



BEGEL ENERJİ ELEKTRİK ELEKTRONİK MÜHENDİSLİK DANIŞMANLIK İNŞAAT TAAHHÜT SANAYİ VE TİCARET LİMİTED ŞİRKETİ

BEGEL ENERGY , which has been supplying innovative solutions for electric power industry market since 2012 with his experienced team and advanced infrastructure, serves as your solution partner with his eco- friendly and innovative products and systems for improving the quality and efficiency of electrical energy in all life-cycles from generation to delivery. BEGEL has a mission of providing innovative products and services with high quality and competitive price in the fields of high voltage transformer centers, electric power generation, power quality, energy efficiency and renewable energy. BEGEL has been realized the goal of becoming a competitive, reliable and leading provider of high quality solutions, a technology developer and a company directing the changes in related fields.

BEGEL has become the leading company in HV- MV power quality industry, where only multinational firms had been operated until recently. In 2012, BEGEL has partnered with "EASYPower", one of the world largest power system analysing software provider in the engineering design of power systems , and began to offer its products and services to 45 countries using the existing franchises and liaison offices. By the end of 2014, BEGEL has not only become the leading company in domestic markets, but also an international brand with his day-by-day growing business in the field of power engineering .

BEGEL , started to increase his interest on electricity transmission and distribution market by 2012, had stated the needs of the customers at the right time, and provided right products and services to the market with an engineering aspect. We have successfully finished 12 turnkey electrical substation projects in Turkey and Turkmenistan By this way, BEGEL has had a good reputation in the market as well as being the market leader. Software named as EASYPower , which has been developed by USA expert engineers since end of 2014 is now being used in 16 electrical engineering companies in Turkey. Besides, EASYPower is the unique software in the market with its dedicated and tailor-made modules recently offered to market for electricity generation, renewable energy and industry markets.

Our Engineering and Design services are completed by internationally recognized standards compatible 10 softwares and engineering disciplines.

Engineering and Design Services:

Electrical Primary Design: Domestic and international HV/MV/LV facilities' primary design according to national and international standards. (Layout, cross section, etc)

Electrical Secondary Design: Secondary design of protection, control, metering etc. systems. (Panel view, electrical schemes, components list etc)

Civil Design: Steel and concrete design (Foundation details, steel construction design, etc)

Mechanical Design: Mechanical systems design for Hydroelectric Power Plants. (Cooling and oil systems design etc)

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Calculation and Analysis: Electrical, construction and mechanical analysis of facility. (equipment dimensioning, short cut, load flow, selectivity, arc flash analysis, stability, concrete calculations, strength calculations, etc.)

Some of Our Major Projects:

2017-2018: Turkish Electricity Production Company (EUAŞ) Ambarlı Combined Cycled Plant-B : Renewing primary equipments and whole secondary systems of the 154kV Substation,



EUAS Ambarlı CCPP –B – 154kV Substation (One and a half breaker schema) Modernizing Project

Scope of Works:

1. Primary and Secondary Testing of whole substation : one and a half breaker system
2. Renewing 6 voltage transformer and 3 current transformer
3. Renewing all of the secondary cables (30 km)
4. Busbar Protection with SEL Busbar Protection Relays with covering 42 feeders: (Largest Busbar Protection System in Turkey)
5. 154kV Control Panel: 2 pieces

