



Agility for
Excellence



Electrification



Engineering



Automation



Digitalization

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.

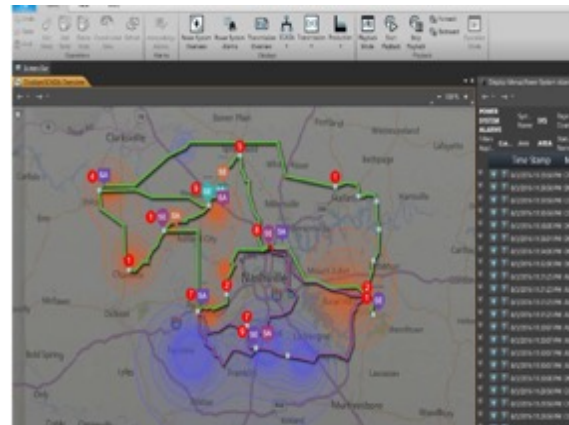
Initially, the new system will cover 21 power plants and 80 substations, consisting of the main and backup dispatch centers and 7 regional monitoring centers.

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.

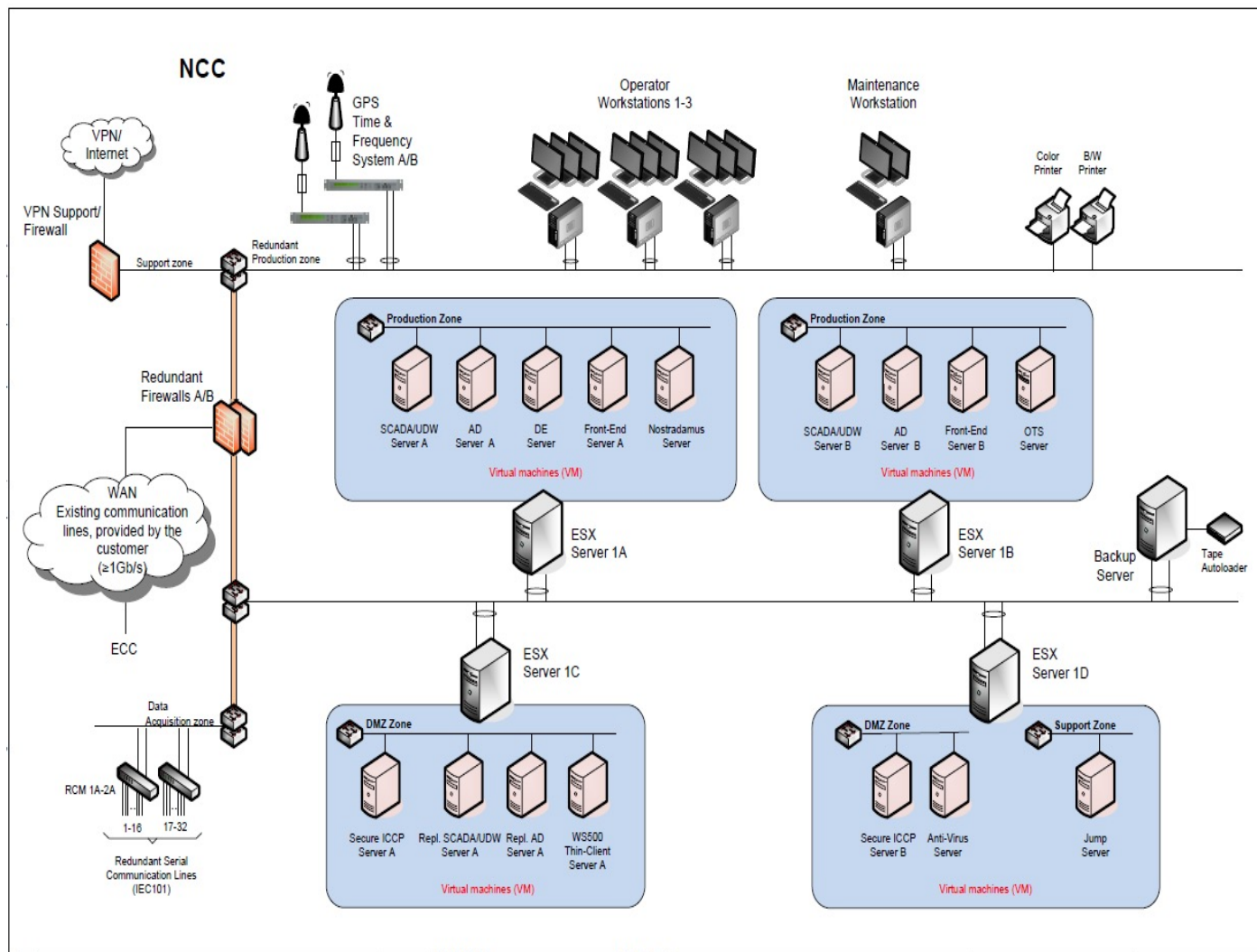
Thus, precautions will be taken at power plants and substations without any problems. With the project, the efficiency of the power plants will be at the highest level and an effective operation and maintenance system will be provided.





Azerbaijan's energy is now digital, secure and sustainable

Azerbaijan National Dispatch Center // System Architecture





Azerbaijan's energy is now digital, secure and sustainable

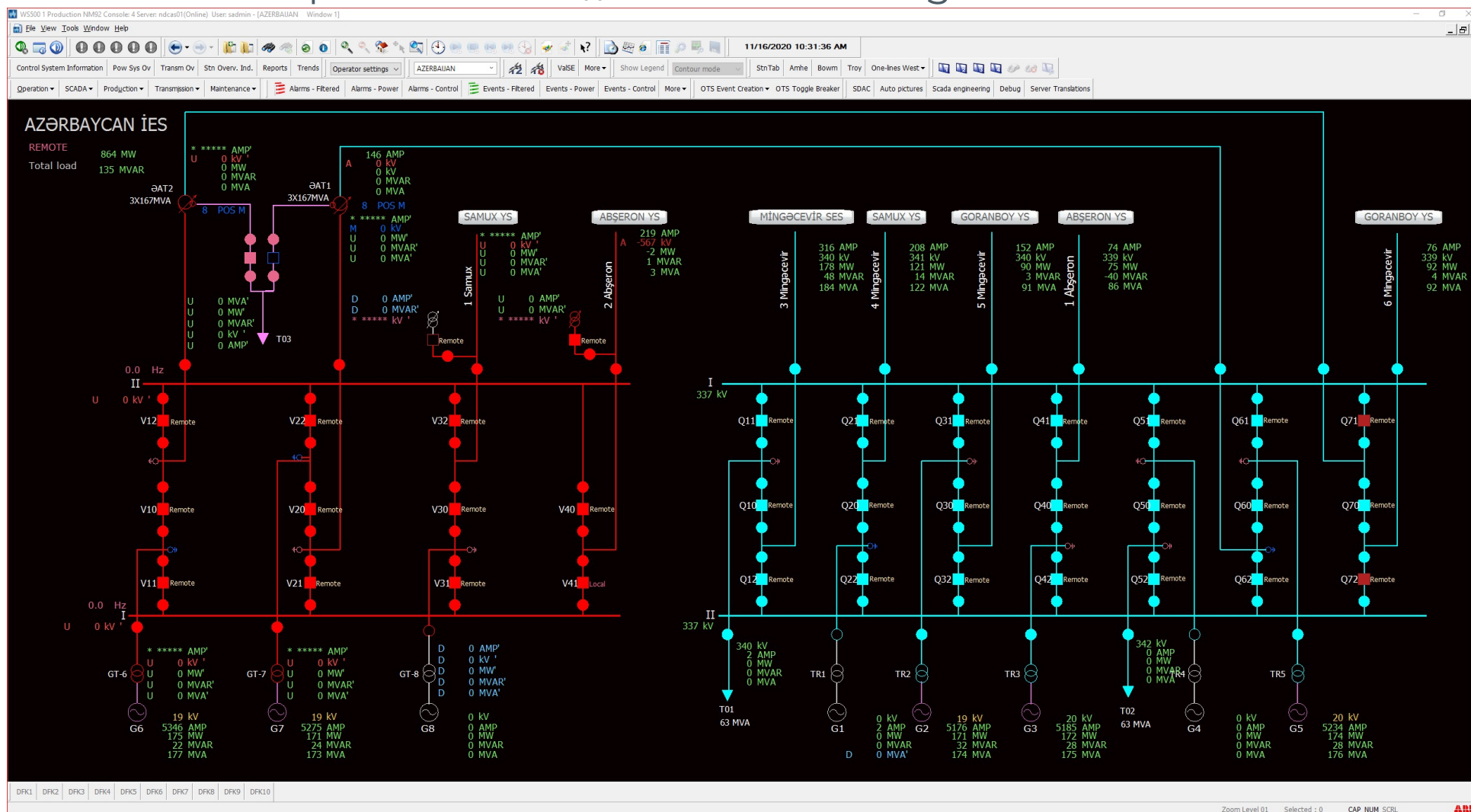
Azerbaijan National Dispatch Center // NCC Building





