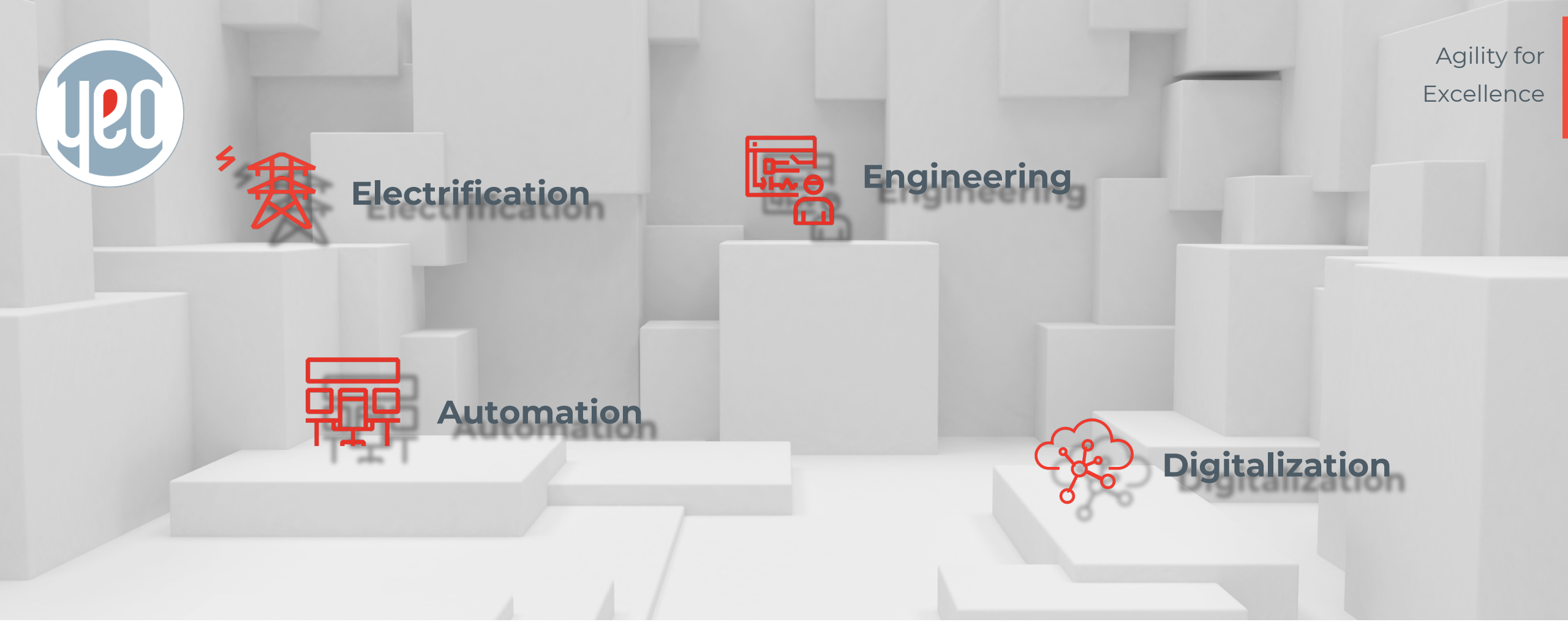


YEO Teknoloji, Enerji ve Endüstri A.Ş.

Project Case Studies

Azerbaijan’s energy is now digital, secure and sustainable

Azerbaijan National Dispatch Center

Project Facts

Project	: AzerEnergy EMS / GMS & Communication Network Project
Client	: AzerEnergy ASC
Location	: Azerbaijan

The Azerbaijan National Central Dispatch Centre project, which comprises entire SCADA, EMS, GMS, and digital infrastructure systems, is being implemented by YEO.

The project is strategically important for the country because, in addition to increasing reliability and safety, it will provide direct technical support for information exchange with SCADA systems used in neighboring countries, as well as ensuring the highest level of electricity import and export.

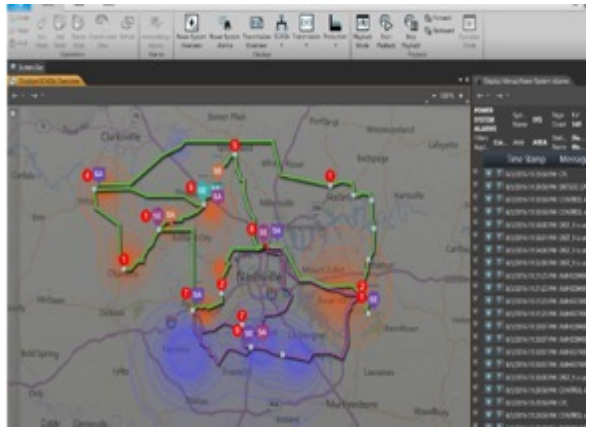
Initially, the new system will cover 21 power plants and 80 substations, consisting of the main and backup dispatch centers and 7 regional monitoring centers.

The ABB Network Manager SCADA System, SCADA (Control, Command, and Data Acquisition System), Energy Management System (EMS), Global Mobile System (GMS), ABB Remote Terminal Units (RTU – 92 pieces), and Huawei Communication Panels (92 pieces) are all being integrated in Project. IEC 60870-5 101 and IEC 60870-5 104 Communication Protocols will enable a 10G bps communication bit rate.

The remote monitoring, control, and management of Azerbaijan's power plants will be offered through the project from a single point. Long-term outages will be avoided, which will speed up communication and transfer between power plants and reduce wasteful energy use.

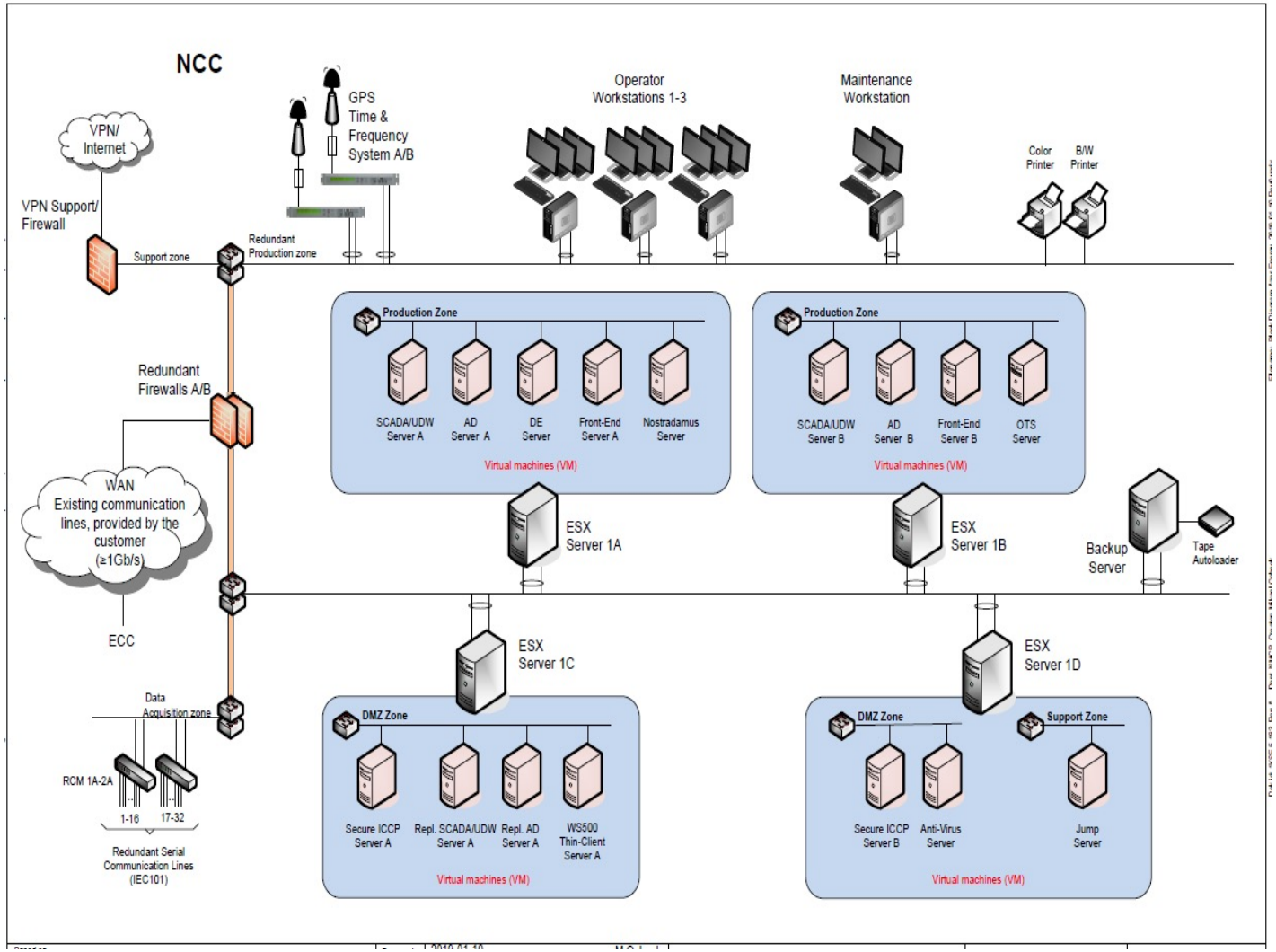
The power plants in Azerbaijan will be monitored and controlled in real time with this system. The technology will provide immediate alerts of any potential problems or errors occurred or may occur in the power plants and substations. It will enable to react quickly and minimize risks.

