



Electrical & Automation Solutions

For Power Generation
Transmission & Distribution

Engineering ● Automation ● Protection ● Electrification



Introduction of Our Company



Facing the future together with confidence...

YEO was established to provide innovative solutions in the industrial automation sector in the early 2000's in Istanbul. By increasing knowledge and experience of our young and dynamic team YEO ranked among the best important electrical and automation companies within Turkey. Being ABB's Value Provider and ensuring the sustainability and productivity growth, YEO has realized various projects in industrial plants within country and abroad with its good engineering background and high-tech equipment.

YEO with expertise in Electrical & Automation & Instrumentation offers turnkey solutions in many sectors, particularly in Energy, Oil & Gas, Mining & Cement, Water and Transportation.

YEO, since its establishment, has been one of the leading company by providing imperhensive technical solutions to Energy sectors. YEO continues its engineering in every segment of energy sectors with its specialized and experienced employees, by utilizing creative and innovative solutions with the application of newly developed technologies.

Yilmaz İnşaat and ISS are group company of YEO.
Short brief information as below



ISS : Integrated Systems Solutions

ISS is a branch of YEO and Azerbaijan ABB value provider, Established in Azerbaijan for the purpose of expanding YEO's services and solutions to Industrial sector in the Azerbaijan and other CIS Countries.

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YEO have great experience in energy sector, the main business lines of YEO in Energy sector, which are listed as follows:

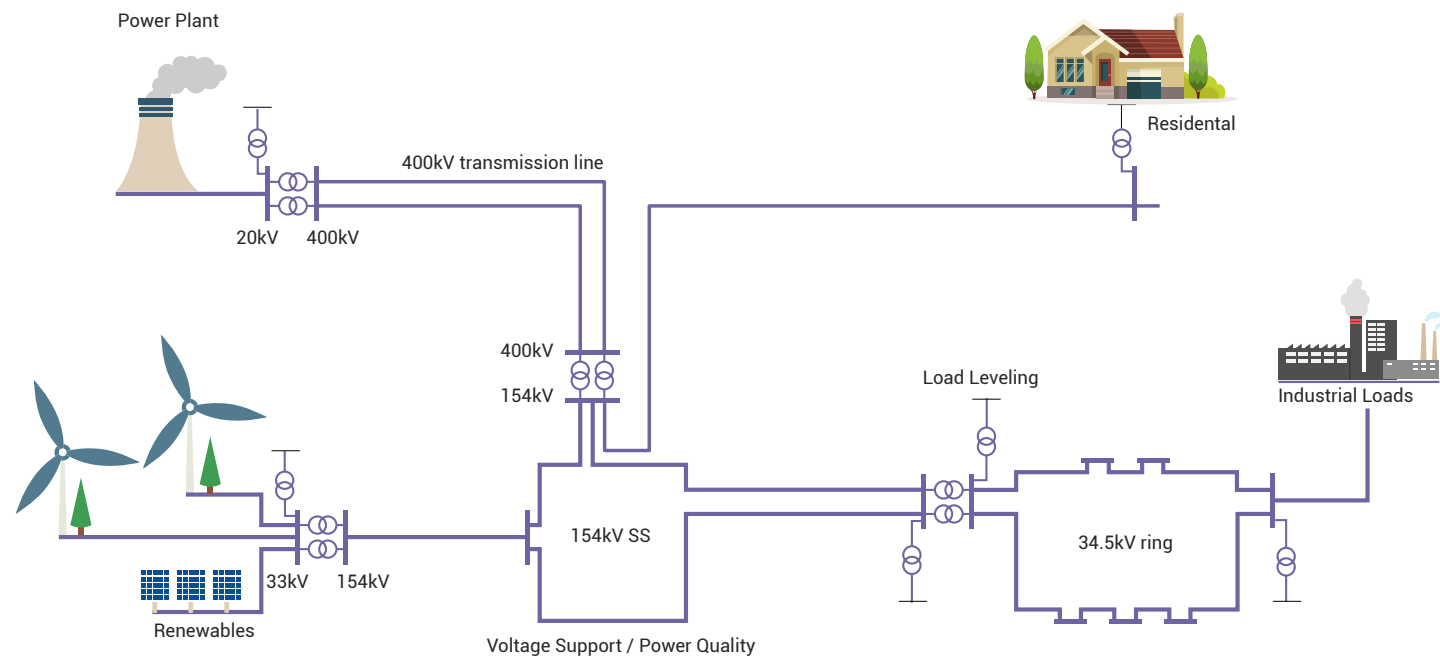
- Turnkey Substations Solutions (AIS, GIS, HGIS, Mobile Sub.)
- Energy & Process Automation Solutions
- Substations Automation System Solutions
- Energy SCADA Solutions
- Electrical Balance of Plant (e-BOP)
- Power System Applications
- Electricity Transmission Lines
- Thermal Power Plant Consultant & Engineering
- Solar Power Plant Solutions
- Wind Power Plant Solutions
- Railway Solutions
- Refinery Process Automation
- Pump and Compressor Stations Solution



