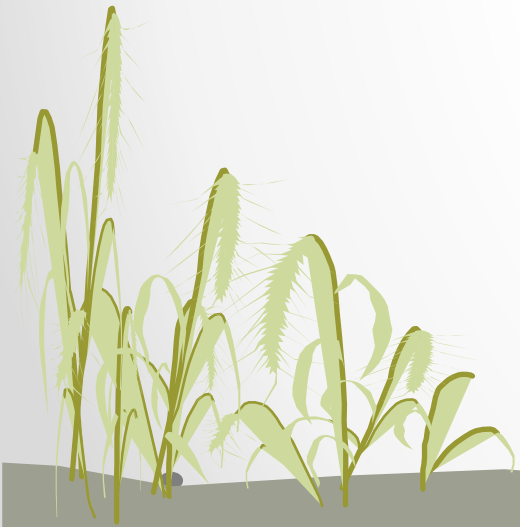


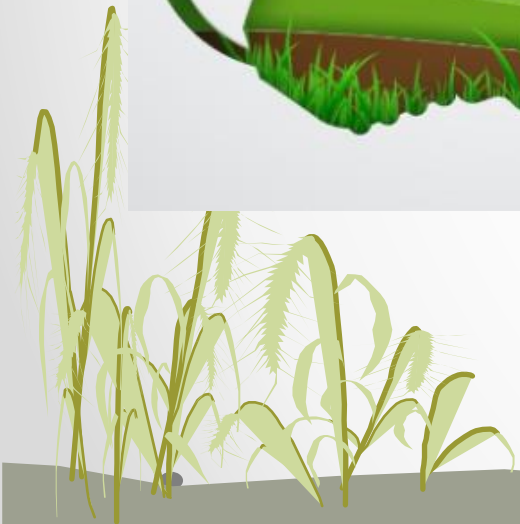
ISO 50001 Energy Management System INFORMATION



INTRODUCTION



- For energy-consuming organizations, minimizing energy costs and reducing environmental impacts are essential goals in today's business world. One of the most effective ways to achieve these goals is to optimize energy management by using energy efficiently.
- The ISO 50001 Energy Management System provides a systematic and strategic approach to energy management, offering substantial support to organizations in achieving their goals.



What is ISO 50001?

ISO 50001 is an international standard aimed at systematically addressing energy management. Developed by the International Organization for Standardization (ISO), this standard assists businesses in managing energy more efficiently, sustainably, and effectively.

ISO 50001 supports organizations in achieving the following goals:

- Energy efficiency,
- Savings,
- Environmental sustainability, and
- Cost control.



What Are the Advantages?

 **Cost Savings:** The analysis and optimization of energy consumption help reduce energy costs, and enhance the profitability of your business.

 **Sustainability:** ISO 50001 supports the reduction of environmental impacts and helps you achieve your sustainability goals through energy efficiency.

 **Competitive Advantage:** ISO 50001 certification demonstrates to customers and stakeholders that your business is environmentally friendly and energy-efficient, which provides a competitive advantage.



What benefits does it offer to businesses?

 **Energy Cost Savings:** Increasing energy efficiency can provide significant savings in energy costs.

 **Reduction of Environmental Impact:** As energy efficiency increases, environmental impacts are reduced, contributing to your sustainability goals.

 **Competitive Advantage:** ISO 50001 certification demonstrates to customers and stakeholders that your business is environmentally friendly and energy-efficient, which provides a competitive edge.

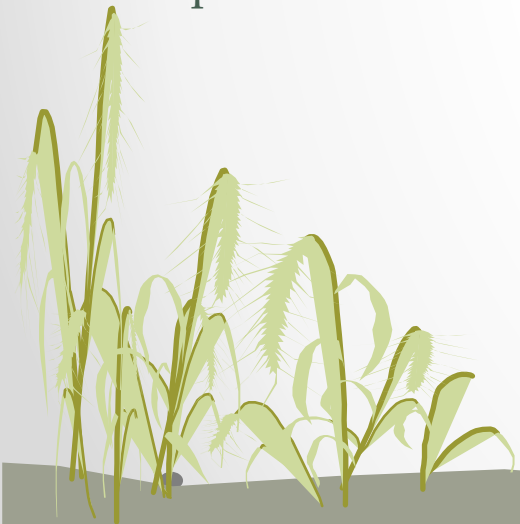
 **Continuous Improvement:** ISO 50001 enables you to subject your energy management system to a continuous review and improvement cycle.