Thus, precautions will be taken at power plants and substations without any problems. With the project, the efficiency of the power plants will be at the highest level and an effective operation and maintenance system will be provided.



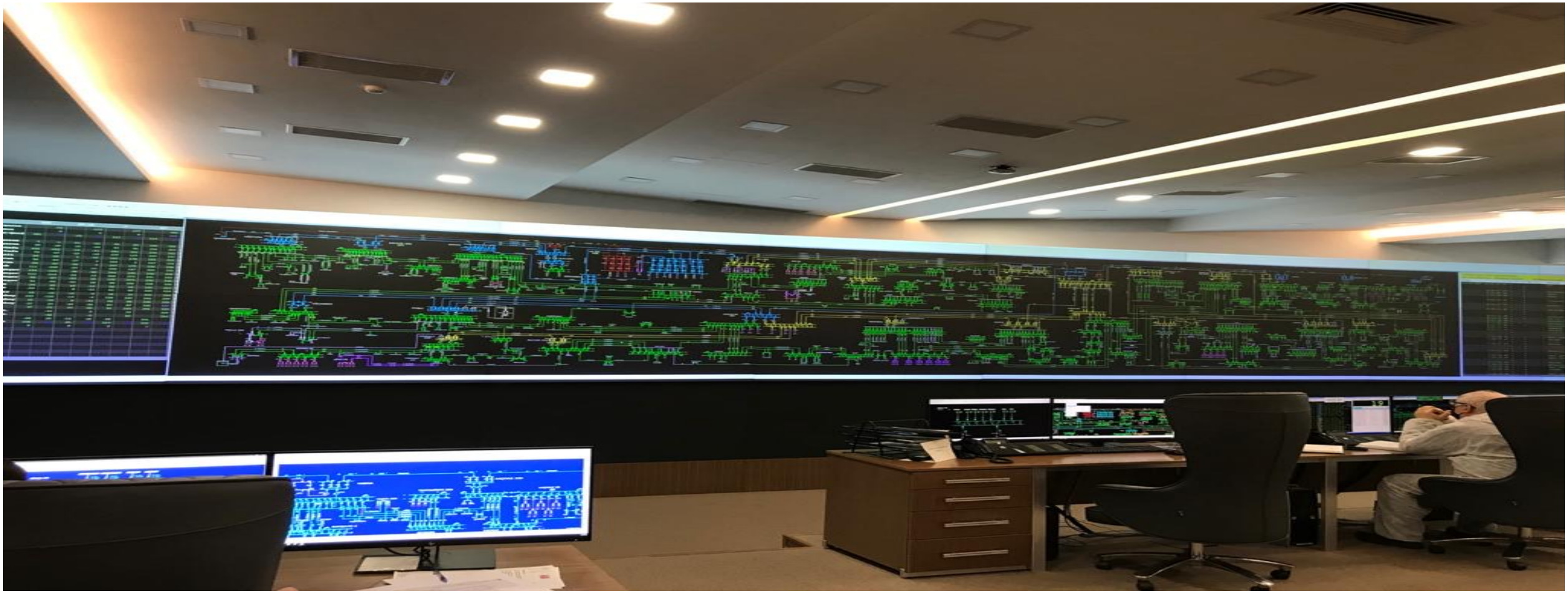
Azerbaijan’s energy is now digital, secure and sustainable

Azerbaijan National Dispatch Center // System Architecture



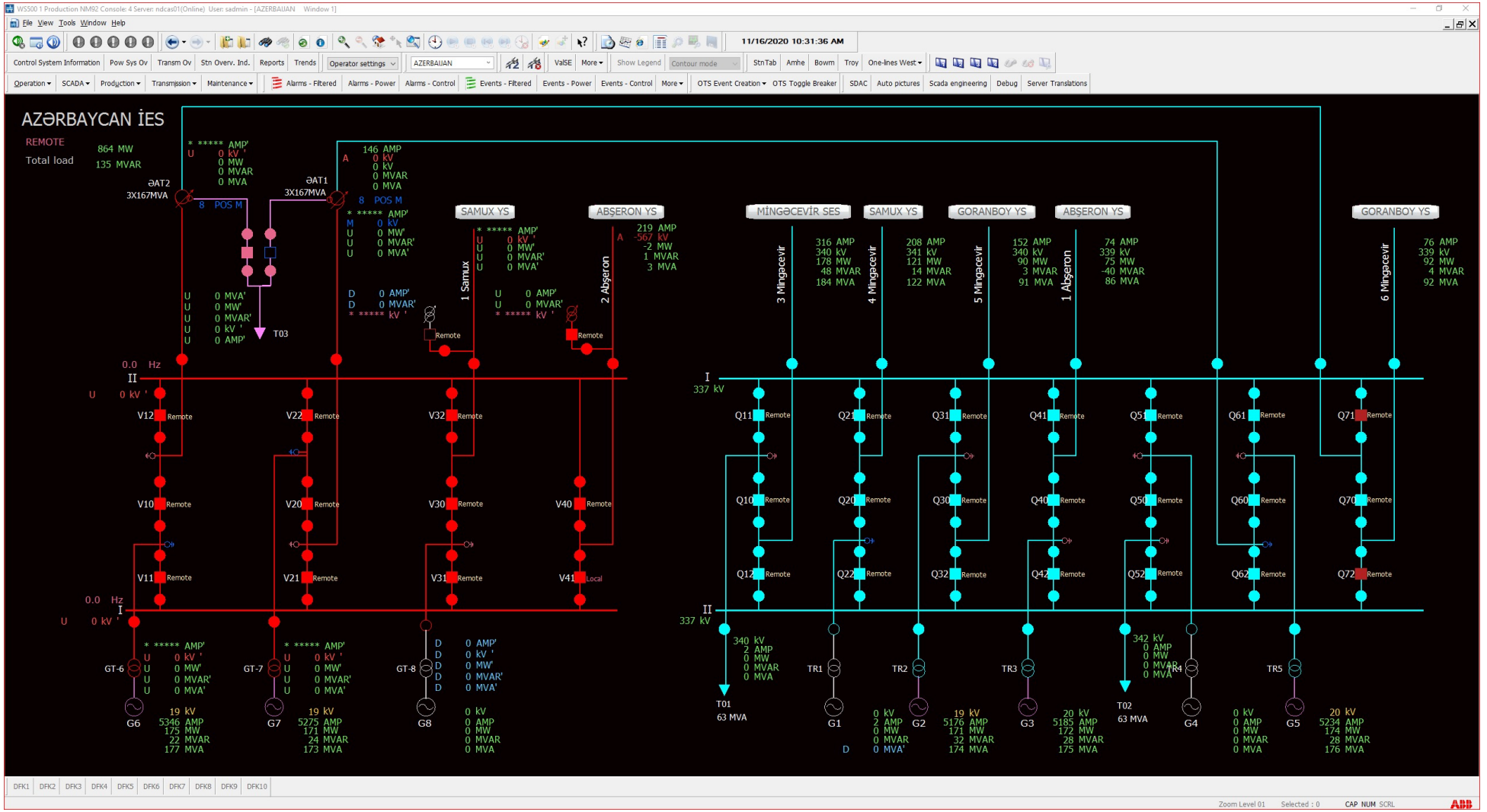
Azerbaijan’s energy is now digital, secure and sustainable

Azerbaijan National Dispatch Center // NCC Building



Azerbaijan’s energy is now digital, secure and sustainable

Azerbaijan National Dispatch Center // Network Manager SCADA



Control & Protection, SCADA & Telecommunications

Afghanistan (SEPS) Phase II Completion & (NEPS)- (SEPS) Connector Substations

Project Description

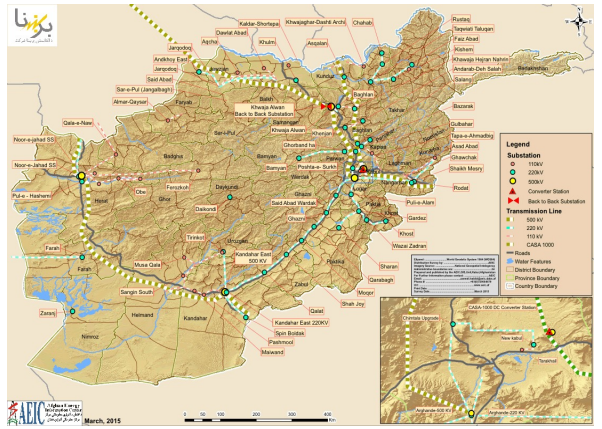
Project	: Control & Protection and SCADA & Telecommunications for the Northeast Power System (NEPS) - Southeast Power System (SEPS) connector substations
End User	: DABS (De Afghanistan Breshna Shirkat)
Location	: Afghanistan

The purpose of the USAID/Afghanistan Southeast Power System (SEPS) Completion II and the Northeast Power System (NEPS) - Southeast Power System (SEPS) Connector Project is to address critical infrastructure deficiencies in Afghanistan's power sector.