YILMAZ İNŞAAT

Since the creation in 1997 as a construction company Yilmaz Insaat engaged in all kinds of concrete projects for power plants, industrial buildings, commercial and residential construction civil works.

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Typical Single Line Diagram

Engineering Services

Electrical:

- Up to 500 kV HV Substation Design
- MV / LV Switchgear Basic and Detail Design
- Reactive Power Compansation
- Sizing calculations for transformers, cables, cable tray, generator
- Shortcircuit Calculation
- Earthing System and Calculation
- Lightning Protection System
- Power and Lighting Desing
- Data, Communication, CCTV, Fire Alarm Design
- Layout Plan
- Detail Engineering

Substation Automation System (SAS):

- Energy SCADA Solutions
- IEC 61850 Applications
- Parallel Redundancy Protocol (PRP) Applications
- Hot-Swap Redundant (HSR) Applications
- Wind Power Plant Measurement (RITM) Application
- Secondary Design of Substation
- Relays Selection and Configurations
- Control&Protection Panel Design

Energy&Process Automation System Designs:

- Energy&Process Automation System Design
- Control System Topology Design
- Configuration of Hardware
- Control Panel Design
- Function Descriptions and Logic Diagrams Application
- Process Flowchart Design
- Instrument Selection and Design
- DCS Systems Design
- PLC Systems Design
- SCADA Systems Design

Power Systems Design and Applications:

- Load Flow Analysis
- Short Circuit Calculations
- Relay Coordinations and Selectivity
- Harmonic Analysis
- Power Quality Analysis

Project Management

- Technical Project Management
- Procurement Management
- Schedule Management
- Project Coordination
- Document Management
- Cost Management
- Risk Management
- Site Services Management
- Quality Management
- Safety Management

