

Bosphorus Electricity Distribution Corporation (BEDAS)

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THE GROUP COMPANY – CLK ENERGY



BEDAŞ has been privatized in 28 May 2013 and owned by CLK Energy. CLK Energy Group, established as the association of Cengiz Holding, Limak Holding and Kolin Group, operates in the utility sector with Akdeniz, Boğaziçi, Çamlıbel, Uludağ Electricity Distribution and Retail Companies.

BOĞAZIÇI ELEKTRİK DAĞITIM

BEDAŞ is the largest electricity distribution company of Turkey operating on the European side of İstanbul with its 4,5 million consumers and 24,5 billion kWh purchased energy amount.



BOĞAZIÇI
ELEKTRİK
DAĞITIM

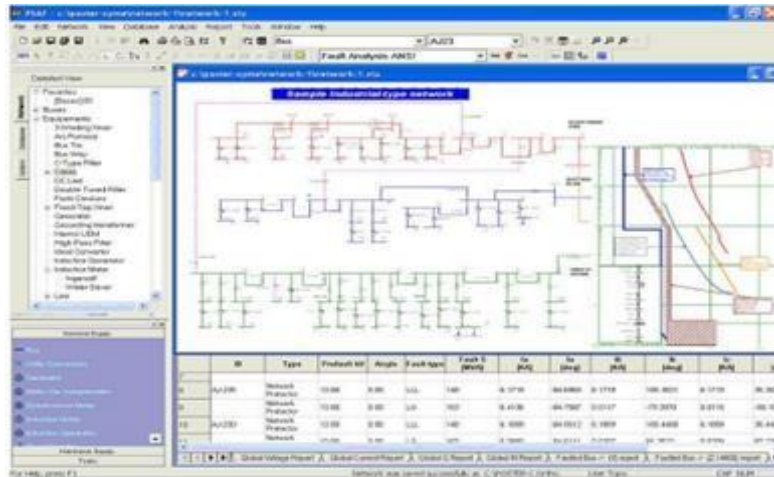


SOME BASIC INDICATORS OF BEDAŞ COMPARED TO TURKEY IN GENERAL

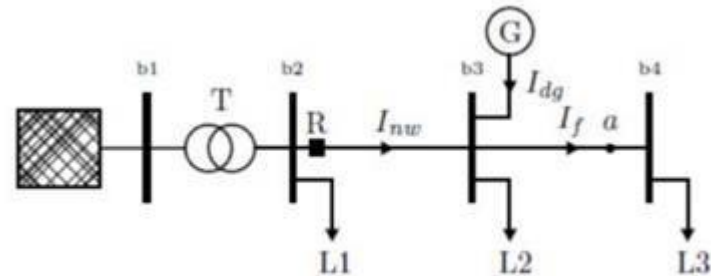
ISTANBUL EUROPEAN SIDE (BEDAŞ)	TURKEY
3.573,1 km ²	814.578 km ²
9.162.919 Population	77.695.904 Population
4.478.445 Consumer	35.767.298 Consumer
24.511.427 MWh	232.452.011 MWh
Area	0,44 % of all Turkey
Population	11,81 % of all Turkey
The Number of the Consumer	12,52 % of all Turkey
Energy Consumption	10,54 % of all Turkey

Project-1: Dynamic Technical Loss Calculation by Load Flow and algorithms and MV-LV Network Modelling

CYME Dist Power System Analysis Software, GIS, AMR-load profiles-, Billing System etc.



Project-2: EV, Energy Storage and DG Optimization and Analysis the Impacts to the Network

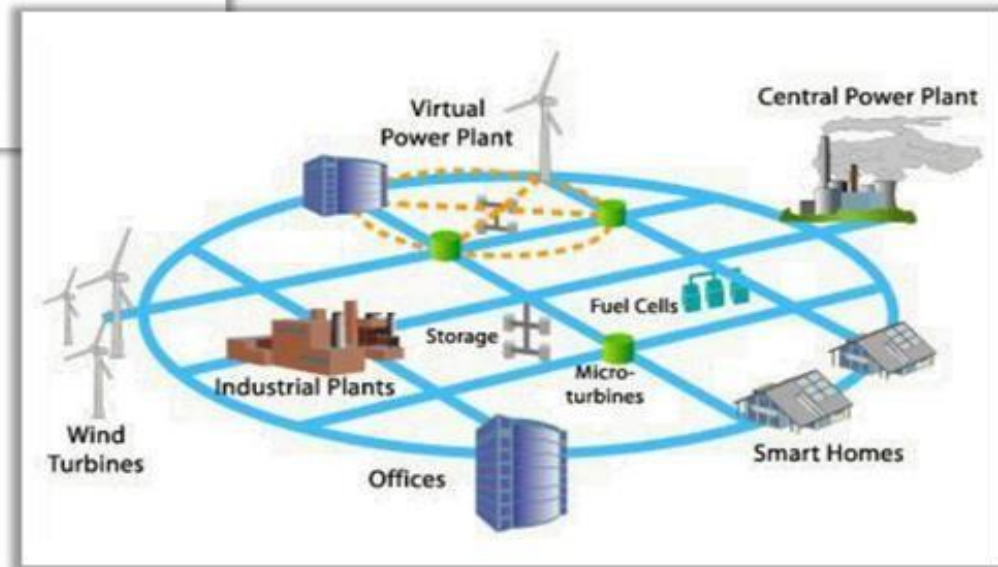


Project-3: Smart Metering Pilot Project

- *8000 Smart Meters, 5-6 different vendors, PLC SFSK, PRIME, G3, Hybrid(RF+PLC, Adaptive Communication), RF, GPRS etc.*