YEO is entrusted to integrate the Control & Protection and SCADA & Telecommunication Systems for the USAID/Afghanistan Southeast Power System (SEPS) Completion II and the Northeast Power System (NEPS) - Southeast Power System (SEPS) Connector projects. The secondary works for 15 substations of country are being equipped with state-of-the-art technologies.

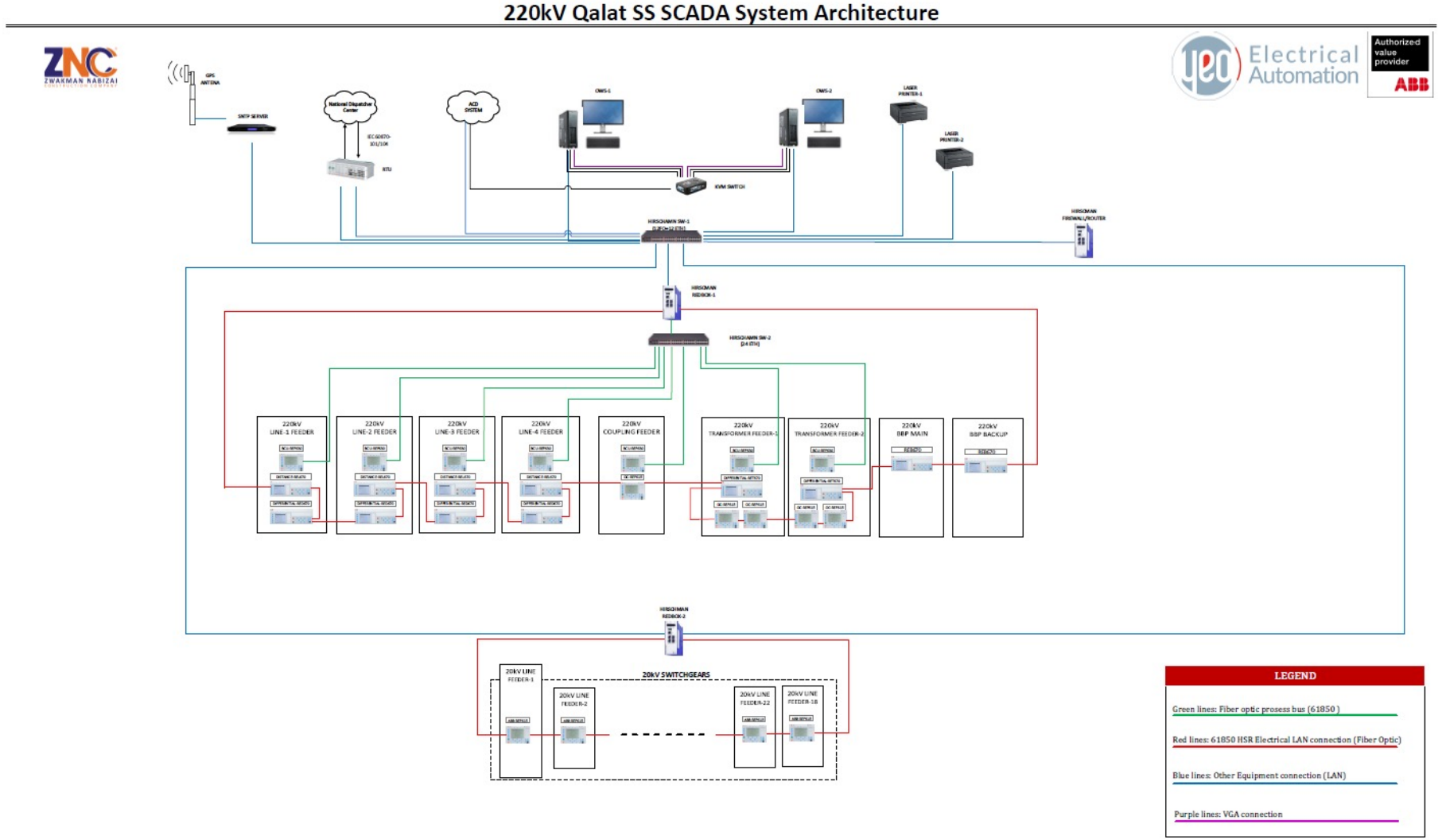
Engineering, protection, control panels, SCADA-RTU and communication systems manufacturing, testing, and commissioning of fifteen 220kV/110kV substations are included in the SEPS Phase II Completion and NEPS-SEPS Project. Panel manufacturing and testing has been completed for all scopes.

The YEO engineering team conducted a successful simulation of a communication system for developing the communication infrastructure of Afghanistan's interconnected system throughout a stretch of about 500 km from east to south. Hitachi-ABB protection relays with IEC 61850-based redundancy technology, MicroSCADA, and RTU500 product groups were employed in this project. STM-64 SDH-PDH Huawei brand products that support DWDM technology were also used in the project.



Control & Protection, SCADA & Telecommunications

Afghanistan (SEPS) Phase II Completion & (NEPS)- (SEPS) Connector Substations



Control & Protection, SCADA & Telecommunications

Afghanistan (SEPS) Phase II Completion & (NEPS)- (SEPS) Connector Substations

Substation Projects

Bikiltaş Cement Factory Substation & Power Transmission Line

Project Description

Project Description	: Bikiltaş Substation Protection & Control Project 154 kV OHL, 154kV 50MVA Substation, Cement Factory All Electrification Works
Client	: Biberci Construction
End User	: Bikiltaş Cement Factory
Location	: Turkey

Scope of Works

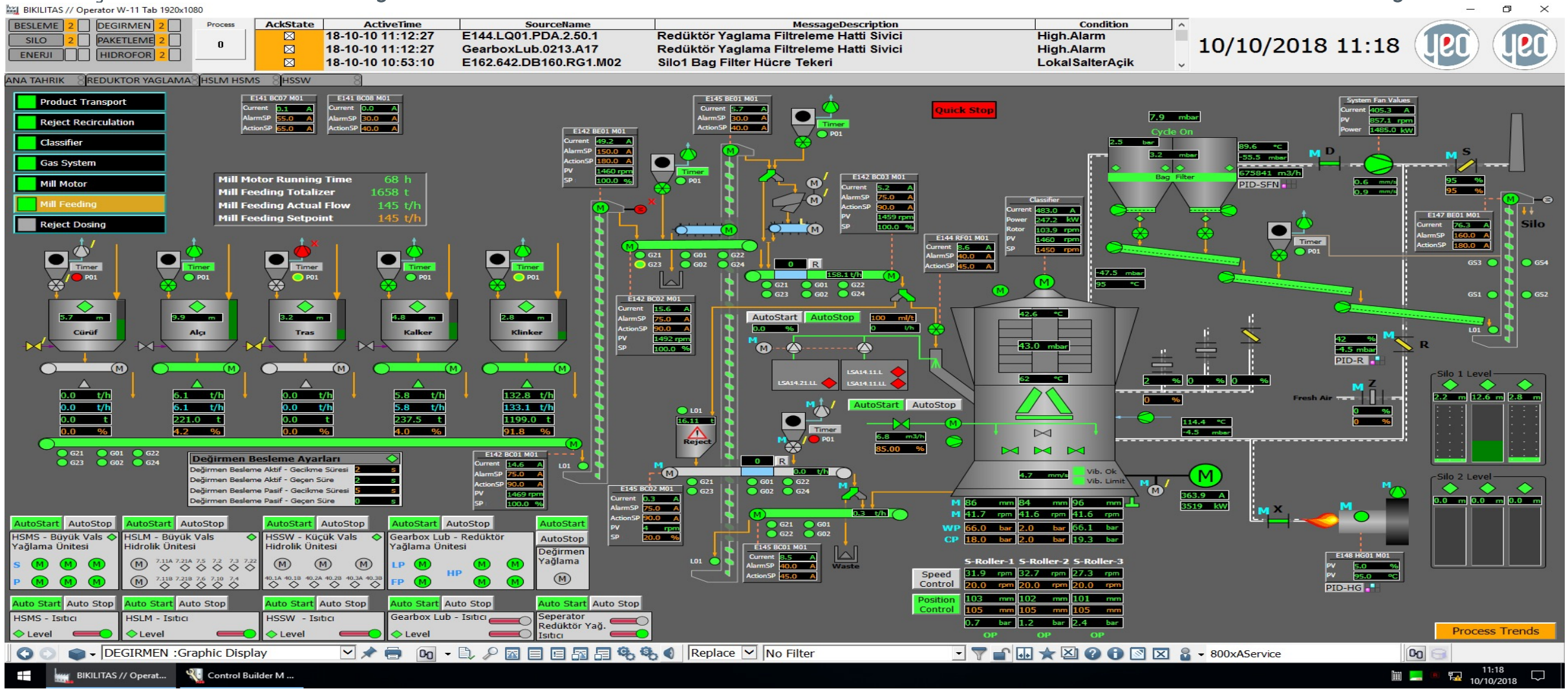
- Primer & Seconder Equipment Installing, Test and Commissioning
- HV Protection and Control Panel Installation
- HV RTU and TEİAŞ Communication Panel
- MV Switchgear Installing, Test and Commissioning
- 10-km overhead power line
- Cement Plant MV Switchgear, MDP, MCC, PLC Panel
- Electrification and Automation Works
- OPGW, PLC System, PAX System, Telecommunication Equipment