Consultancy Services

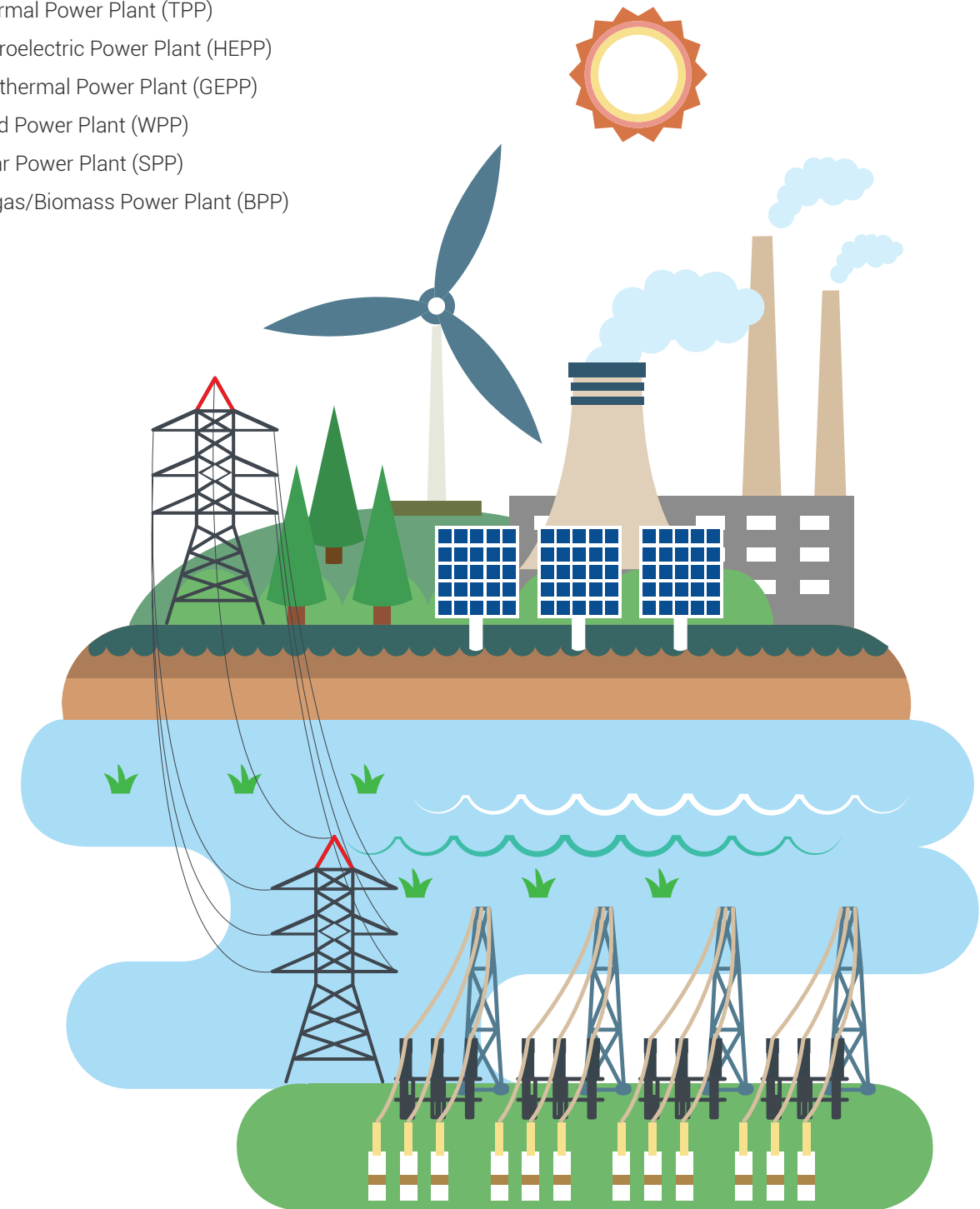
- MENR, National Grid Regulation Application
- Preparation of technical specification
- Technical evaluation of offers
- Attendance to meetings for Technical Coordination
- Preparing Project Feasibility





Power Plants Electrical and Automation Solutions

Thermal Power Plant (TPP)
Hydroelectric Power Plant (HEPP)
Geothermal Power Plant (GEPP)
Wind Power Plant (WPP)
Solar Power Plant (SPP)
Biogas/Biomass Power Plant (BPP)



Turnkey Substation Solutions (AIS-GIS-HGIS, Mobile SS)
Substation Automation Systems (SAS)
Process Automation Solutions (Advanced DCS Systems)
Electrical Balance of Plant (e-BOP) [Transmission line to Instruments]
Energy SCADA Solutions
Power Quality Applications (PFC,SFC,RPC)
Design and Engineering Services
Consulting Services



Power Plants Electrical and Automation Applications

Plant Electrical System:

- Excitation System
- Automatic Voltage Regulator (AVR)
- Synchronization Units System
- High-Speed Bus Power Transfer System
- MV Switchgear
- MDP, MCC Panel Solutions
- Electrical Works (From HV Switchgear to Instrumentation)

Plant Control System:

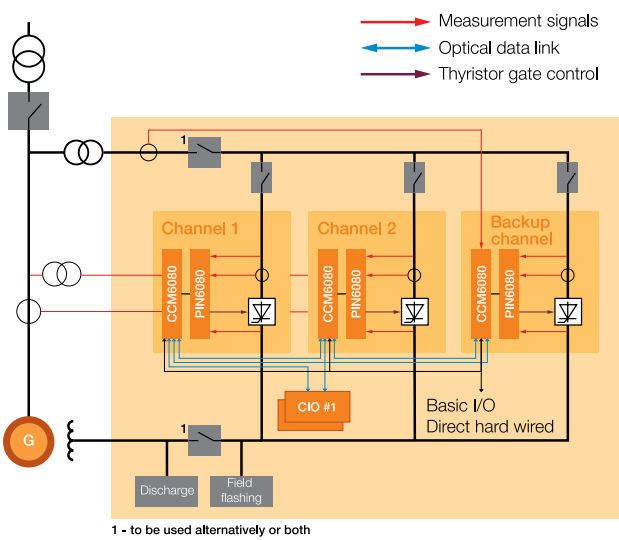
- DCS, PLC System
- RTU System
- SCADA System
- Communication (61850, Modbus, Profibus, Profinet, GSM, RF...)