Energy Management at OzU

Pursuant to the Regulation on Increasing the Efficient Use of Energy Resources and Energy, an **Energy Manager** has been appointed, and an **Energy Management Team** has been established at Özyeğin University.

(Annual energy consumption $\geq 1,000$ Tons of Equivalent Petrol (TEP))



Roles and Responsibilities of the Energy Manager

Organizes training and awareness activities,

Monitors, maintains, and calibrates energy consuming devices

Monitors and periodically reports energy consumption and density

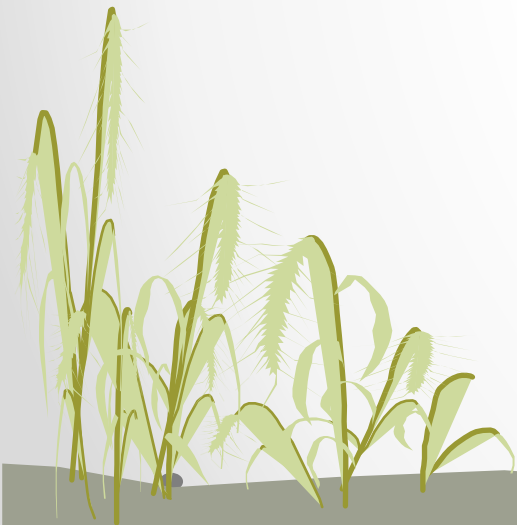
In charge of feasibility studies and project coordination

Conducts cost-benefit analyses and reports to top management

Prepares plans for alternative fuel use as well as crisis periods

Determines the CO₂ reductions achievable through energy efficiency measures

Reports annual energy consumption and energy management activities
to the ETKB at the end of March



Energy Resources at OzU

1- Utility Grid (Mains Power)

An energy source provided by electricity distribution companies. Distribution transformers are located at specific points to prevent voltage drop due to the extensive layout and distant settlement of our campus and dormitory buildings.

2- Trigeneneration System

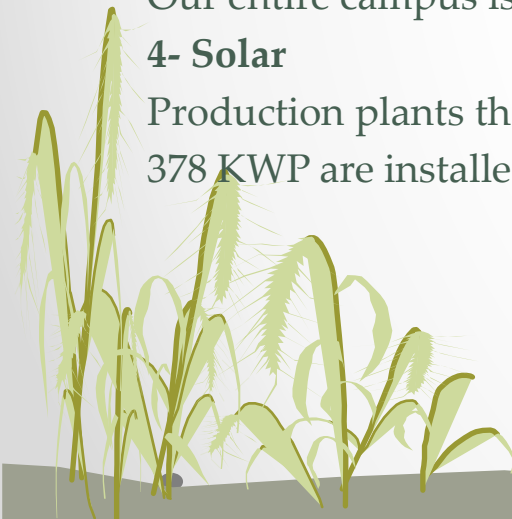
Power plants designed to capture and utilize the heat generated during the production of electricity from natural gas. They use this heat in existing heating and cooling systems, by preventing its release into the atmosphere.