Substation Projects

Bikiltaş Cement Factory Substation & Power Transmission Line// AIS

Substation Projects

Bikiltaş Cement Factory Substation & Power Transmission Line// Process SCADA System



Substation Projects

Azerenergy IES Thermal Power Plant Substation

Project Facts:

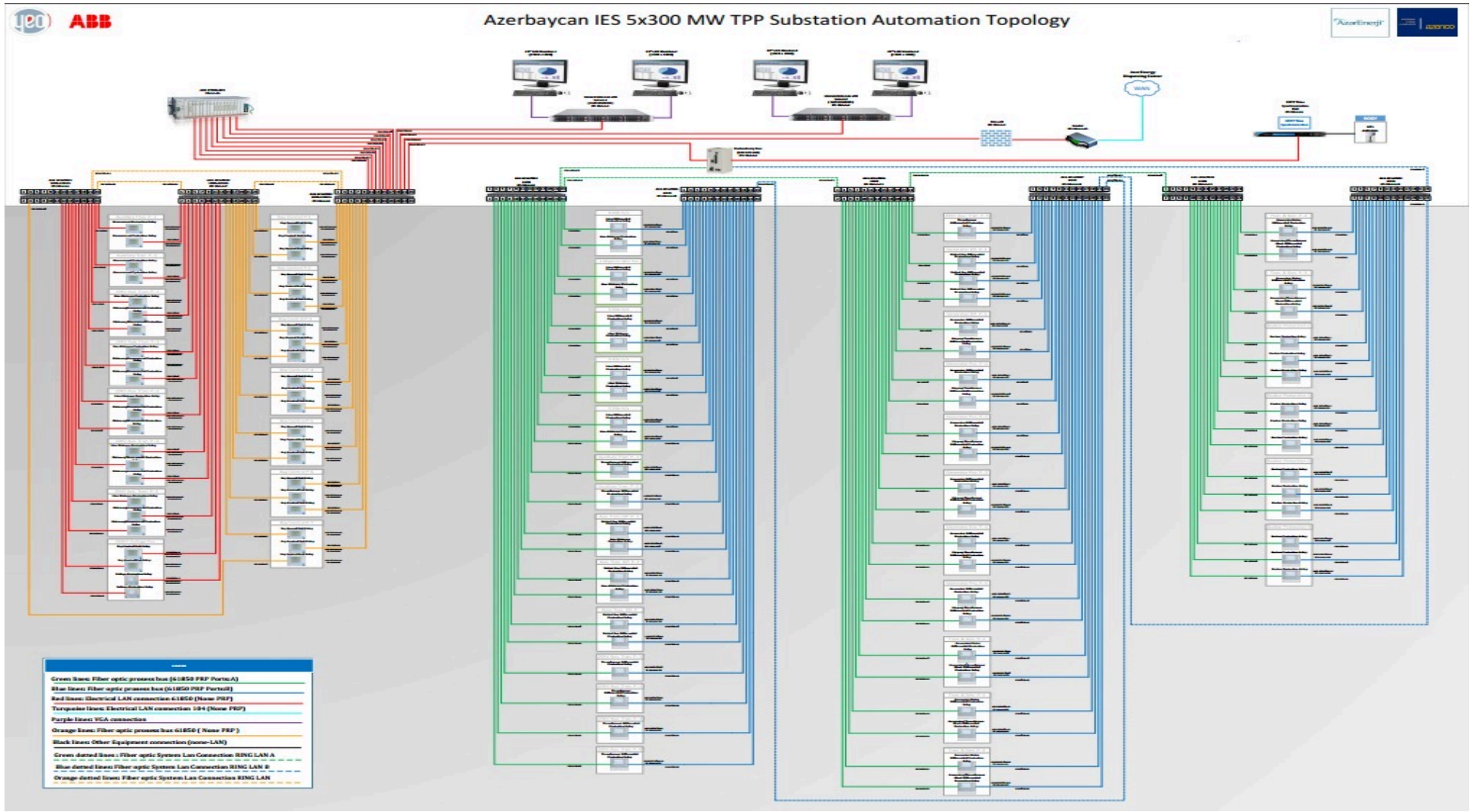
Project Description	: Azerbaycan Substation Secondary & Automation (330 / 20 / 6 kV) 8 x 300 MVA Power Generator 330 kV: 7 Diameter System- 5 Line Feeder, 5 Opposite Line Feeder 5 Generator Transformer Feeder, 2 Power Transformer Feeder, 2 Auto Transformer Feeder
Client	: Mingeçevir Energy
End User	: AzerEnergy
Location	: Azerbaijan

Scope of Works

- Primer & Seconder Equipment Installing, Test and Commissioning
- MV Switchgear Installing, Test and Commissioning
- MV & LV Cabling, Earthing and Lightning System
- ABB RTU560 with IEC104 communication between Azerisiq National Control Center
- ABB Micro SCADA IEC 61850 Communication
- OPGW, PLC System, PAX System, Telecommunication Equipment
- HV Protection and Control Panel Installation
- Lighting and emergency Lighting System

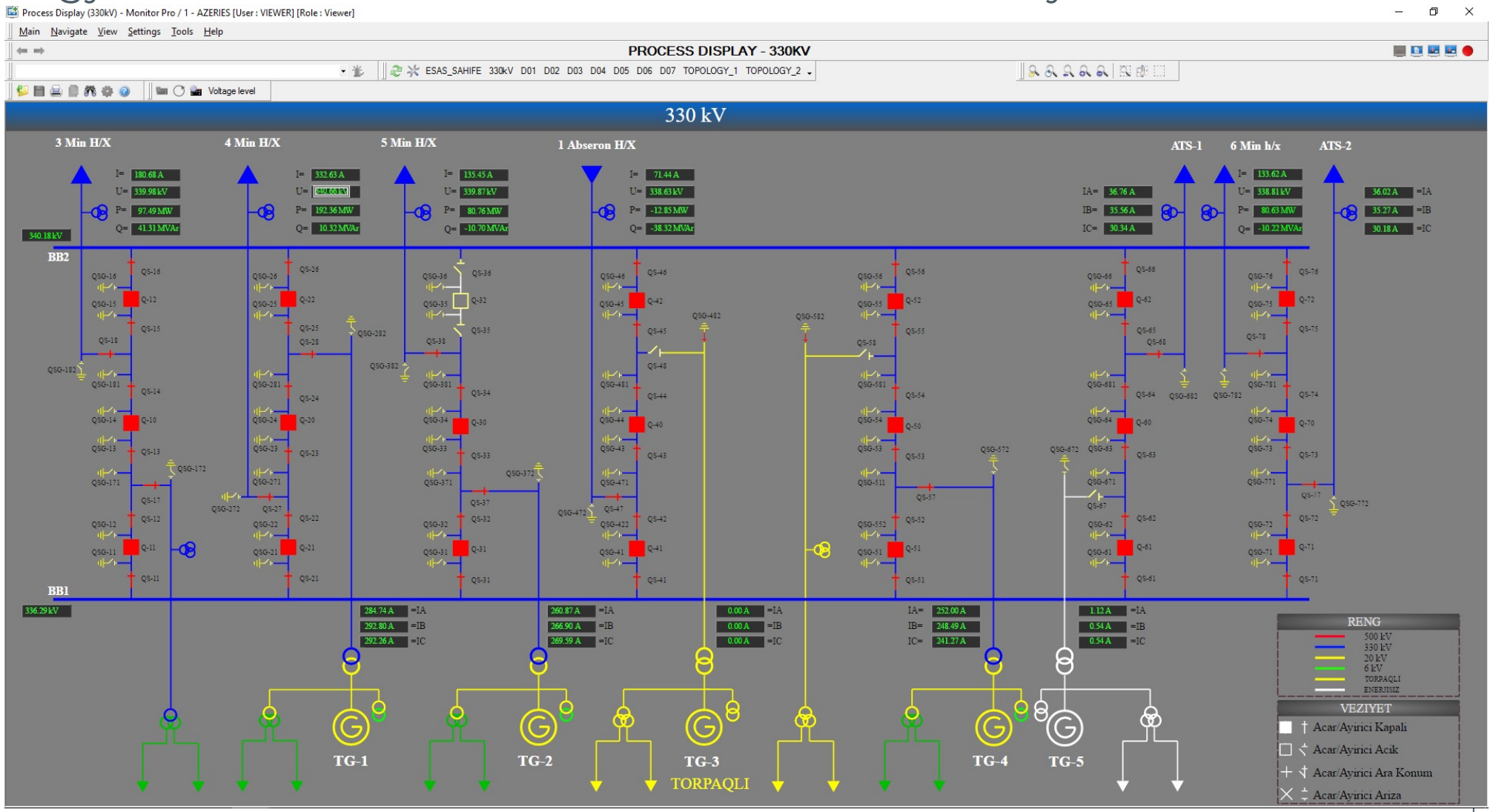
Substation Projects

Azerenergy IES Thermal Power Plant Substation// System Architecture



Substation Projects

Azerenergy IES Thermal Power Plant Substation// SCADA System



Substation Projects

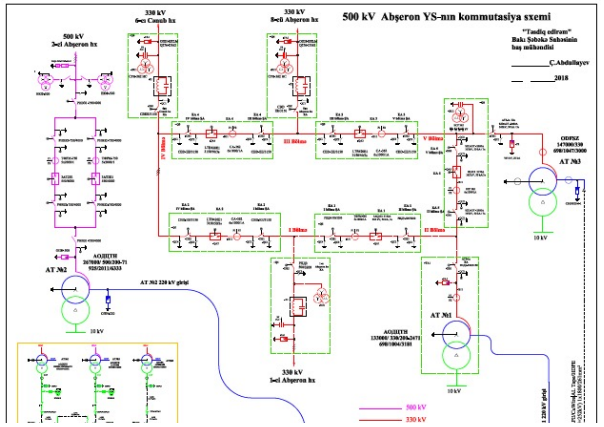
500/ 330/ 220 kV Abseron Substation

Project Description

Project Description	: 500/ 330/ 220 kV Abşeron Substation Project
Client	: AzerEnergy ASC
End User	: AzerEnergy ASC
Location	: Azerbaijan

