# Electric Energy Systems Laboratory of the National Technical University of Athens (NTUA)

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# NTUA

- NTUA is the oldest and most prestigious educational institution of Greece in the field of technology.
- It has contributed unceasingly to the country's scientific, technical and economic development since its foundation in 1836.

# NTUA

- 1350 employees, split as follows:
  - 700 academic staff
  - 140 scientific assistants
  - 510 administrative and technical staff
- 8500 undergraduate students
- 1500 graduate students
- Nine Schools (Faculties) divided into 33 Departments

# NTUA Schools

1. School of Civil Engineering
2. School of Mechanical Engineering
3. School of Electrical and Computer Engineering
4. School of Architecture
5. School of Chemical Engineering
6. School of Rural and Surveying Engineering
7. School of Mining Engineering and Metallurgy
8. School of Naval Architecture and Marine Engineering
9. School of Applied Mathematical and Physical Science

# Institute of Communication and Computer Systems (ICCS)

- ICCS is a private law body associated with the School of Electrical and Computer Engineering of NTUA.
- ICCS has been established in 1989 by the Ministry of Education in order to carry out research and development activities in the fields of telecommunication and computer systems and their applications in a variety of sectors, such as electric power systems, software and hardware engineering, control systems and biomedical engineering.

# School of Electrical and Computer Engineering (ECE)

- ECE was founded in 1836.
- ECE has 180 employees, including 93 people as academic staff.
- ECE is split into seven divisions.

# Divisions of ECE

1. Division of Electromagnetics, Electrooptics and Electronic Materials
2. Division of Information Transmission Systems and Material Technology
3. Division of Signals, Control and Robotics
4. Division of Computer Science
5. Division of Communication, Electronic and Information Engineering
6. Division of Electric Power
7. Division of Industrial Electric Devices and Decision Systems

# Laboratories of Electric Power Division of ECE

1. Electric Energy Systems Laboratory
2. Electric Machines and Power Electronics Laboratory
3. High Voltage Engineering Laboratory

# Electric Energy Systems Laboratory (EESL)

- EESL has 16 employees, including 6 people as academic staff.
- Today, EESL has over 30 active PhD students.

# EESL Academic Staff

1. Nikos Hatziargyriou, Professor, IEEE Fellow
2. Costas Vournas, Professor, IEEE Fellow
3. Evangelos Dialynas, Professor, IEEE Senior Member
4. George Korres, Assoc. Professor, IEEE Senior Member
5. Pavlos Georgilakis, Lecturer, IEEE Senior Member
6. Stavroula Kavatza, Lecturer, IEEE Member

# EESL Research Programs

1. iGREENGrid
2. BEAMS
3. DERRI
4. MERGE
5. IRENE
6. SMART-house Smart Grids
7. MORE MICROGRIDS

# **iGREENGrid –** Integrating Renewables in the European Electricity Grid

- **Duration**: 01/01/2013 – 31/12/2015
- **Budget**: 6,7 M€
- **Coordinator**: IBERDROLA (Spain)
- **Objective**: Increase the hosting capacity for distributed renewable energy resources in power distribution grids without compromising the reliability or jeopardizing the quality of supply.

# **BEAMS –** Building Energy Advanced Management System

- **Duration**: 01/10/2011 – 31/03/2014
- **Budget**: 2,7 M€
- **Coordinator**: ETRA (Spain)
- **Objective**: Development of an advanced, integrated management system that enables energy efficiency in buildings.

# **DERRI** – Distributed Energy Resources Research Infrastructure

- **Duration**: 01/09/2009 – 31/08/2013
- **Budget**: 6,8 M€
- **Coordinator**: ERSE (Italy)
- **Objective**: Provision of User Access to a unique portfolio of important European Laboratories in the field of Distributed Energy Resources.

# **MERGE** – Mobile Energy Resources in Grids of Electricity

- **Duration**: 01/01/2010 – 31/12/2011
- **Budget**: 4,43 M€
- **Coordinator**: PPC (Greece)
- **Objective**: Identification and preparation of solutions for the operational problems that will be caused on the electric grid, to the generation sub-system and to its commercial operation as a result of progressively increasing deployment of plug-in electric vehicles.

# **IRENE** – Infrastructure Roadmap for Energy Networks in Europe

- **Duration**: 01/09/2008 – 31/12/2012
- **Budget**: 5,51 M€
- **Coordinator**: AREVA (UK)
- **Objective**: Identification of strategies for investors and regulators to build a more secure, ecologically sustainable and competitive European electricity system.

# **SMART** – Smart House Smart Grids

- **Duration**: 01/09/2008 – 28/02/2011
- **Budget**: 3,81 M€
- **Coordinator**: SAP (Germany)
- **Objective**: Use of modern information and communication technologies (ICT) to optimize the operation and the energy efficiency of consumers.

# **MORE MICROGRIDS –** Advanced Architectures and Control Concepts for More Microgrids

- **Duration**: 01/01/2006 – 31/12/2009
- **Budget**: 8,4 M€
- **Coordinator**: ICCS-NTUA (Greece)
- **Objective**: Increase of penetration of microgeneration in electrical networks through the exploitation and extension of Microgrids concept, involving the investigation of alternative microgenerator control strategies and alternative network designs.