3- Diesel Generator

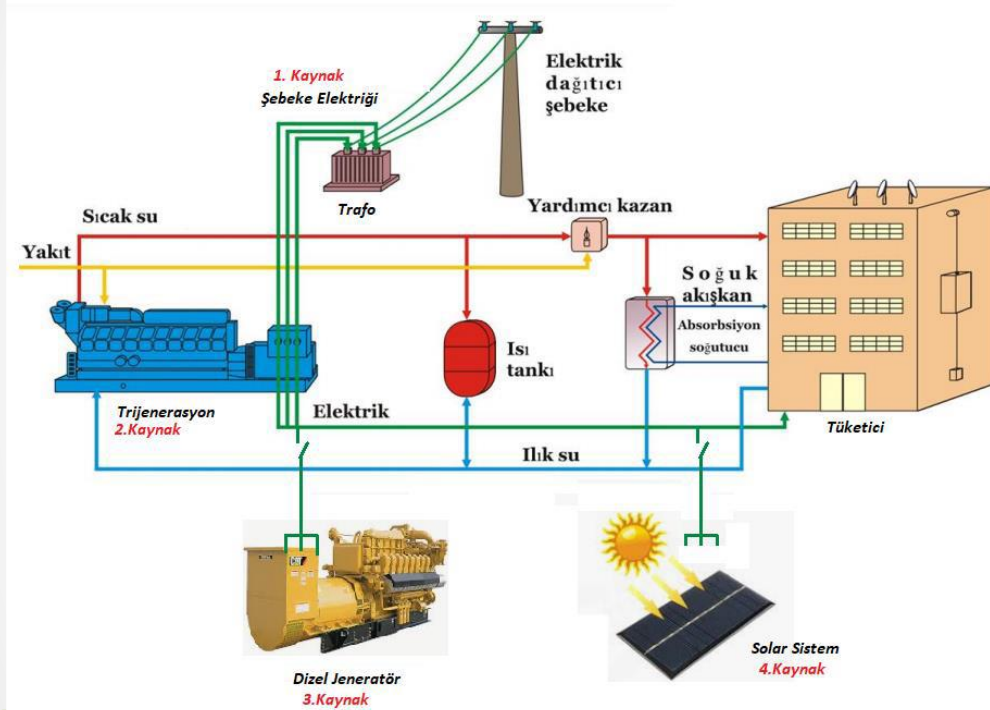
Systems that convert chemical energy into electrical energy, supplying power to the entire system during electricity outages. Our entire campus is designed in a way to be powered by four 1,100 KVA Caterpillar generators.

4- Solar

Production plants that convert solar energy into electrical energy. In the master plan, solar power plants with a total capacity of 378 KWP are installed on the roofs.



Energy Resources at OzU



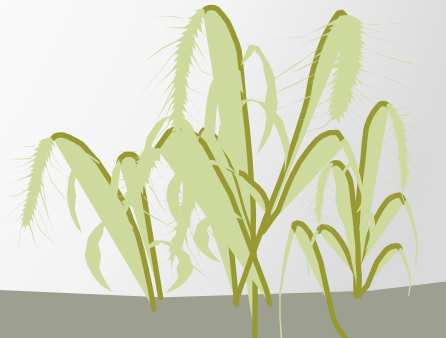
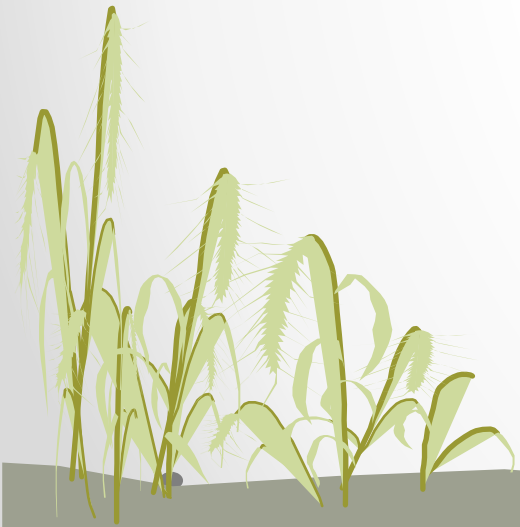
Three sources can be operated in synchronization simultaneously.

The second source (Trigeneration) is prioritized as the main source due to its economic efficiency.