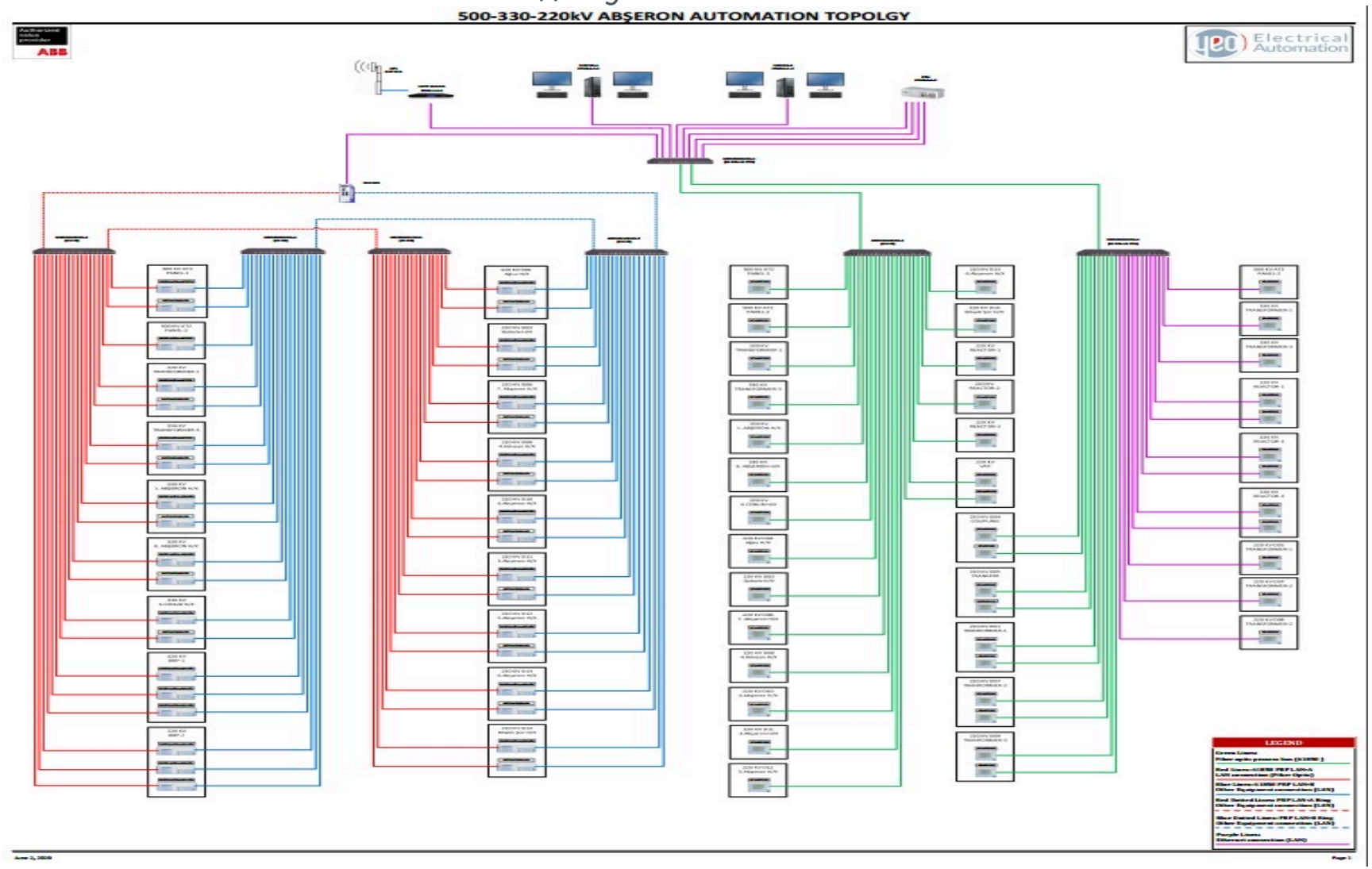
Scope of Works

- 500/ 330/220 kV High Voltage Protection and Control Panel Design and Manufacturing
- RTU and Communication Panel Design and Manufacturing
- HV and MV Relay Configuration and Parameterization
- Full Redundant IEC 61850 SCADA System
- Supervising of Installation
- Seconder Equipment Test and Commissioning
- AzerEnergy Dispatching Center Communication with IEC 60870-5-104 protocol