Automation Systems in Power Plant:

- Turbine Control&Protection System
- BMS SIL2-3 Application
- Balance of Plant
- Synchronization
- Excitation System
- Network Connection and Power Quality

Test & Commissioning :

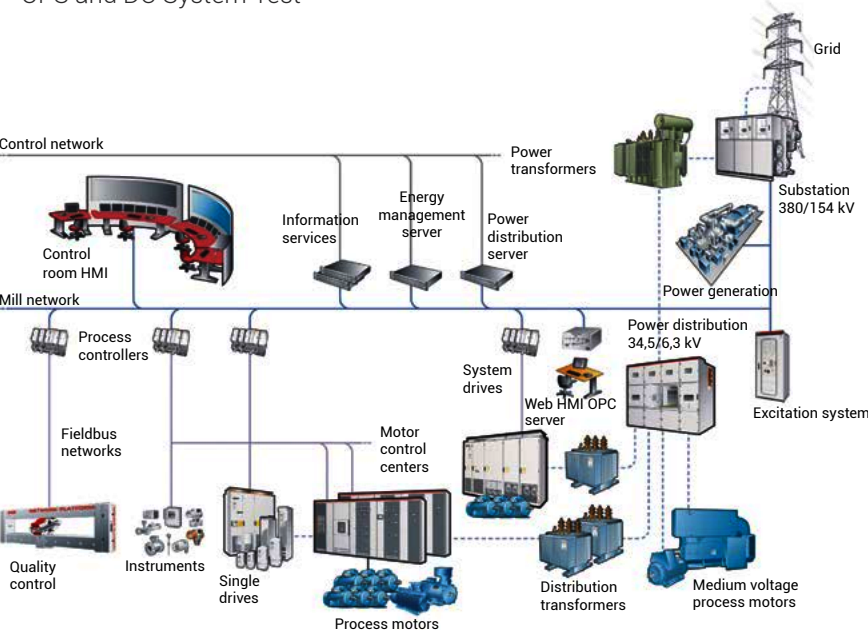
- Primer Equipments Test
- Secondary Equipments Test
- Protection Relay Tests
- Transformer Test
- Grounding Measurement
- UPS and DC System Test
- Hot & Cold Signal Test
- Function Test
- Cable Hi-pot Test
- SAS Equipment Test
- Site Acceptance Test



Excitation System;
Excitation systems have a powerful effects on generator dynamic performance and availability. It ensures quality of generator voltage and reactive power. UNITROL 6000 is the latest generation of Indirect Excitation Systems



Synchronization Units System;
Synchronizing Device are widely used in power stations where the generators need to be parallel with national grid systems.



Energy & Process Automation Solutions;
Highly reliable automation system design
Provide innovative solutions in the industrial automation sector



HV Substation Solutions

HV Substation:

- Turnkey Substation Solutions
- Gas Insulated Switchgear for Substations (GIS)
- Air Insulated Substations (AIS)
- Hybrid Gas Insulated Switchgear (HGIS)

Primary Equipments:

- Circuit Breaker
- Disconnecter
- Voltage Transformer
- Current Transformer
- Surge Arrestor
- Line Trap

Secondary Equipments:

- Relays Panel
- Local Control Panel (LCC)
- AC Distribution Panel
- DC Distribution Panel
- Telecommunication Panel
- RTU Panel
- AVR Panel
- Metering Panel

Automation and Protection:

- Energy SCADA Solutions
- IEC 61850 Applications
- Parallel Redundancy Protocol (PRP) Applications
- Hot-Swap Redundant (HSR) Applications
- Metering Panel



AIS: Air Insulated Switchgear;
Up to 550 kV AIS Substation Solutions



GIS: Gas Insulated Switchgear;
Up to 550 kV GIS Substation Solutions



Energy Automation and Protection;
Energy Scada, PRP, HSR, IEC 61850 Applications



HGIS: Hybrid Gas Insulated Switchgear;
Up to 550 kV HGIS Substation Solutions

MicroSCADA Pro for network control and distribution management;