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

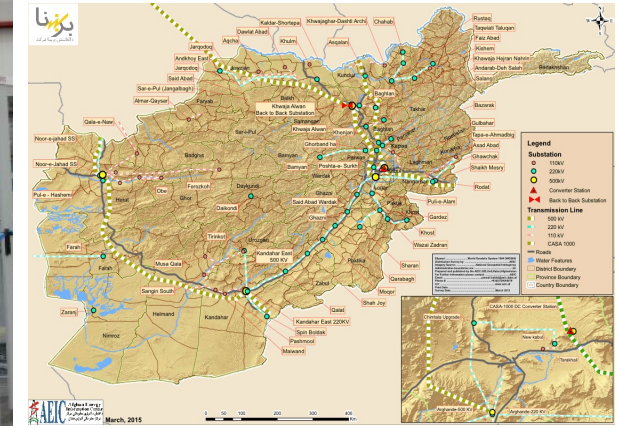
Project	: Control & Protection and SCADA & Telecommunications for the Northeast Power System (NEPS) - Southeast Power System (SEPS) connector substations
End User	: DABS (De Afghanistan Breshna Shirkat)
Location	: Afghanistan

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.

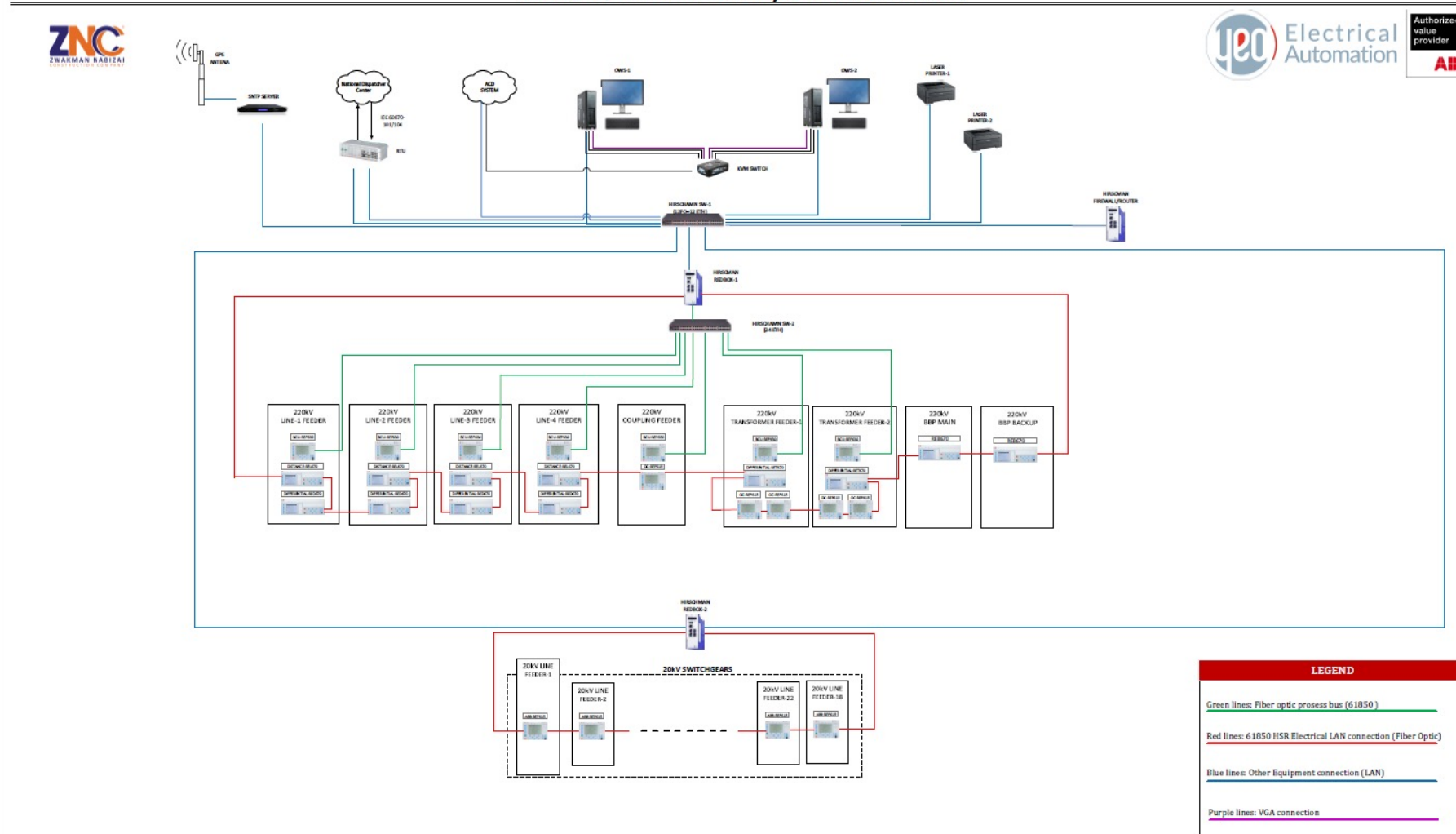




Control & Protection, SCADA & Telecommunications

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

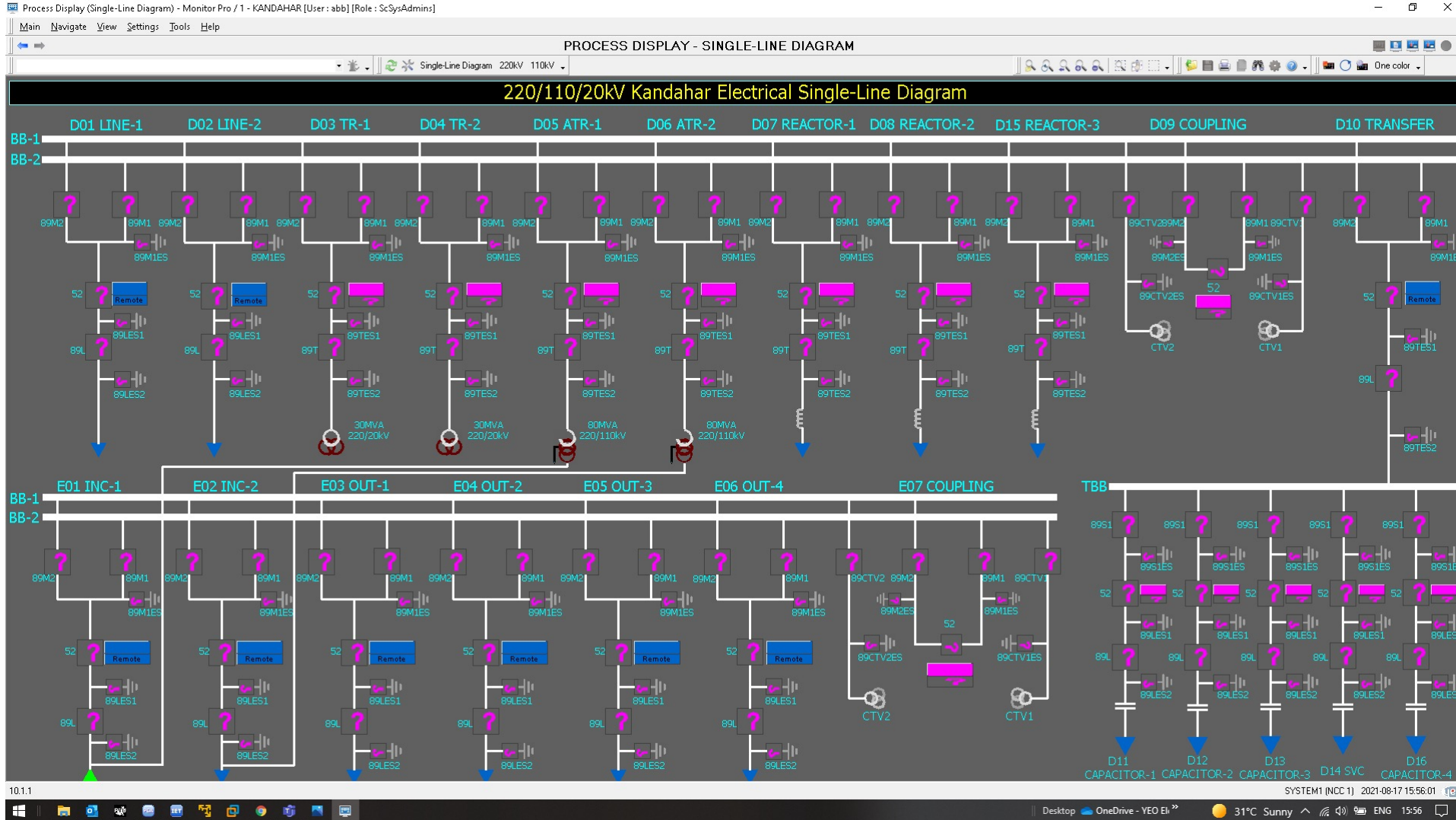
220kV Qalat SS SCADA System Architecture





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	: Biberçi 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

BIKILITAS // Operator W-11 Tab 1920x1080

Process	AckState	ActiveTime	SourceName	MessageDescription	Condition
BESLEME 2	<input checked="" type="checkbox"/>	18-10-10 11:12:27	E144.LQ01.PDA.2.50.1	Redüktör Yağlama Filtreleme Hattı Sivici	High.Alarm
SILO 2	<input checked="" type="checkbox"/>	18-10-10 11:12:27	GearboxLub.0213.A17	Redüktör Yağlama Filtreleme Hattı Sivici	High.Alarm
ENERJİ	<input type="checkbox"/>	18-10-10 10:53:10	E162.642.DB160.RG1.M02	Silo1 Bag Filter Hücre Tekeri	LokalSalterAçık

10/10/2018 11:18