Due to its technical specifications, Trigeneration is operated in island mode (in isolation, with only the second source in operation) within a capacity range of 35% to 85%. If the capacity drops below 35%, connected consumers are automatically switched to the mains power (first source). If the capacity is above 85%, both the first and second sources supply electricity to the consumer synchronously. Meanwhile, solar power plants are continuously operated to ensure Trigeneration capacity never drops below 35%.

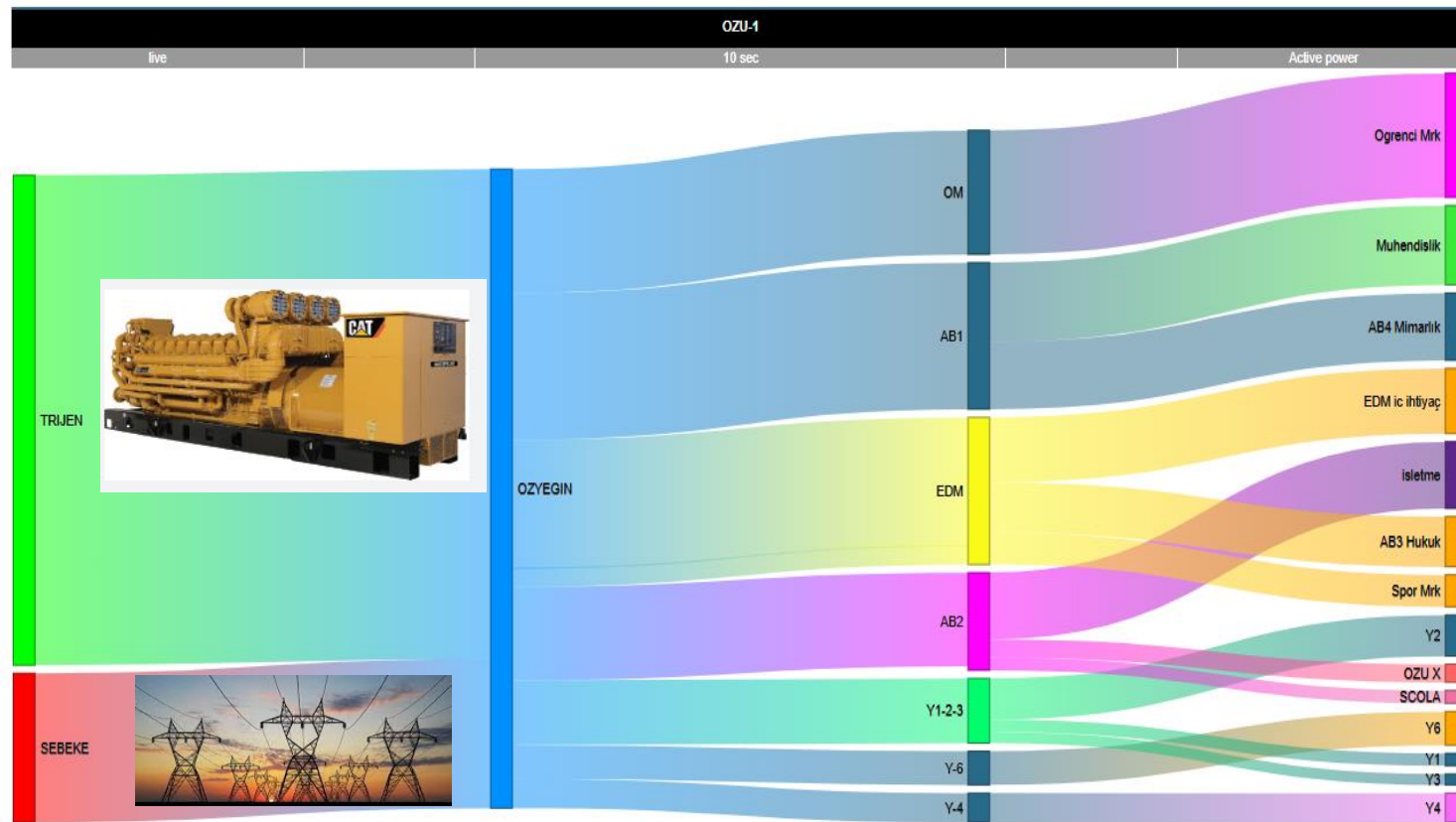
In a case in which the first and second sources are out of service, the entire system is powered by four Diesel generators (third source).