- Leading functionality
- Operation and informative presentation of the network
- Dependable operational safety
- Intelligent switch order management
- Outages from hours to minutes
- Extensive reporting facilities
- Measurement reports
- Energy reports
- Support for asset management



Energy SCADA Applications

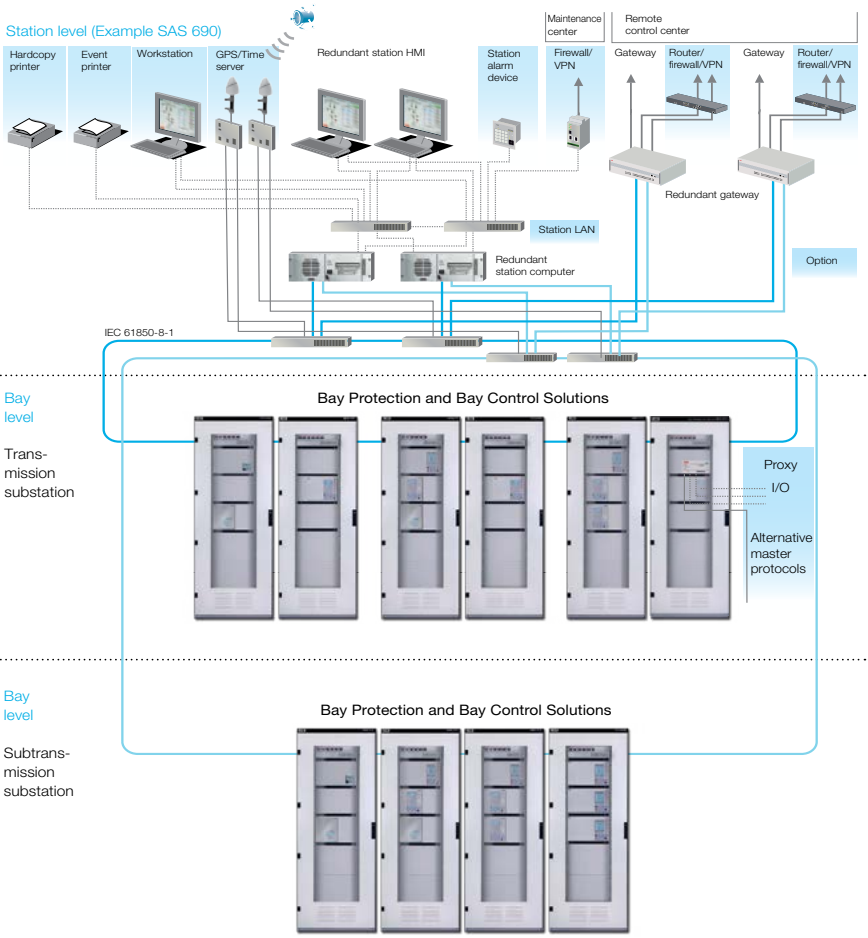
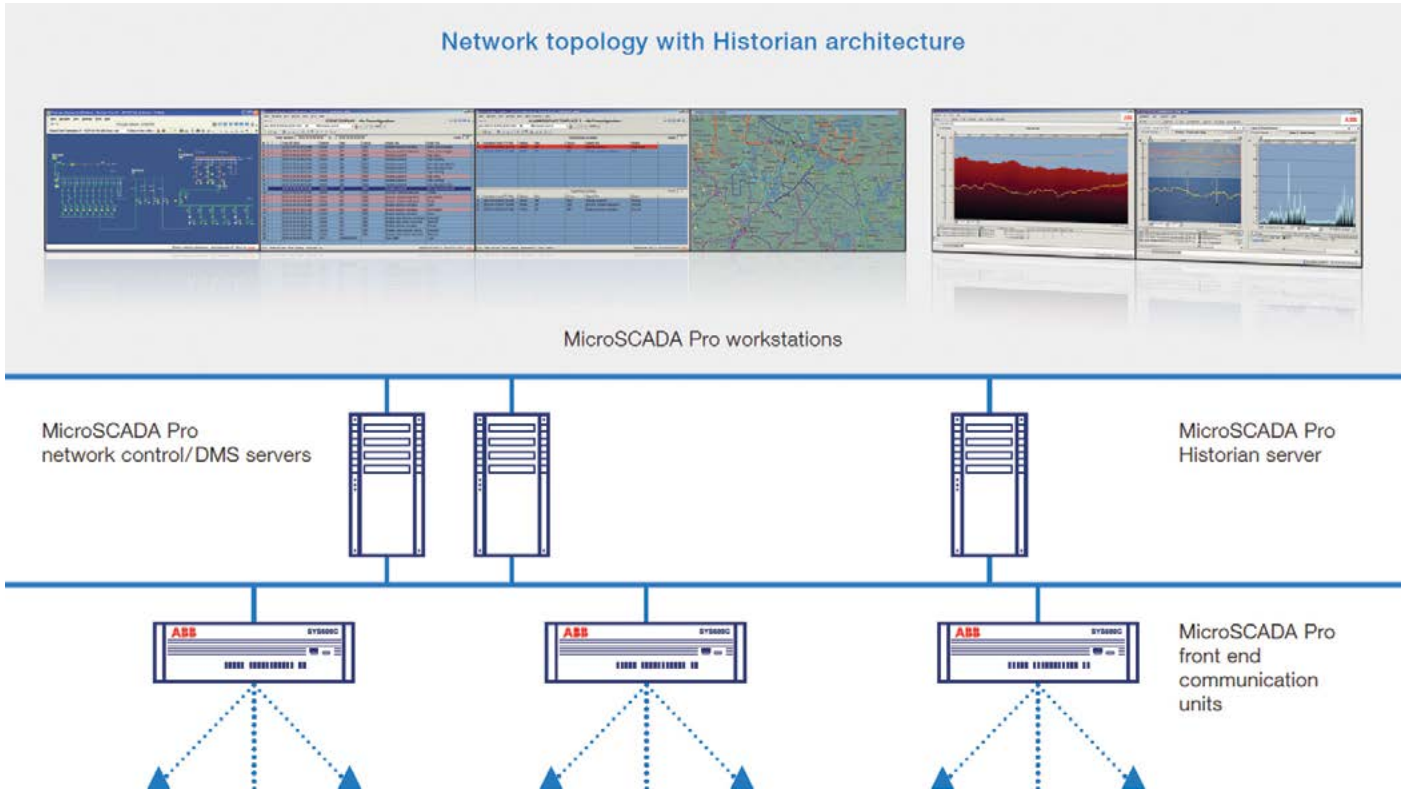
Energy SCADA Applications:

- IEC 61850 Application
- Parallel Redundancy Protocol
- Redundant Gateway
- Redundant Station HMI
- Independent embedded gateway
- Advanced Control
- Advanced Monitoring
- Extra-high voltage transmission
- Complex distribution

Energy SCADA network control and distribution management:

- Leading functionality
- Operation and informative presentation of the network
- Dependable operational safety
- Intelligent switch order management
- Outages from hours to minutes
- Extensive reporting facilities
- Measurement reports
- Energy reports
- Support for asset management

Station Level Solutions



SCADA for PRP and 61850 Applications:

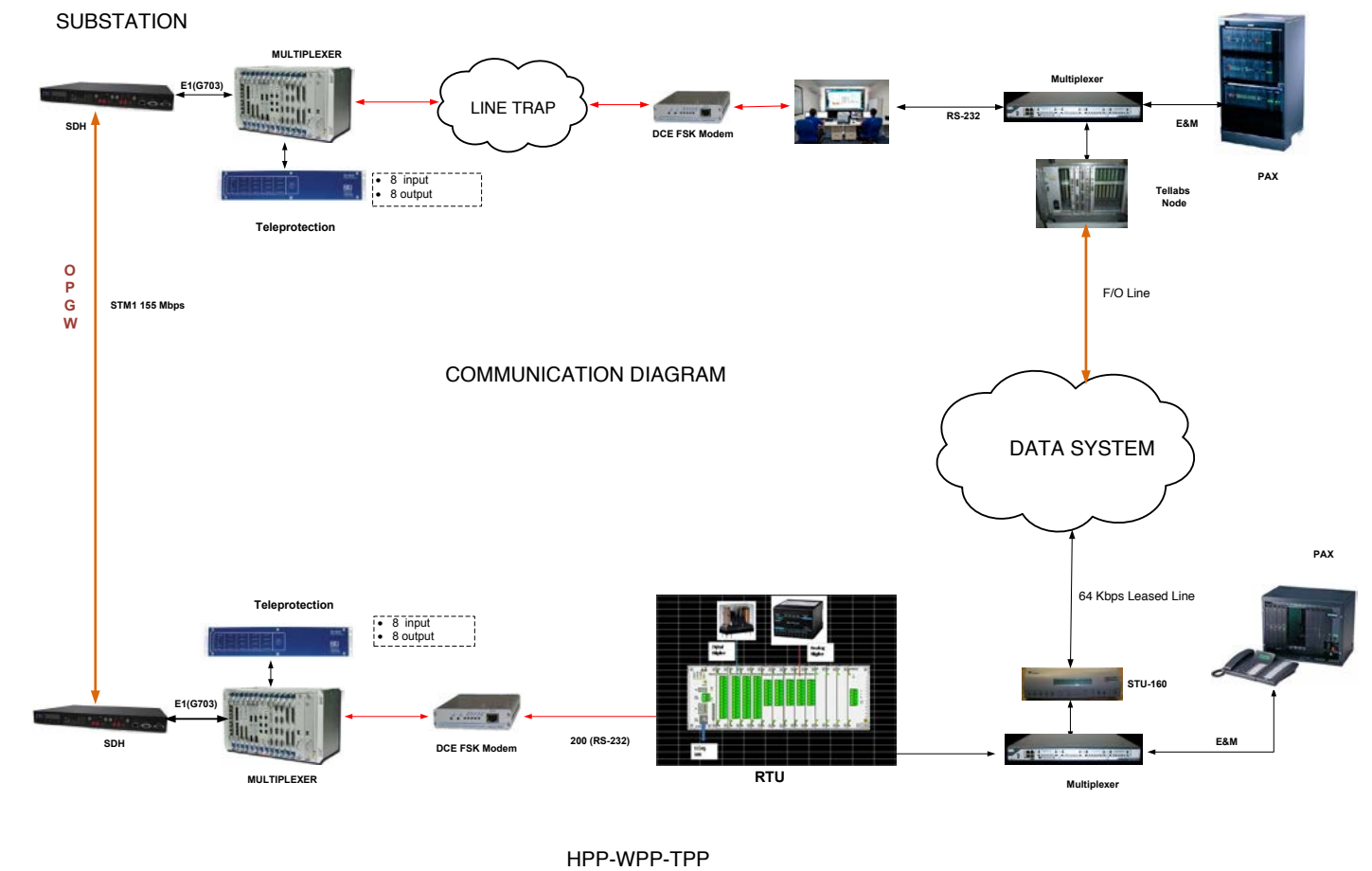
- Redundant Gateway
- Redundant Station HMI
- Independent embedded gateway
- Advanced Control
- Advanced Monitoring
- Extra-high voltage transmission
- Complex distribution



National Load Dispatch Center (NLDC) Telecommunication

Our services for communications technologies, fiber-optic infrastructure installations, PLC (Power Line Carrier), Transmission Systems, Wireless Communications and Engineering Works include for a turnkey system solutions. TEİAŞ, OPGW spare lines and leased line communications for Turk Telekom SDH, MUX, PAX plant and the able to supply different types of modems, all works with engineering services are carried out by our company until to system acceptance phases.

- PLC (Power Line Carrier) Projects,
- Fiber Terminations and OTDR measurements,
- Transmission Systems and Projects, (SDH, PDH, CWDM, DWDM, MUX, etc...)
- PBX and PAX Solutions,
- Leased lines,
- Communication System Solutions
- Power Plants Communication Systems.





Power Quality Applications

- **Primary Frequency Control Test Solutions**
- **Secondary Frequency Control Test Solutions**
- **Reactive Power Control Test Solutions**
- **National Load Dispatching Center Reporting Software and Solutions**

Primary Frequency Control (PFC)

The Primary Frequency Control (PFC), an important way to maintain frequency stability, balances the power generation and load consumption in the grid. The main purpose of primary frequency control is to react within a few seconds to any frequency deviation and to reestablish the balance between produced and consumed energy. The activation is done locally and independently by a proportional control in every participating power unit.