Substation Projects

500/ 330/ 220 kV Abseron Substation// System Architecture

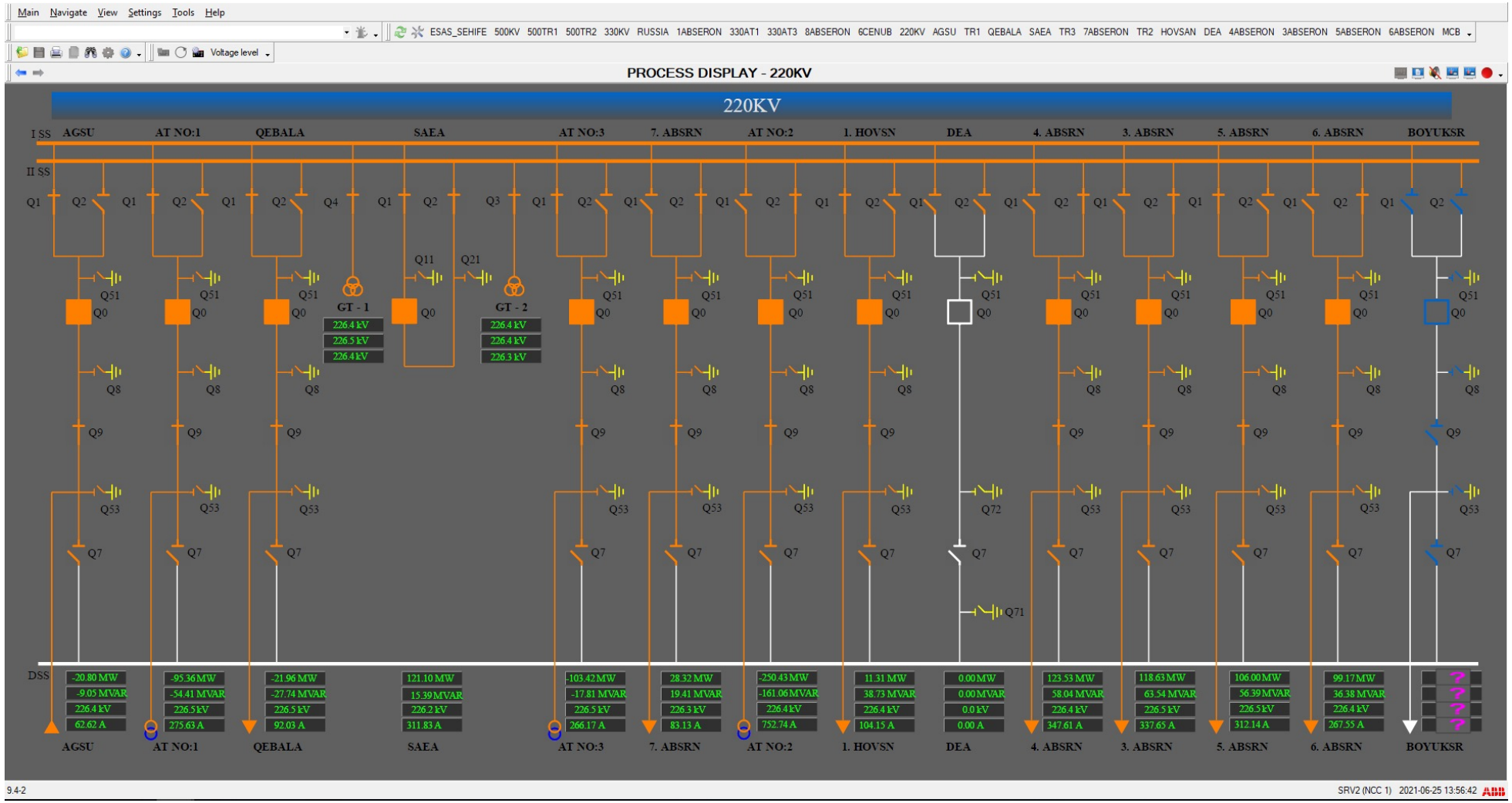


Substation Projects

500/ 330/ 220 kV Abseron Substation// AIS

Substation Projects

500/ 330/ 220 kV Abseron Substation// SCADA System



Substation Projects

500/ 330/ 220 kV Abseron Substation// Control Center

Substation Projects

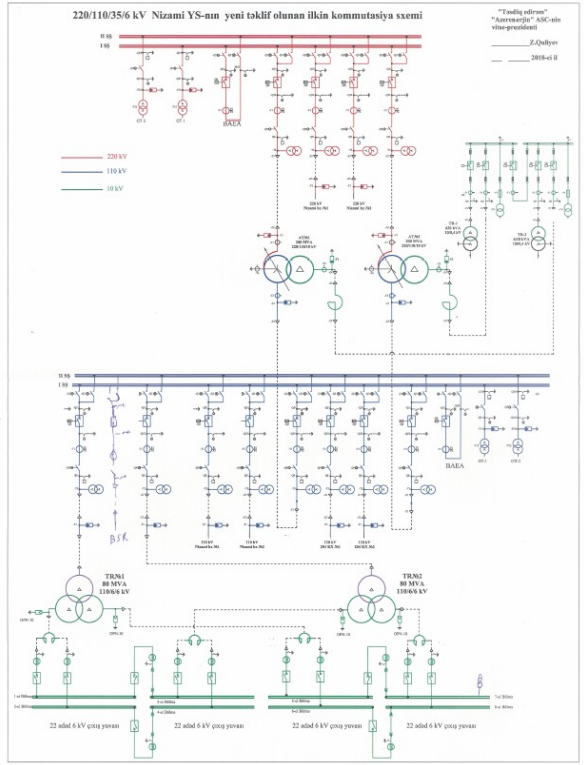
220/ 110/ 35 kV Nizami GIS Substation

Project Description

Project Description	: 220/ 110/ 35 kV Nizami GIS Substation Project 220 kV 2 OHL, 2 Transformers and coupling feeders 110 kV 4 OHL, 2 Transformers and coupling feeders
Client	: AzerEnergy ASC
End User	: AzerEnergy ASC
Location	: Azerbaijan

Scope of Works

- Supply of 220 and 110 kV Gas-insulated High-Voltage Switchgear (GIS)
- Installation, Test and Commissoning of 220 and 110 kV GIS
- Secondary Drawings & Design
- HV Protection and Control Panel Installation
- HV RTU and Communication Panel
- ABB Micro SCADA IEC 61850 Communication
- Electrification and Automation Works



Substation Projects

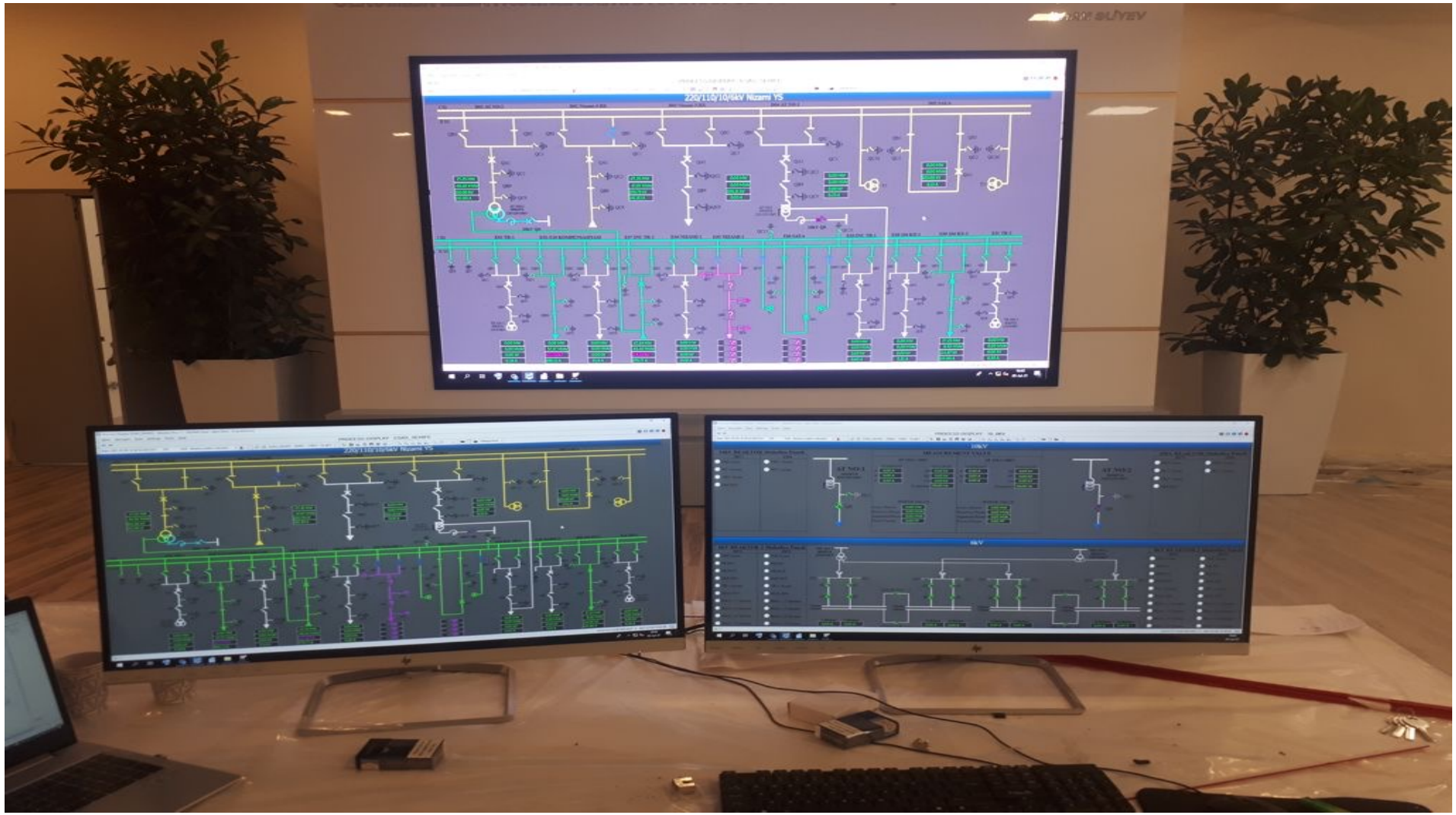
220/ 110/ 35 kV Nizami GIS Substation// GIS

Substation Projects

220/ 110/ 35 kV Nizami GIS Substation// Protection and Control Panel Room

Substation Projects

220/ 110/ 35 kV Nizami GIS Substation// Control Center



Biogas Projects

Seymen Landfill Gas Power Plant

Project Description

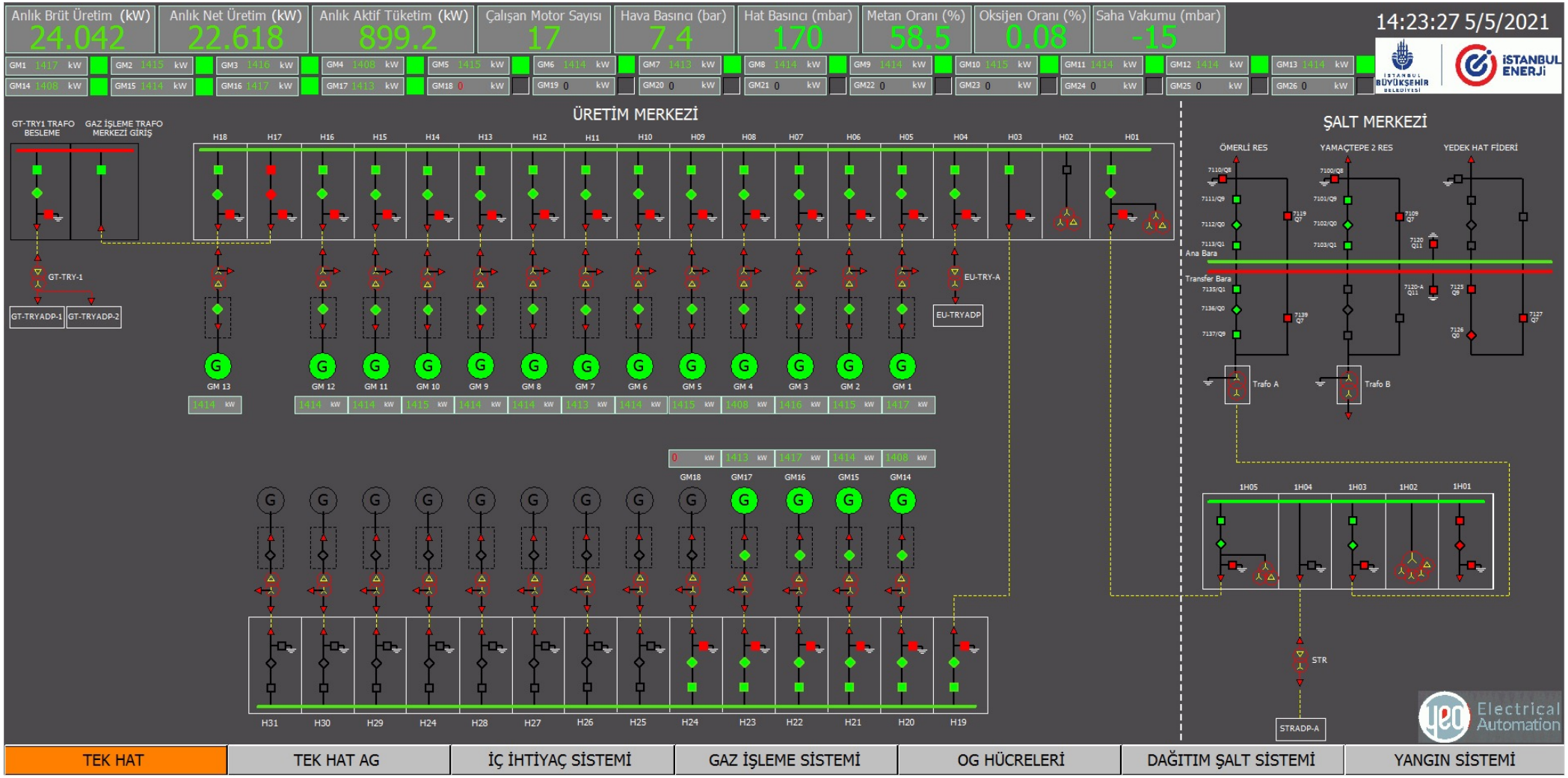
Project Description	: İBB Seymen Energy Electrical and Automation Works 73,5 MW Power Plant, 154 kV Susbstation
Client	: İstanbul Energy Inc.
End User	: İstanbul Energy Inc.
Location	: İstanbul / Turkey