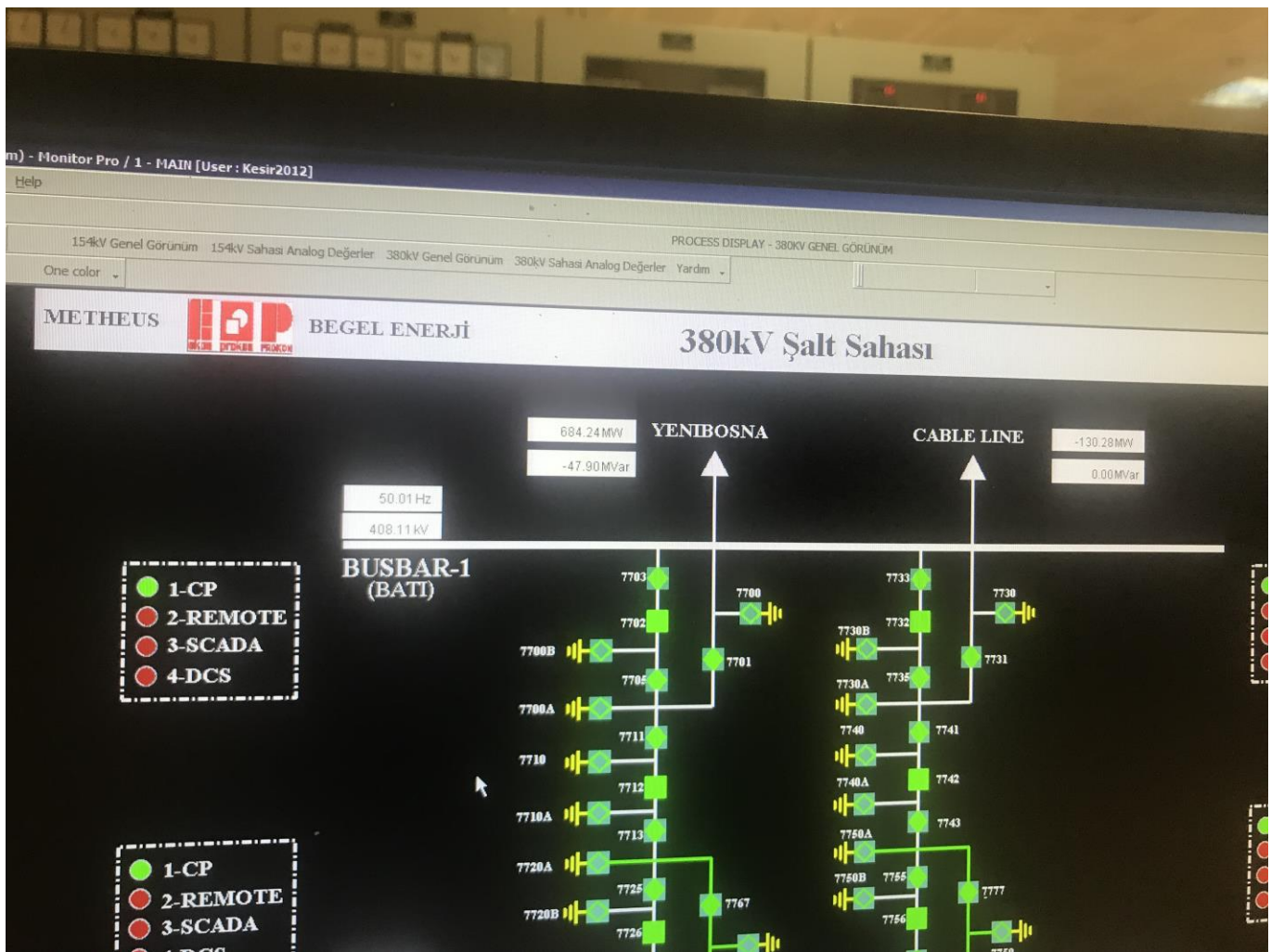
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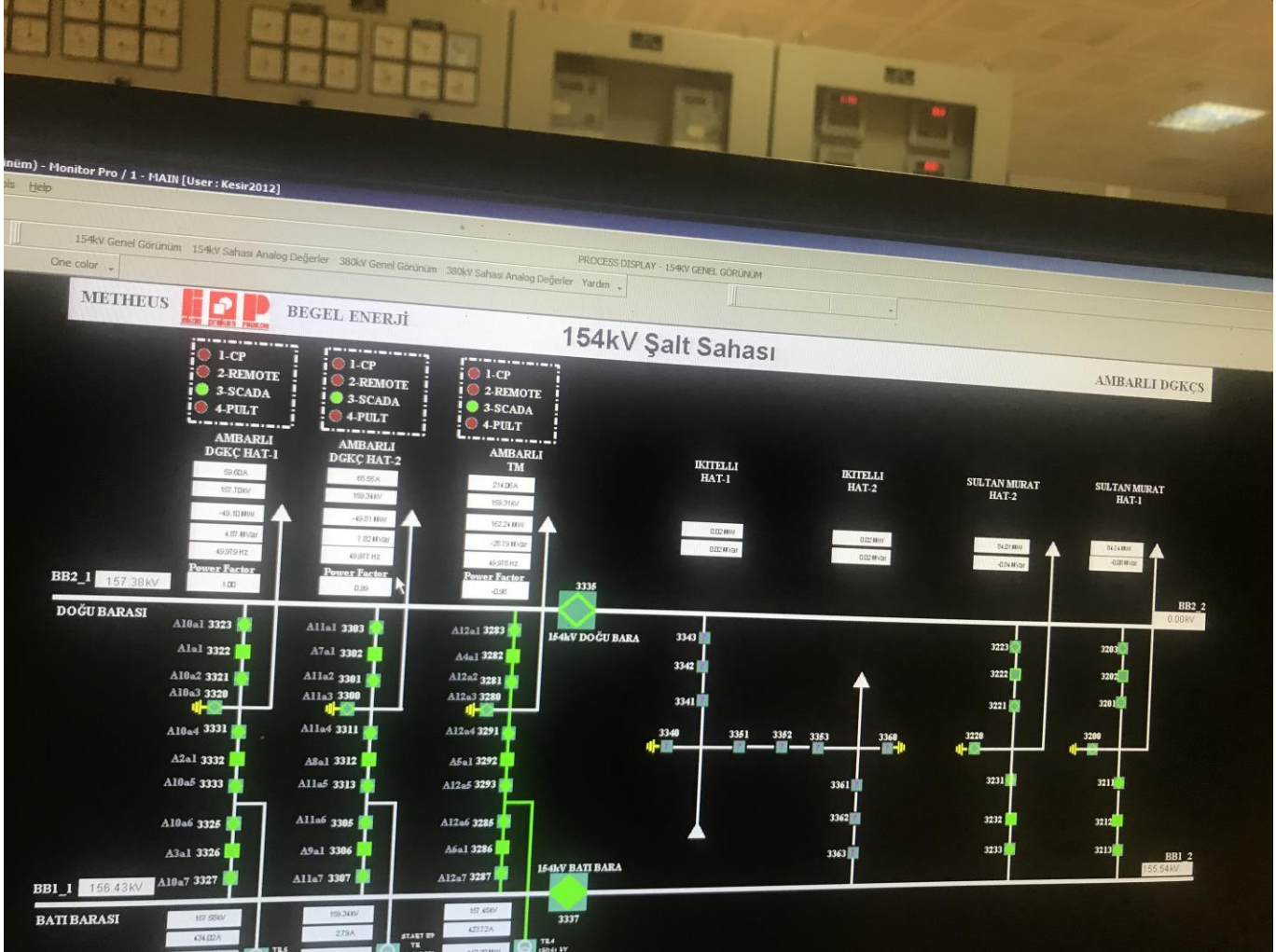
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6. 154kV Relay Panel: 2 pieces
7. AC-DC distribution
8. SCADA – RTU system : 380-154kV substation Real Time Monitoring
9. Construction of New Control Building
10. Renewing Telecom Building
11. Cable Channel Construction: 150 meters
12. Steel Construction: 8 tons
13. Heavy duty Cable Tray: 1000 meter