PFC Signals,

- Active Power Output (MW)
- Network Frequency
- Simulated Frequency
- Valve Positions
- Steam Pressure
- Steam Temperature

PFC Tests,

- Primary Frequency Control Reserve Test
- Primary Frequency Control Sensitivity Test
- Primary Frequency Control 24 Hours Verification Test

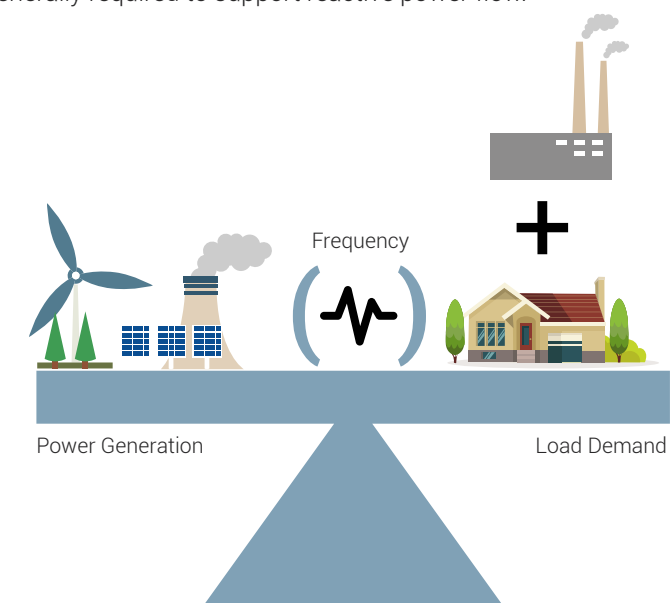
Secondary Frequency Control (SFC)

Secondary control, also referred to as Load Frequency Control, is the second level for compensating active power mismatch. It should start after a few seconds and as a result the frequency returns to the nominal value within 15 minutes, if it does not, tertiary control takes over from secondary control.

The role of secondary frequency control is to keep or restore the system frequency to its nominal value, the balance generation/load within a control area, and scheduled power exchanges with neighboring areas of control. This control is addressed modifying the set-point of active power units assigned to secondary control, which belong to the control area where the imbalance occurs.

Reactive Power Support and Voltage Control

During the daily operation, power systems may experience both over-voltage and under-voltage violations that can be overcome by voltage/Var control. Through controlling the production, adsorption, and flow of reactive power at all levels in the system, voltage/Var control can maintain the voltage profile within acceptable limit and reduce the transmission losses. Transmission connected generators are generally required to support reactive power flow.





Panel Solutions

Panel Solutions:

- Main Distribution Panel (MDP)
- Motor Control Center Panels (MCC)
- Compensation Panels
- Frequency Converter / Softstarter Panels
- RTU Panels
- DCS Panels
- PLC Panels



Panel Solution Technical Specifications

Description	Notes
• Manufacturing Standards	• IEC 60439-1, DIN EN 60439-1 (VDE 0660 part 500)
• Class Partitioning	• Form 1 to Form 4b
• Protection Class	• IP20 to IP68
• Metal thickness	• Up to 3 mm
• Short circuit Capacity	• Up to 6300 A / 100 kA
• Operation Condition -Temperature	• Up to +50°C
• Rated insulation voltage (Ui)	• 1000 V, 3p, AC, DC
• Paint color and thickness	• Electrostatic epoxy polyester powder paint
• Busbars	• L1/L2/L2 PE-N, PE and N phase 50%/100% of the capacity, 99,9% pure electrolytic copper busbar



Installation Works

Installation Works:

- Turnkey HV Substations Installation (AIS-GIS-HGIS, Mobile SS)
- Industrial Facilities Electrification Works
- Medium Voltage Switchgears Installation
- LV MDP, Compensation, MCC, Control, Scada etc. Panels Installation
- Transformers Installation (100 kVA ... 250 MVA)
- LV Busbars and 6 kV to 20 kV HV Busbars Installation
- Cabling Works (Cable Pulling, Termination, e.t.c)
- Cable Tray and Conduit Installation
- Lighting, Socket, Power System Installation
- Data, Telephone, CCTV, Fire detection
- Grounding and Lightning Protection Installation
- Automation, DCS, PLC, SCADA, RTU Installation
- Test and Commissioning



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- DHMİ** Adana Airport Energy SCADA Project Adana/Turkey
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- BOTAS** Lezita Natural Gas RMS-A Automation Systems Project İzmir/Turkey
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- TPAO** Kurkan Petrol Production Station Automation and Instrumentation Project Diyarbakır/Turkey





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