Scope of Works

- Design & Technical Consultant
- 154 kV Substation
- Supplying all Electrical Equipment
- Installation of all Electrical Equipment
- ABB Symphony® Plus Scada System
- Software and Hardware Engineering
- Training
- Approvals of Project Documents at TEİAŞ
- Test and Commissioning

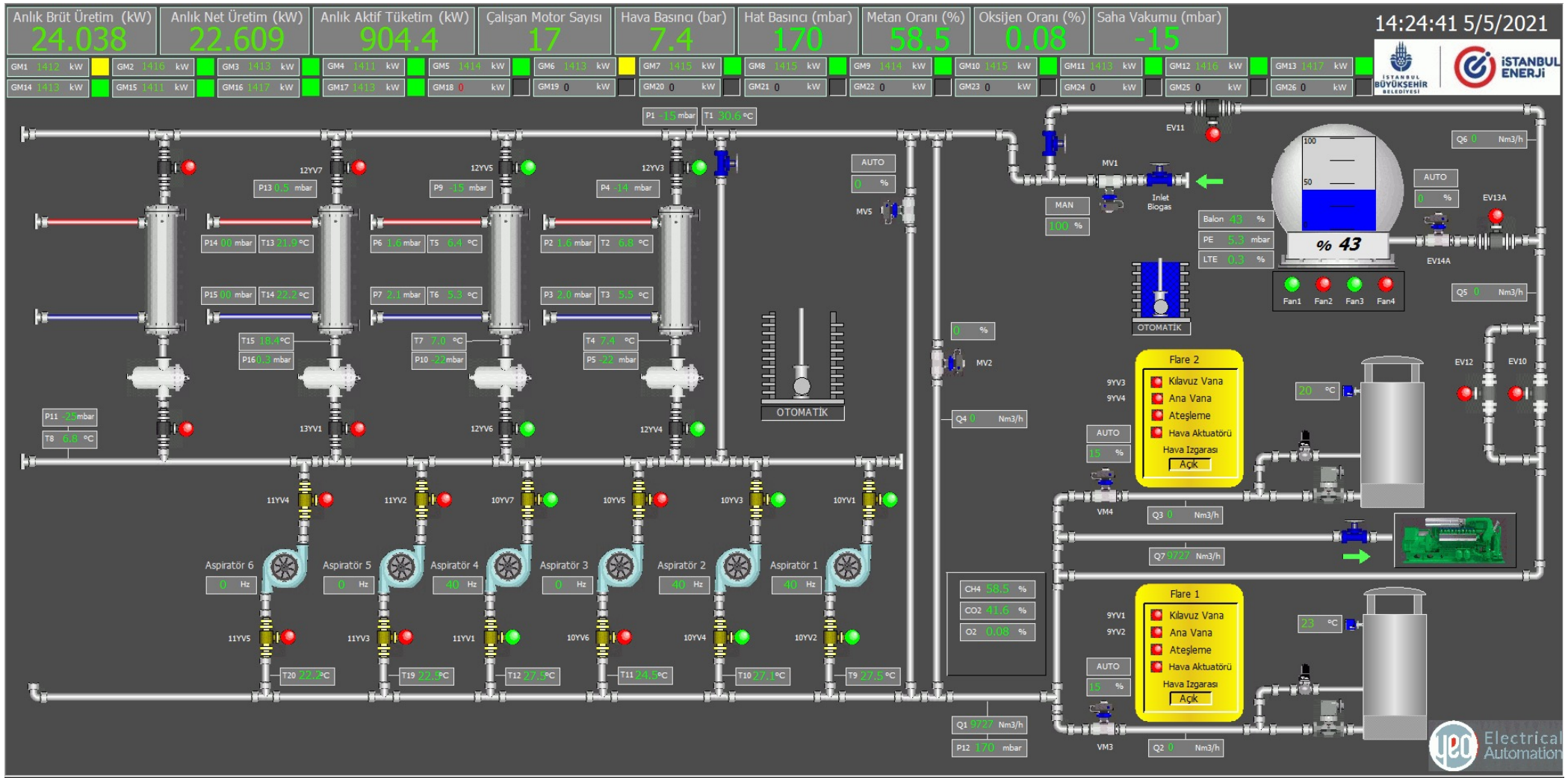
Biogas Projects

Seymen Landfill Gas Power Plant// Plant SCADA System– MV Single Line Diagram



Biogas Projects

Seymen Landfill Gas Power Plant// Plant SCADA System// Process Line

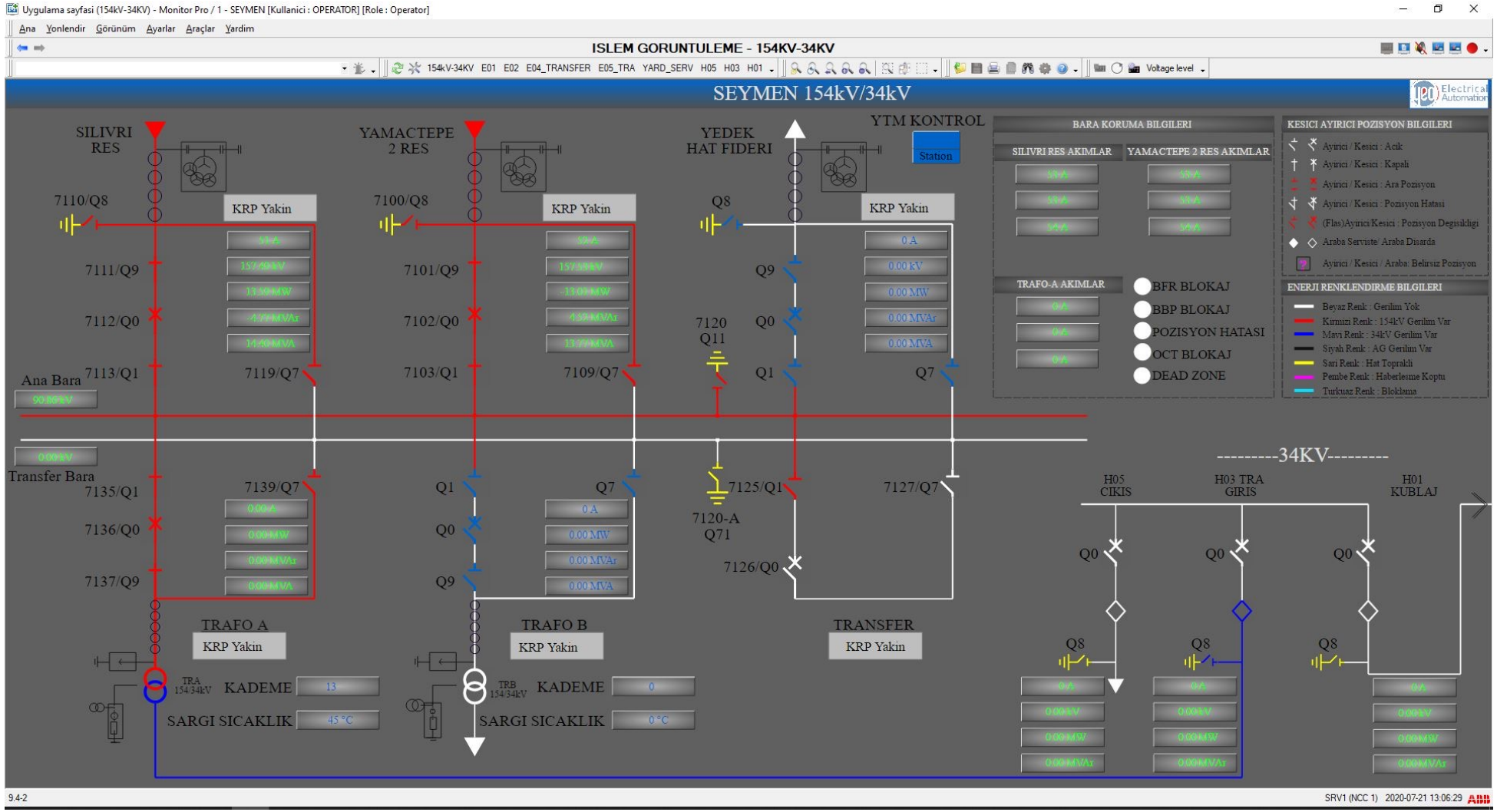


Biogas Projects

Seymen Landfill Gas Power Plant// Plant SCADA System// Gas Engines

Biogas Projects

Seymen Landfill Gas Power Plant// HV SCADA System



Biogas Projects

Afyon Biogas Power Plant

Project Description

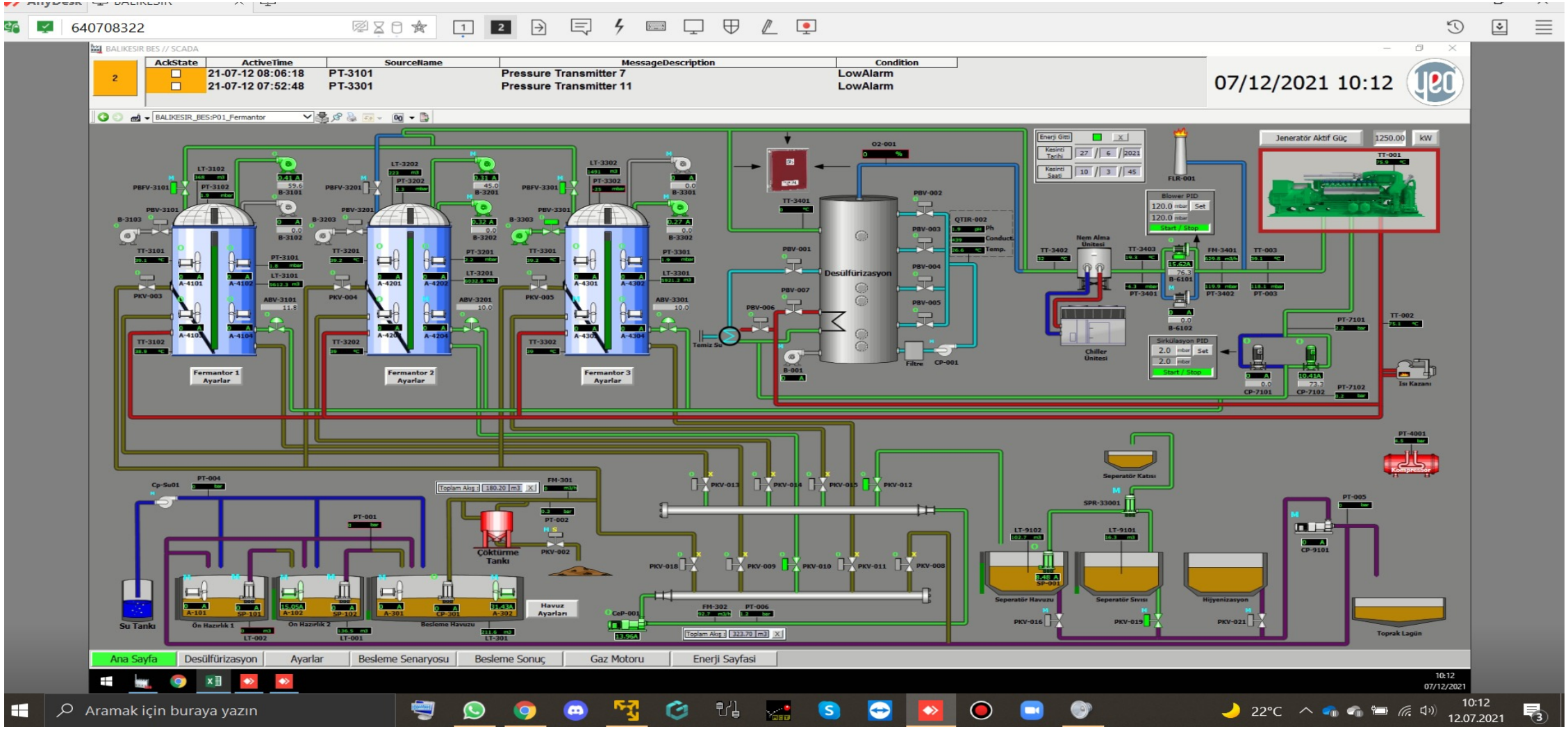