ANA TAHRİK | REDUKTOR YAĞLAMA | HSLM HSMS | HSSW

Product Transport

Reject Recirculation

Classifier

Gas System

Mill Motor

Mill Feeding

Reject Dosing

Mill Motor Running Time 68 h
Mill Feeding Totalizer 1658 t
Mill Feeding Actual Flow 145 t/h
Mill Feeding Setpoint 145 t/h

Değirmen Besleme Ayarları

Değirmen Besleme Aktif - Geçme Süresi	2 s
Değirmen Besleme Aktif - Geçen Süre	2 s
Değirmen Besleme Pasif - Geçme Süresi	5 s
Değirmen Besleme Pasif - Geçen Süre	0 s

Speed Control

S-Roller-1	31.9 rpm	S-Roller-2	32.7 rpm	S-Roller-3	27.3 rpm
WP	66.0 bar	CP	2.0 bar	CP	66.1 bar
CP	18.0 bar	CP	2.0 bar	CP	19.3 bar

Position Control

OP	103 mm	OP	102 mm	OP	101 mm
OP	105 mm	OP	105 mm	OP	105 mm
OP	0.7 bar	OP	1.2 bar	OP	2.4 bar

Silo 1 Level

Level	2.2 m	Level	12.6 m	Level	2.8 m
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Silo 2 Level

Level	0.0 m	Level	0.0 m	Level	0.0 m
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DEĞIRMEN :Graphic Display

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800xAService

11:18
10/10/2018

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

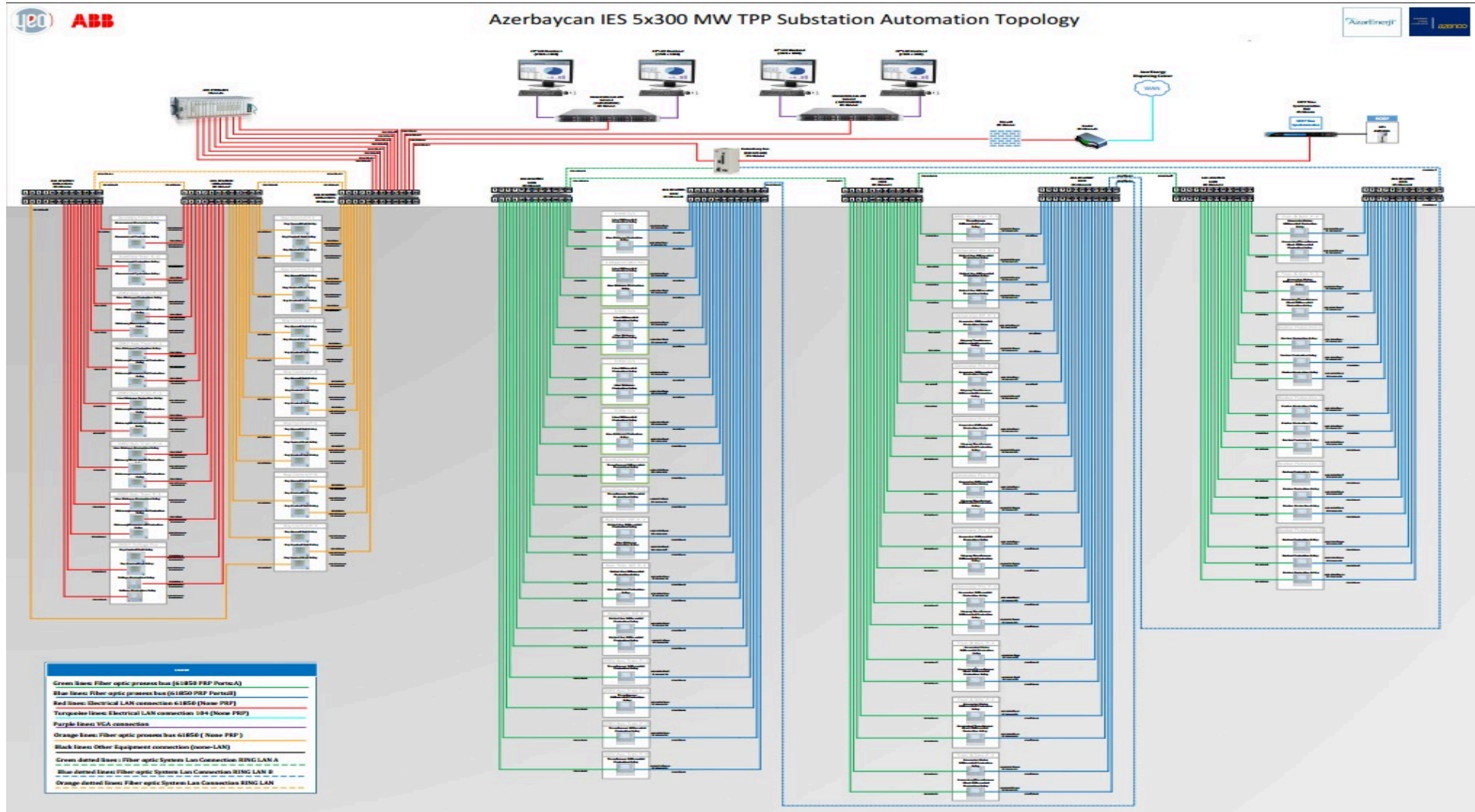
Scope of Works

- 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 Azerisq 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