**IF YOU CAN'T
MEASURE IT,
YOU CAN'T
MANAGE IT!**



Energy Management System at OzU

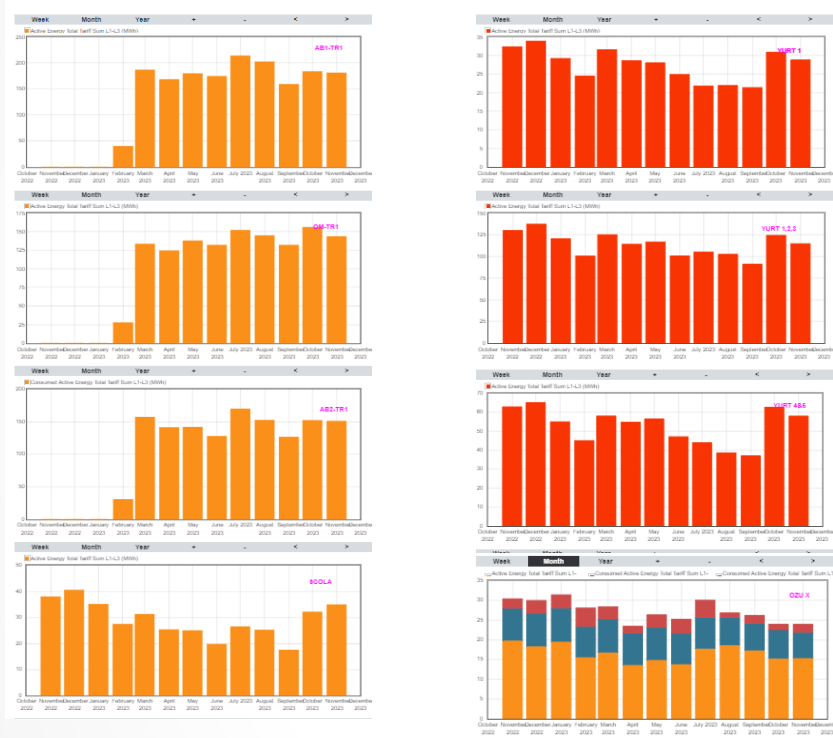
Energy consumption data are monitored and recorded via the SCADA system.



Monthly Average SES (Solar Energy Systems) Consumption



Energy Management System at OzU



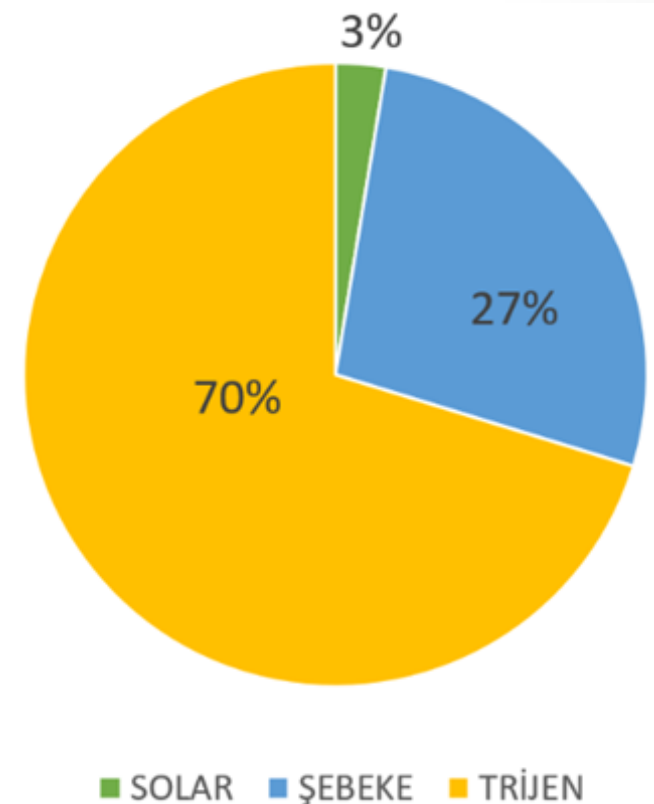
- The electrical consumptions of the buildings are monitored and recorded via the SCADA system.
- Consumptions are measured with quality analyzers that generate EN50160 standard reports.