Ambarlı CCPP – B 380 kV Substation SCADA System

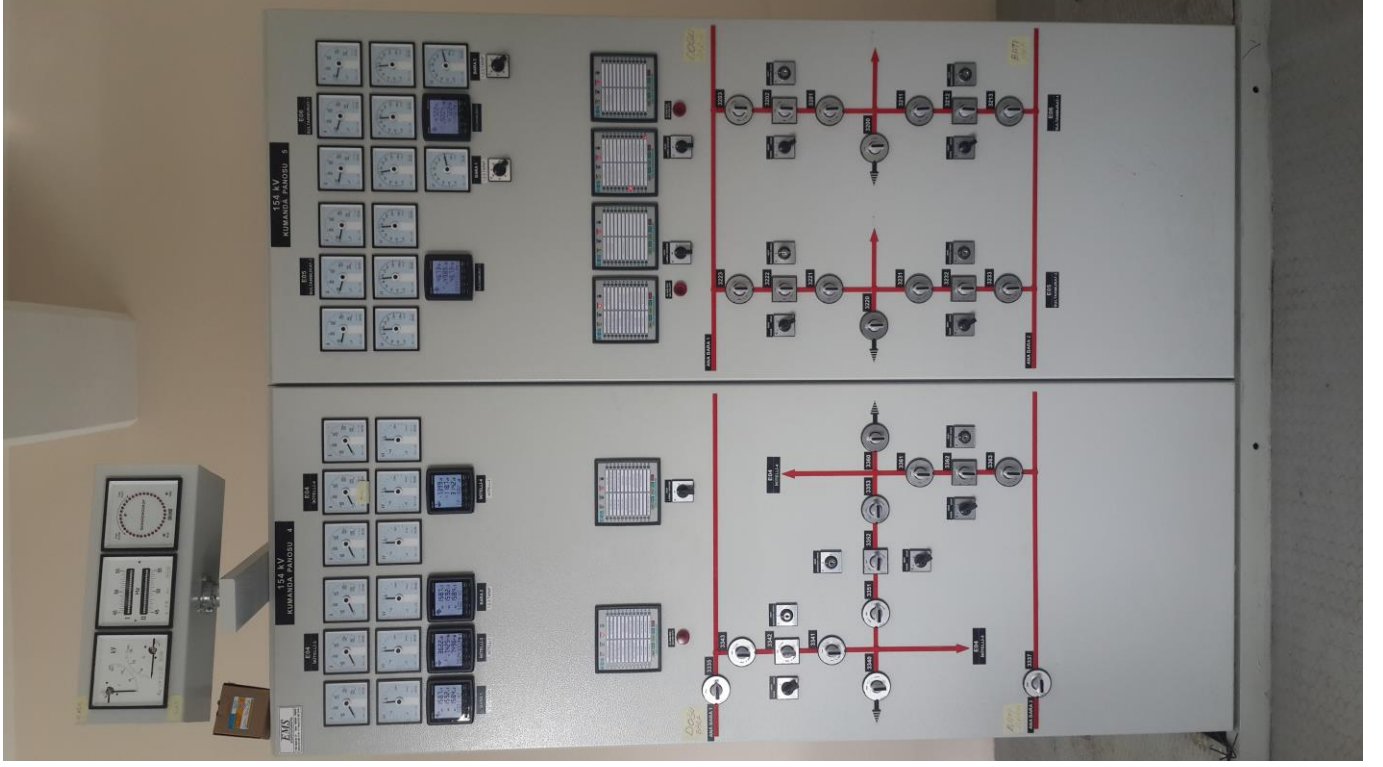
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Ambarlı CCPP-B 154 kV Substation SCADA System

4 154 kV one and a half breaker schema overhead line feeders

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Ambarlı 154kV CCPP –B Control Panels

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Ambarlı 154kV Relay Panel

2016-2017: 110/35/10 kV 2*25 MVA Akbugday Electrical Substation TURKMENİSTAN:

Begel Energy has successfully finished before the deadline of Project Akbugday Substation in 5 months after signing the contract .

In this Project we made extraordinary effort and compete with extreme desert conditions of Karakum Desert.

Scope of Works :

H-type busbar configuration of substation turnkey construction including civil Works also.

1. Installation of two 110/35/10 kV Power Transformer
2. SCADA System with communicating dispatch center and two substations
3. MV Metal clad Switchgear with 24 feeders
4. Protection and Control Systems
5. Telecommunication System
6. Fire Fighting System

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Akbugday TM Metal Clad Building while construction

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Akbugday TM Steel Construction ; outside temperature is 50 degree celcius.