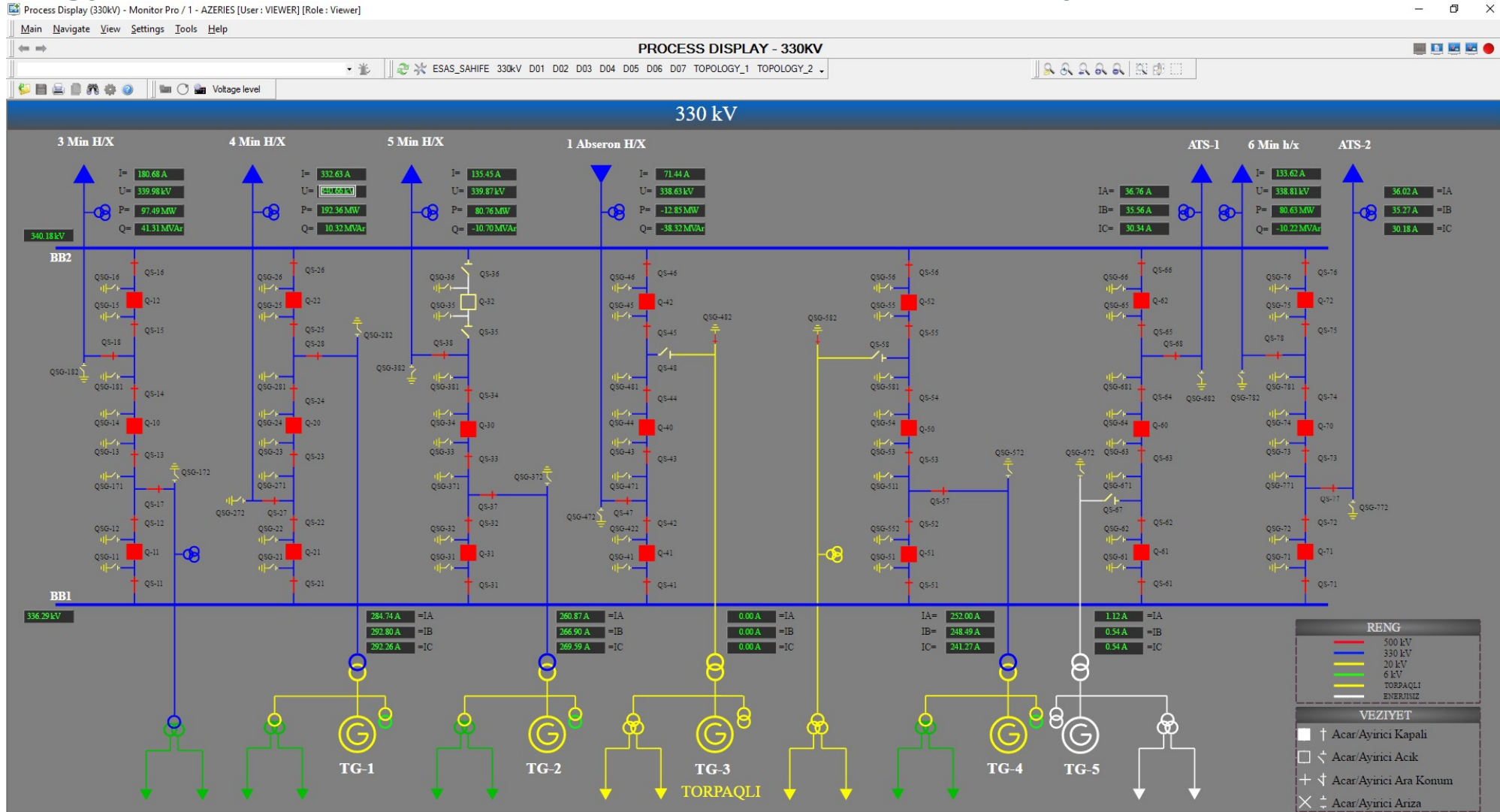
Azerenergy IES Thermal Power Plant Substation// System Architecture