Project Description	: Afyon Energy Electrical and Automation Project 4 MW Power Plant
Client	: Alkataş İnşaat
End User	: Afyon Energy
Location	: Afyonkarahisar / Turkey

Scope of Works

- MV and LV Distribution System Installation
- TEDAŞ Sale and AEM MV SWG Installation
- Step-Up & Step-Down Transformers Installation
- 0.4kV MDB and Compensation Panel Manufacturing & Installation
- Electrical Works of Co-generation Facility
- MV & LV Cabling, Earthing and Lightning System
- Lighting and emergency Lighting System
- Telephone and Fire Alarm System
- Generator and Neutral Resistance Installation
- Ex-proof Interior Lighting Installation

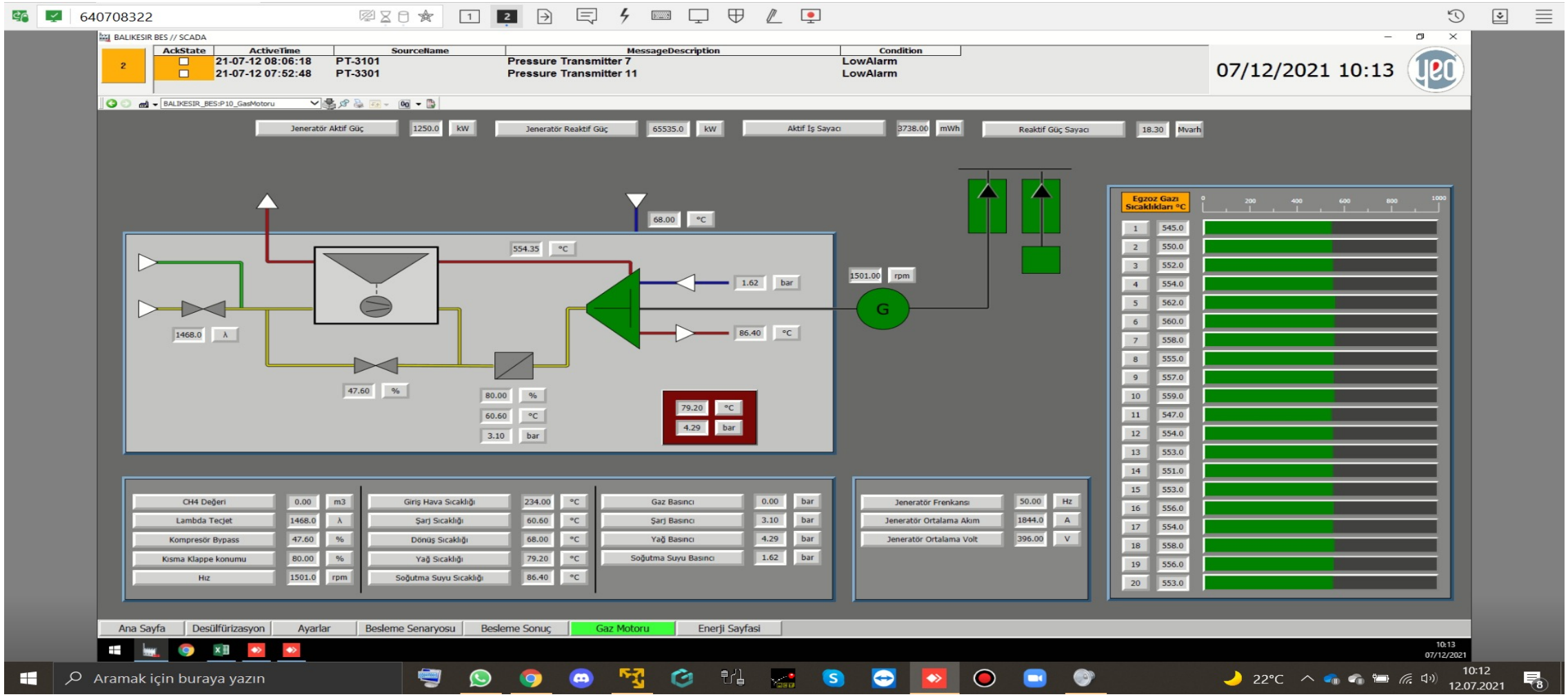
Biogas Projects

Afyon Biogas Power Plant// SCADA System



Biogas Projects

Afyon Biogas Power Plant// SCADA System



Agility for
Excellence