and power restoration of Non-fault areas, which is the best choice of distributed FA.
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Technical route of master station in the power distribution
Technical route of terminal in the power distribution

- Measurement & Control protection of Distributed energy access points
- Primary & Secondary Primary switchgear facility
- Software and hardware platform of terminal
- Realization of distributed FA functional
- Modularized terminal & Distributed terminal
- Be adapted to measurement, control & protection of terminal in distribution network with AC&DC hybrid
Power and productivity for a better world™