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

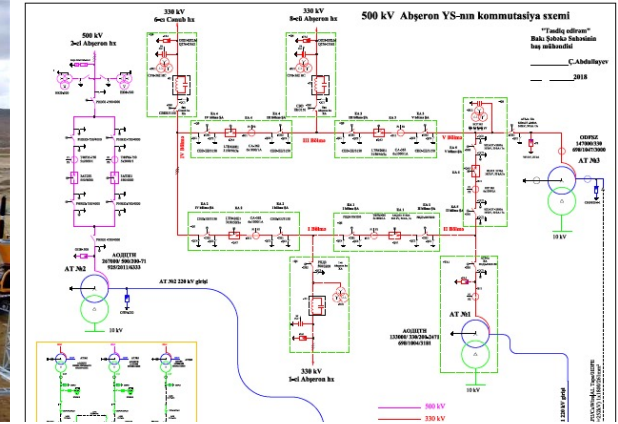
Client : AzerEnergy ASC

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

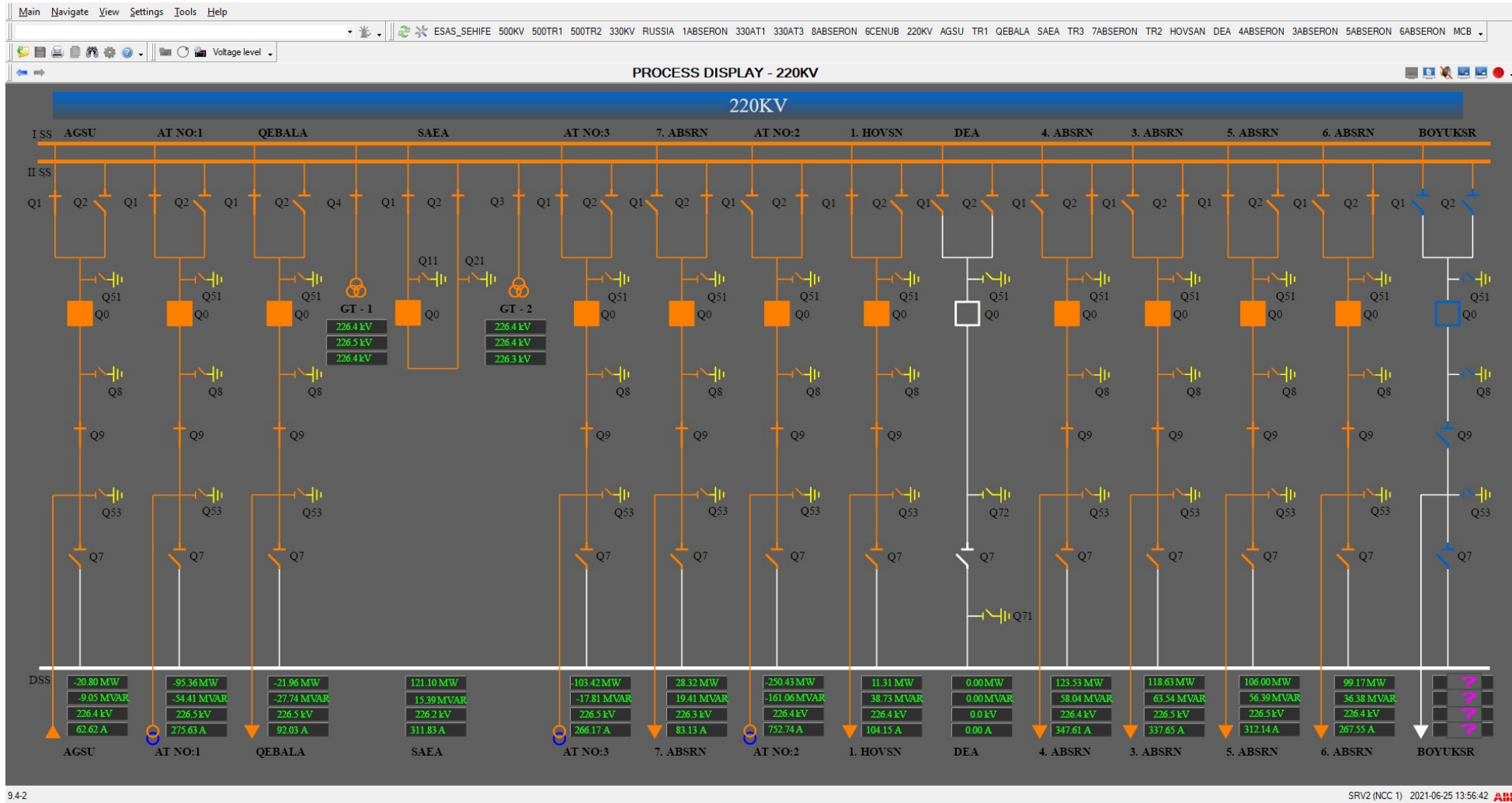
500/ 330/ 220 kV Abseron Substation// AIS





Substation Projects

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



9.4.2

SRV2 (NCC 1) 2021-06-25 13:56:42 ABB

Substation Projects

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



Substation Projects

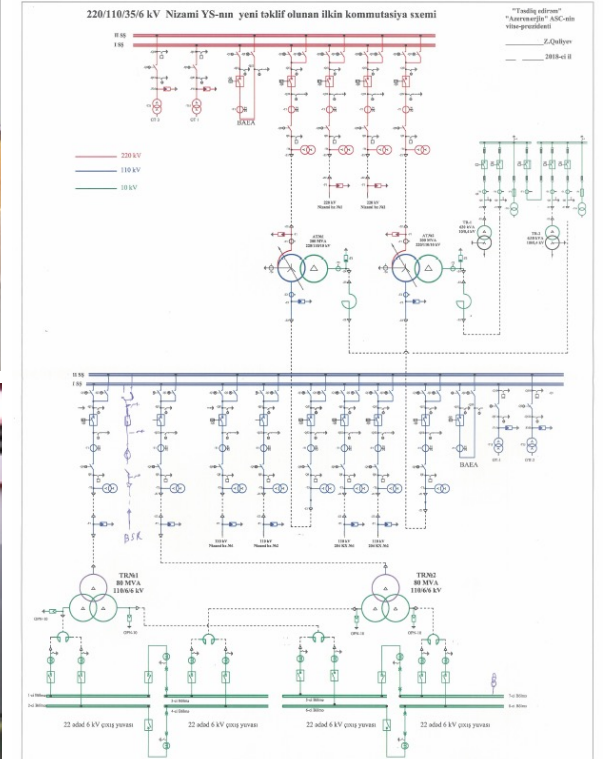
220/ 110/ 35 kV Nizami GIS Substation

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 Commissioning 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 Substation
Client	: İstanbul Energy Inc.
End User	: İstanbul Energy Inc.
Location	: İstanbul / Turkey

Scope of Works

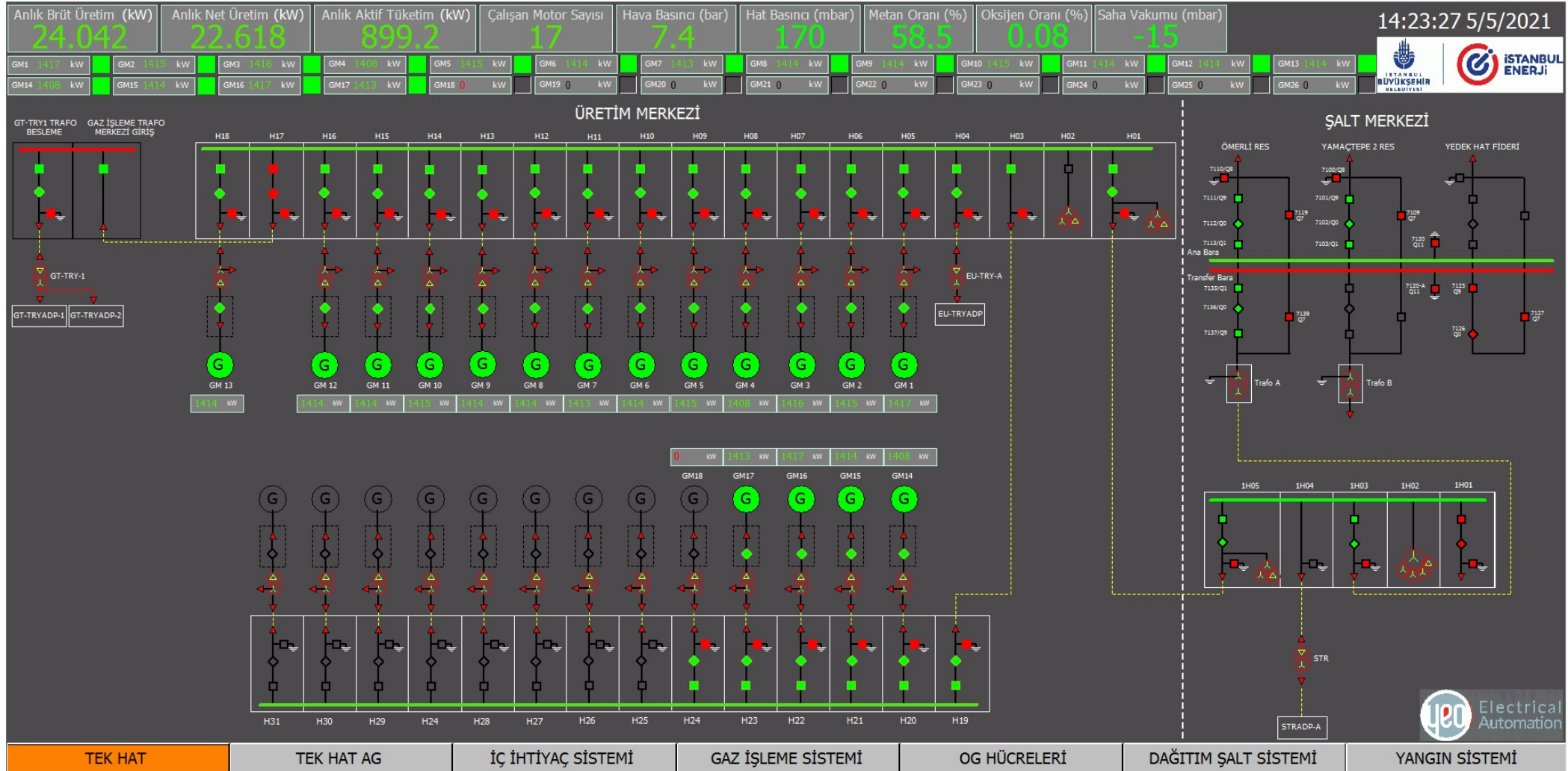
- Design & Technical Consultant
- 154 kV Substation
- Supplying all Electrical Equipment
- Installation of all Electrical Equipment
- ABB Symphony® Plus Scada System
- Software and Hardware Engineering
- Training
- Approvals of Project Documents at TEİAŞ
- Test and Commissioning