Project-4: Turkey Smart Grid 2020 Roadmap & Strategy



Project-5: Open Inter-DSO Electricity Markets for RES Integration *Callia*

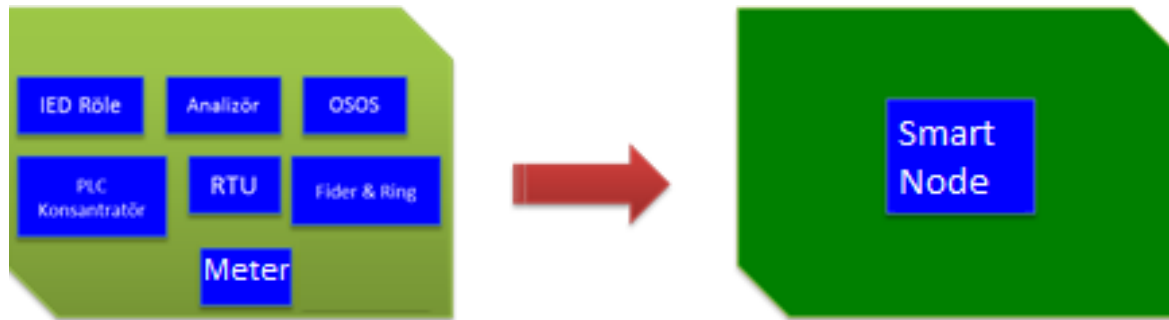
Innovative algorithms for system aware holonic design(trading learning agents) for improved integration of RES especially at distribution level will be investigated. The focus is the mapping from/to the intra-dso demand – response scheme.

Callia investigates and validates the interaction between the inter-DSO interface and the intra-DSO demand-response scheme which connects the customers



Project-6: Smart Node

Smart Node is integrated solution at Trafonformers point



Project-7: LV Feeder Monitoring, Metering Analysis and Protection System Design

Up to 12 LV feeders power quality values can be measured according to TS-EN-61000-4-30 standardization.



Description of the BEDAS R&D Department

- R&D team consists of 2 Ph.D. 6 M.Sc., 8 B.Sc. Electrical Engineers and 4 B.Sc. Computer Scientists with diverse specifications and qualifications.
- BEDAS can provide various demonstration and analysis opportunities to the project with high level expertise, experience and know-how in distribution grid operation in addition to the network infrastructure.

Research of Interest

- Demonstrating state of art concept, devices and architectures in BEDAS's grid
- Integration of different technologies into our systems for validating their feasibility
- Demonstrating capability of smart consumers and its effect to distribution grid
- Preparation our grid to the future
- Big data, data science and applicability of predictive machine learning algorithm

«LC-SC3-ES-5-2018-2020 TSO – DSO – Consumer: Large-scale demonstrations of innovative grid services»

Demonstrate at a large-scale how markets and platforms enable electricity TSOs and DSOs to procure energy services from large-scale and small-scale assets connected to the electricity network

Objectives:

- Efficient integration of renewable of sources in to the distribution grid
- Integrated Systems to obtain flexibility from variety of sources
- Test innovative ways to promote consumer participation, engagement and perception

Expected results

- Demonstrating state of art grid services
- Demonstration, validation and implementation of new Technologies, concepts in Turkish DSO
- Gathering know-how and technology transfer between partners

«LC-SC3-EC-1-2018-2019-2020: Motivating consumers towards active demand services»

Next generation active demand service structures with consumers as active player at energy market.

- **Objectives:**

- Inform and facilitate consumer adoption of active demand side service
- Support different forms of collective action for energy efficiency and active demand side services
- Identify and implement solutions to address split incentives

- **Expected results**

- Reduction in Opex and Capex in terms of grid investment
- New financial supporting structure recommendation
- Contribution to reducing regulatory barriers and improving contractual conditions.

«LC-SC3-ES-1-2019-2020: Flexibility and retail market options for the distribution grid»

Innovative solutions for flexibility and retail markets with renewables, smart grids
Technologies and cooperations with other DSO and TSO's

- **Objectives:**

- To mitigate short-term and long-term congestions or other problems in the network market mechanism will be defined and tested with cooperation other DSO's and TSO's.
- To demonstrate flexibility structures and schemes in BEDAS's grid.

- **Expected results**

- Deferral of distribution network investment cost
- Optimize operations of the distribution network which guarantee security of supply while integrated large share of variable renewables.

Thank you for your attention!

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