Energy Management System at OzU

- Energy consumption data are monitored and recorded online via the SCADA system.
- With the installation of Trigenation in 2017, 70% of our electricity needs have been met through this system since then.
- The contribution of the Solar Energy System (GES) to our electricity consumption corresponds to 3% of our total consumption.

Energy Source Utilization Rates

**These rates may vary based on natural gas and grid (mains) electricity costs.*



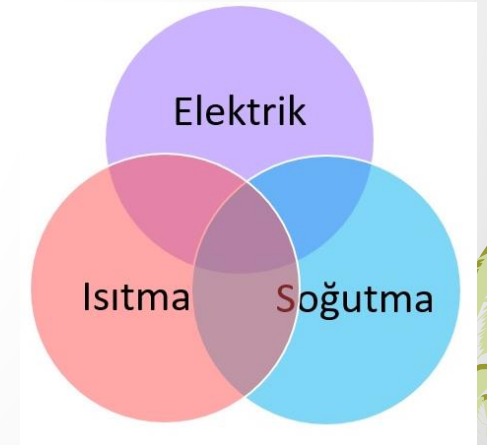
Energy Efficiency Practices at OzU

- In Lighting Systems; high-efficiency lamps and LED fixtures are used. Lighting is controlled by an automation system.
- The roofs of our buildings AB1, AB2, ScOLa, and Energy Distribution Center house solar power plants with a total capacity of 378 Kwp. Installed in 2014, these power plants generate approximately 400,000 Kwh of electricity annually.



Energy Efficiency Practices at OzU

- In order to enhance our energy efficiency, we invested in the Trigenation system in 2017. Located in the EDC building, this system utilizes natural gas as fuel to generate electricity. The waste heat produced in the chimney and the body during electricity generation is recycled, serving dual purposes for both heating and cooling.



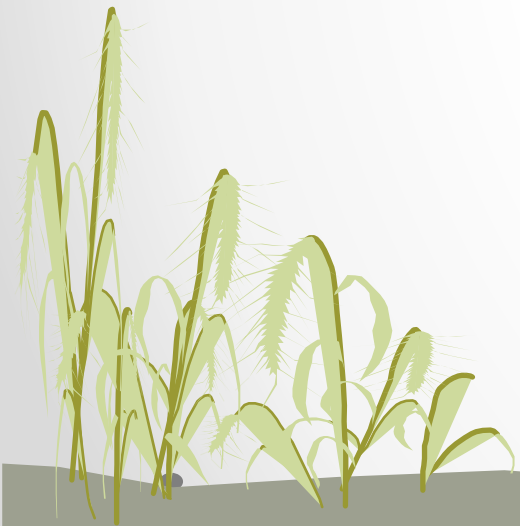
Energy Efficiency Practices at OzU

- In our mechanical heating and cooling systems, energy efficient A+ devices are preferred and monitored via an automation system.



Energy Efficiency Practices at OzU

- Our buildings architecture is designed to receive more natural light (daylight).



Energy Efficiency Practices at OzU



- Aerators are used in toilet faucets.

Energy Efficiency Practices at OzU

- Smart thermostats are used in heating and cooling systems.



Energy Efficiency Practices at OzU

- Revolving and sliding doors are preferred at building entrances to minimize heat loss.



THE WORLD IS OURS!

Conscious and sustainable energy consumption is a crucial matter to which each individual can make a meaningful contribution.
Thank you for your support and contributions.