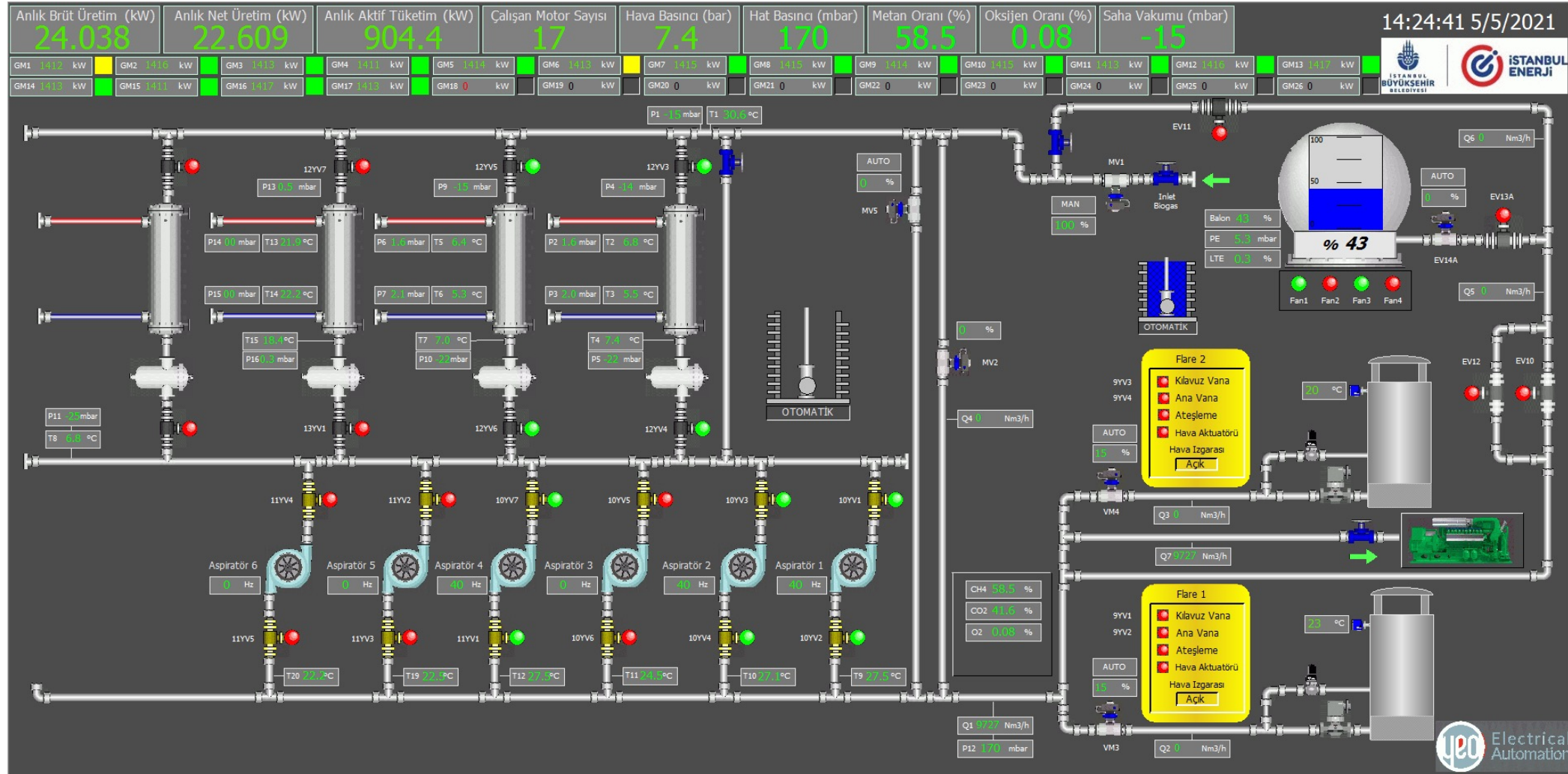
Biogas Projects

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

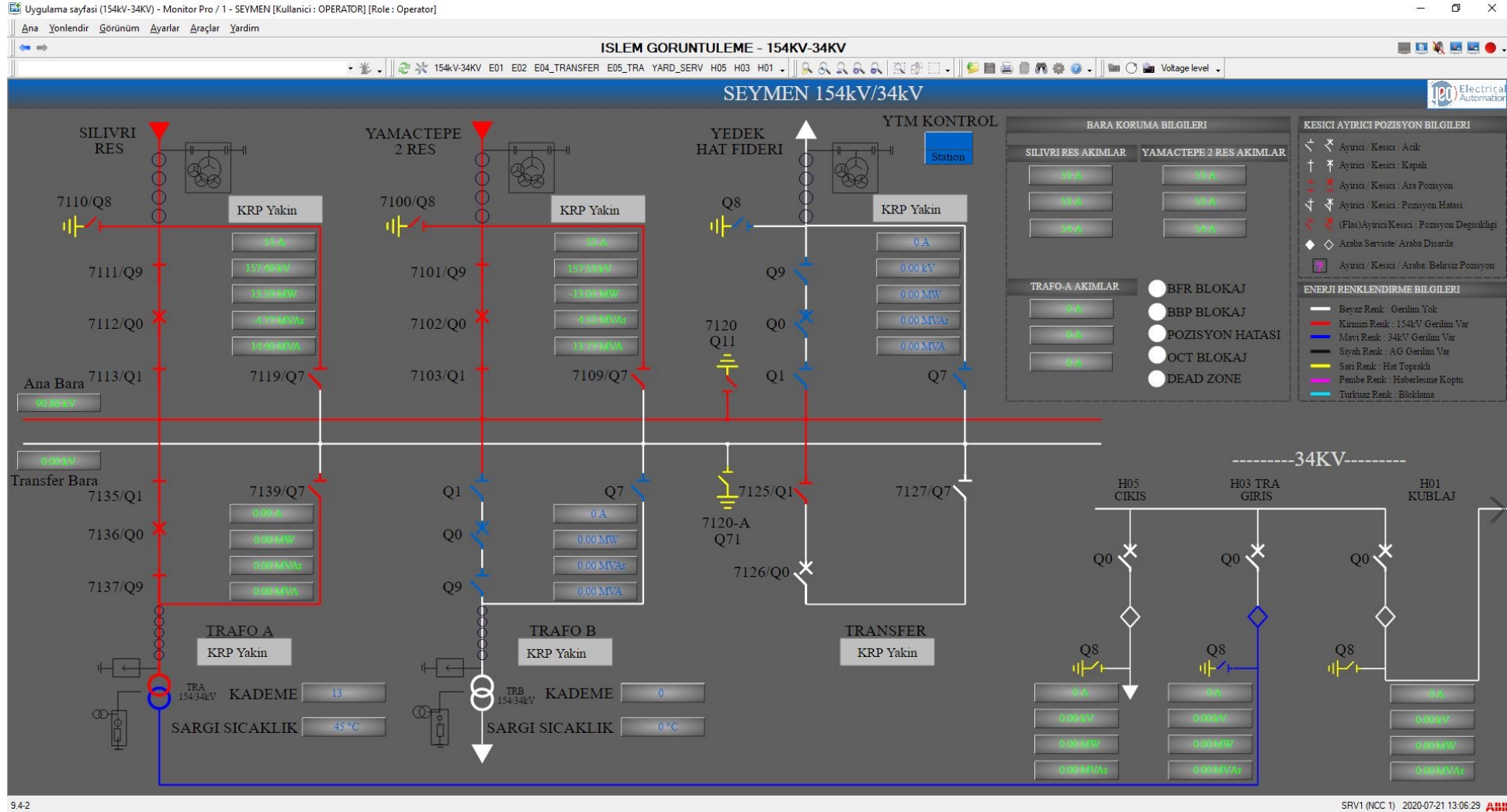
Seymen Landfill Gas Power Plant// Plant SCADA System// Gas Engines