Consultancy Services:



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- Preparing technical specifications
- Technical evaluation of projects and offers
- Supervision services
- Time scheduling
- Procedure and process monitoring

Technical Project Control:

- Compilation and technical control of designs
- Coordination of parties (Organizing information flow between Manufacturer, Investor and Contractor firms)
- Field supervision and controls during project execution
- Organizing technical meetings

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Turkey's first MV automated shunt reactor systems- 2010

SCADA AND AUTOMATION

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BEGEL ENERGY offers a compact solution to clients for SCADA and Automation systems including design, panel manufacturing, field tests and commissioning.

Keeps being proud of high-end technology by following newest SCADA and Automation systems.

BEGEL ENGINEERING offers HEPP Systems solutions by 20 years of Energy Sector experience.

We are breaking new grounds on SCADA, Automation and Synchronisation systems for Hydroelectric Power Plants for years by our experience.

We serve our clients during the processes of drawing automation projects, designing PLC and Synchronisation systems, manufacturing automation panels and generating energy. Hot and Cold tests of Hydroelectric Power Plant is included in that process

Our high-end devices and years of experience are combined to serve in means of actualizing your investments profitably and efficiently.

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- *Water level control,*
- *Intake gate control,*
- *Turbine monitoring and control,*
- *Exciter and governor controls,*
- *Generator Synchronisation,*
- *HV,MV and LV distribution and control systems,*
- *Monitoring Protective Relays and Energy Analysers,*
- *Turbine Temperature Control,*
- *Applying Emergency Stop Scenarios of Power Plant,*
- *Controlling Facility by monitoring on SCADA System and Mimic Control Desk,*
- *Turbine oil levels information,*
- *Turbine cooling water valve open/close information,*
- *Turbine governor oil level information,*
- *Turbine governor oil pressure information,*
- *Turbine cooling water valve open/close command,*
- *Turbine entrance valve open/close information,*
- *Bypass open/close limit switch information,*

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- *Excitation, synchronisation failure information,*
- *Speed information,*
- *Turbine governor start/stop control,*
- *Turbine governor increase/decrease set value control,*
- *Excitation system running and failure information,*
- *Control output.*



Installation

A facility's all electrical equipments from generation to end user including process instruments are installed by us. Our installation works starting with planned mobilisation, are delivered to test and commissioning phase without any problems in supervision of our experienced engineers and foremans.

- Power Plants (HEPP, WEPP, THERMAL)
- Substation (AIS – GIS)
- Industrial Facilities
- Shopping Malls and Business Centers
- Complete GIS Installation up to 380 kV (Gas Insulated Switchgears)

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- Complete AIS Installation up to 380 kV
- Medium Voltage Switchgear Cubicle Installation
- Process and Switchgear Automation Installation
- Low Voltage, Control, Scada etc. Panels Installation
- Transformer Installation (100 kVA ... 750 MVA)
- Cable Conduit Installation
- Cabling Works (Cable Pulling, Termination, Bushing, Muff)
- Lighting, Automation, Weak Current Installation
- Steel and Iron Construction Installation
- Grounding System

Test and Commissioning

In the process starting with project execution and ending by delivering to client, all equipments' field tests are completed before first energising.

During the process of field tests and energising, we serve with our experienced engineers, technicians, calibrated primary and secondary test devices.

The main purpose of the tests is combining our experience with client's comments and applying to the field rather than testing the project as it is and applying to the field.

- HV Switchgear Equipments Primary and Secondary Tests
- LV-MV Switchgear Equipments Primary and Secondary Tests
- Protective Periodic Maintenance and Installation

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- Grounding Measurement (Acciording to Wenner and Selvaz Method)
- GIS tests, SF6 Gas Tests and Applications
- Electrical Power, Harmonic and Thermal Analysis
- Electrical and Gas Tests of Oils
- Generator and Motor Tests
- Protection and Control Relay Tests
- UPS and DC System Tests