Anlık Brüt Üretim (kW)		Anlık Net Üretim (kW)		Anlık Aktif Tüketim (kW)		Çalışan Motor Sayısı		Hava Basıncı (bar)		Hat Basıncı (mbar)		Metan Oranı (%)		Oksijen Oranı (%)		Saha Vakumu (mbar)		14:23:52 5/5/2021								
24.042		22.605		898		17		7.4		170		58.5		0.08		-15										
GM1 1417 kW	GM2 1412 kW	GM3 1414 kW	GM4 1416 kW	GM5 1416 kW	GM6 1413 kW	GM7 1416 kW	GM8 1414 kW	GM9 1415 kW	GM10 1414 kW	GM11 1411 kW	GM12 1413 kW	GM13 1415 kW	GM14 1412 kW	GM15 1417 kW	GM16 1413 kW	GM17 1414 kW	GM18 0 kW	GM19 0 kW	GM20 0 kW	GM21 0 kW	GM22 0 kW	GM23 0 kW	GM24 0 kW	GM25 0 kW	GM26 0 kW	
GM-01	GM-02	GM-03	GM-04	GM-05	GM-06	GM-07	GM-08	GM-09	GM-10	GM-11	GM-12	GM-13	GM-14	GM-15	GM-16	GM-17	GM-18	GM-19	GM-20	GM-21	GM-22	GM-23	GM-24	GM-25	GM-26	
1417 kW	1412 kW	1414 kW	1416 kW	1416 kW	1413 kW	1416 kW	1414 kW	1415 kW	1414 kW	1411 kW	1413 kW	1415 kW	1412 kW	1417 kW	1413 kW	1414 kW	0 kW	0 kW	0 kW	0 kW	0 kW	0 kW	0 kW	0 kW	0 kW	0 kW
1417 kVA	1412 kVA	1414 kVA	1416 kVA	1416 kVA	1413 kVA	1416 kVA	1414 kVA	1415 kVA	1414 kVA	1411 kVA	1413 kVA	1415 kVA	1412 kVA	1417 kVA	1413 kVA	1414 kVA	0 kVA	0 kVA	0 kVA	0 kVA	0 kVA	0 kVA	0 kVA	0 kVA	0 kVA	0 kVA
1 kVAR	1 kVAR	0 kVAR	-1 kVAR	0 kVAR	0 kVAR	1 kVAR	0 kVAR	-1 kVAR	0 kVAR	-3 kVAR	0 kVAR	-3 kVAR	0 kVAR	-1 kVAR	0 kVAR	-1 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	
1992 A	1999 A	1977 A	2000 A	2010 A	1992 A	2042 A	2002 A	1998 A	2016 A	1984 A	1984 A	2001 A	1971 A	2003 A	1978 A	2008 A	0 A	0 A	0 A	0 A	0 A	0 A	0 A	0 A	0 A	0 A
7483.9 MWh	7534.0 MWh	7578.0 MWh	7560.1 MWh	7527.8 MWh	6716.2 MWh	7497.4 MWh	7330.4 MWh	7300.7 MWh	7207.8 MWh	7438.5 MWh	7436.7 MWh	4450.2 MWh	4556.7 MWh	4776.9 MWh	4761.6 MWh	4690.8 MWh	0.0 MWh	0 MWh	0 MWh	0 MWh	0 MWh	0 MWh	0 MWh	0 MWh	0 MWh	
25.6 MVARh	30.4 MVARh	30.6 MVARh	28.5 MVARh	26.6 MVARh	22.3 MVARh	37.5 MVARh	36.1 MVARh	30.2 MVARh	35.1 MVARh	72 MVARh	45.1 MVARh	13.5 MVARh	23.9 MVARh	23.6 MVARh	24.7 MVARh	32 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	
286 start	324 start	250 start	308 start	285 start	194 start	138 start	222 start	155 start	162 start	208 start	153 start	79 start	82 start	94 start	107 start	72 start	0 start	0 start	0 start	0 start	0 start	0 start	0 start	0 start	0 start	
5305 hours	5398 hours	5373 hours	5356 hours	5332 hours	4717 hours	5305 hours	5192 hours	5165 hours	5101 hours	5255 hours	5244 hours	3150 hours	3226 hours	3379 hours	3368 hours	3319 hours	0 hours	0 hours	0 hours	0 hours	0 hours	0 hours	0 hours	0 hours	0 hours	
1412 kW	1417 kW	1413 kW	1414 kW	0 kW	0 kW	0 kW	0 kW	0 kW	0 kW	0 kW	0 kW	0 kW	1412 kW	1417 kW	1413 kW	1414 kW	0 kW	0 kW	0 kW	0 kW	0 kW	0 kW	0 kW	0 kW	0 kW	
1412 kVA	1417 kVA	1413 kVA	1414 kVA	0 kVA	0 kVA	0 kVA	0 kVA	0 kVA	0 kVA	0 kVA	0 kVA	0 kVA	1412 kVA	1417 kVA	1413 kVA	1414 kVA	0 kVA	0 kVA	0 kVA	0 kVA	0 kVA	0 kVA	0 kVA	0 kVA	0 kVA	
-1 kVAR	-1 kVAR	0 kVAR	-1 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	-1 kVAR	-1 kVAR	0 kVAR	-1 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	0 kVAR	
1971 A	2003 A	1978 A	2008 A	0 A	0 A	0 A	0 A	0 A	0 A	0 A	0 A	0 A	1971 A	2003 A	1978 A	2008 A	0 A	0 A	0 A	0 A	0 A	0 A	0 A	0 A	0 A	
4556.7 MWh	4776.9 MWh	4761.6 MWh	4690.8 MWh	0.0 MWh	0 MWh	0 MWh	0 MWh	0 MWh	0 MWh	0 MWh	0 MWh	0 MWh	4556.7 MWh	4776.9 MWh	4761.6 MWh	4690.8 MWh	0.0 MWh	0 MWh	0 MWh	0 MWh	0 MWh	0 MWh	0 MWh	0 MWh	0 MWh	
23.9 MVARh	23.6 MVARh	24.7 MVARh	32 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	23.9 MVARh	23.6 MVARh	24.7 MVARh	32 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	0 MVARh	
82 start	94 start	107 start	72 start	0 start	0 start	0 start	0 start	0 start	0 start	0 start	0 start	0 start	82 start	94 start	107 start	72 start	0 start	0 start	0 start	0 start	0 start	0 start	0 start	0 start	0 start	
3226 hours	3379 hours	3368 hours	3319 hours	0 hours	0 hours	0 hours	0 hours	0 hours	0 hours	0 hours	0 hours	0 hours	3226 hours	3379 hours	3368 hours	3319 hours	0 hours	0 hours	0 hours	0 hours	0 hours	0 hours	0 hours	0 hours	0 hours	
T.Aktif Üretim: 115675.4 MWh		T.Aktif Tüketim: 4561.84 MWh		T.Reaktif Üretim: 525.7 MVARh		T.Reaktif Tüketim: 1067.19 MVARh		FAZ A 157.503 kv		FAZ B 157.218 kv		FAZ C 156.939 kv		Raporlar		Rapor Alma										



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

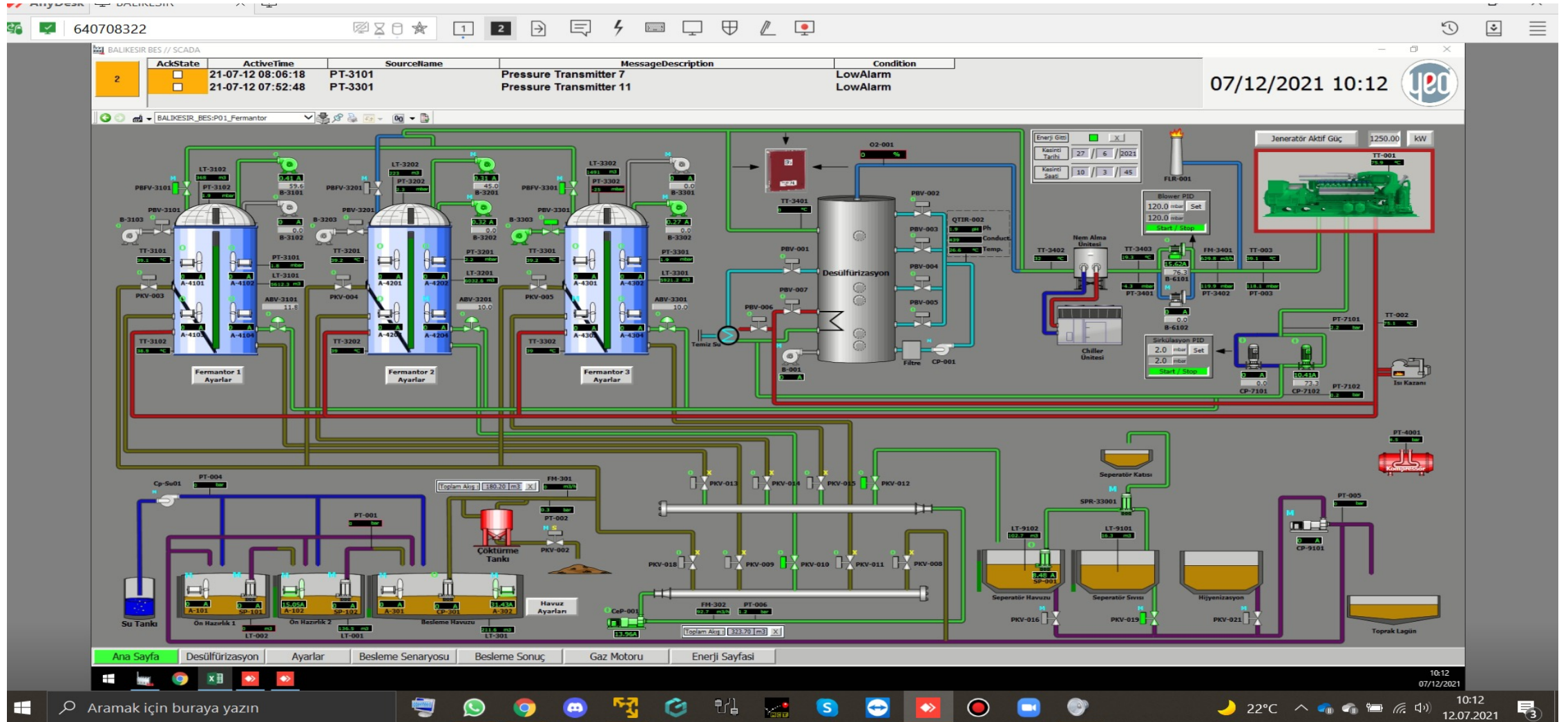
- MV and LV Distribution System Installation
- TEDAŞ Sale and AEM MV SWG Installation
- Step-Up & Step-Down Transformers Installation
- 0.4kV MDB and Compensation Panel Manufacturing & Installation
- Electrical Works of Co-generation Facility
- MV & LV Cabling, Earthing and Lightning System
- Lighting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





Biogas Projects

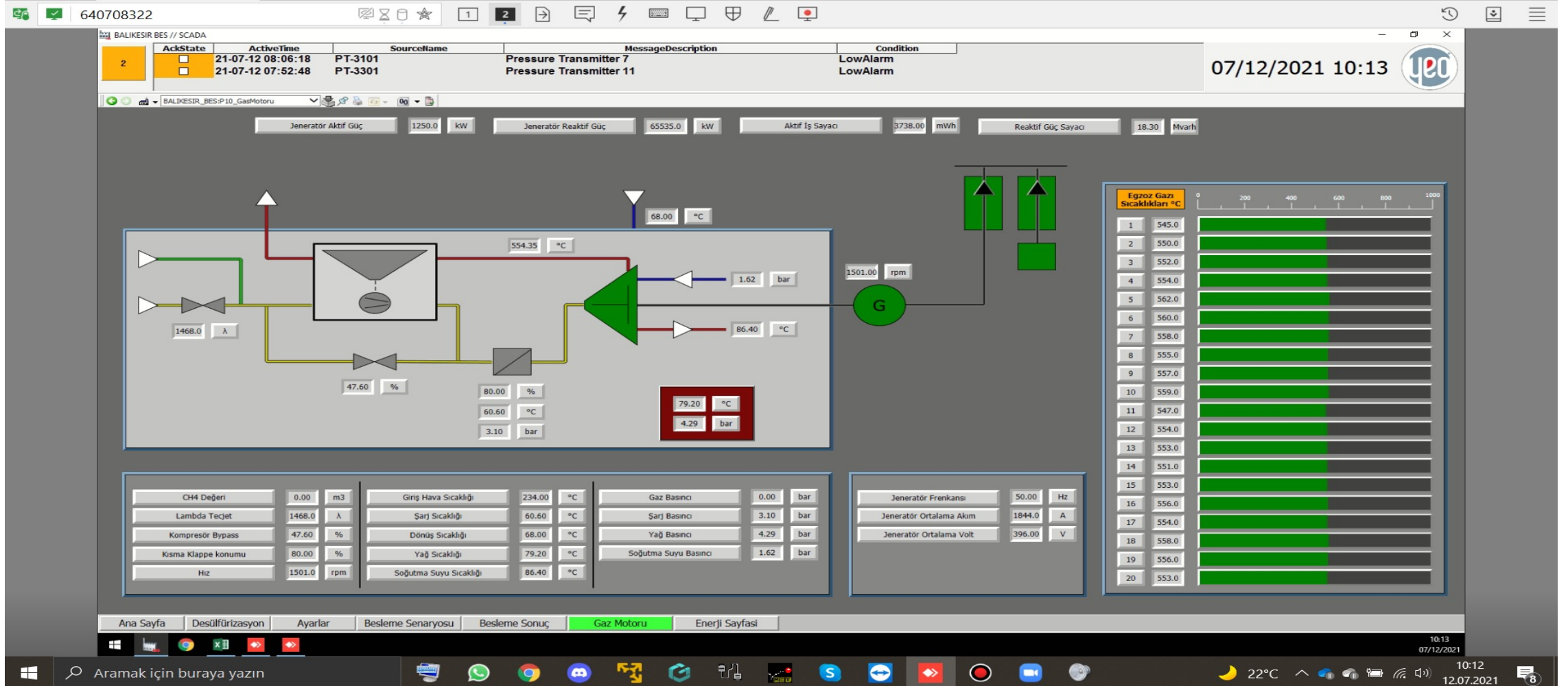
Afyon Biogas Power Plant// SCADA System





Biogas Projects

Afyon Biogas Power Plant// SCADA System





Agility for
Excellence
