

## **Technological Educational Institute of Crete**

Technological Educational Institute of Crete (TEIC) is a higher education and research public organisation, founded in 1983 by the Hellenic Ministry of Education. It is now comprised of 19 departments in a variety of scientific and technological disciplines (including management and economics, health and welfare services, agricultural and environmental technology, electronics, mechanical and computer engineering, while many of the curricula are multidiscipline in their structure).

TEIC is a thriving academic community with an expert faculty of 350 members, over 300 administrative and technical staff and approximately 12.000 students. The institutional mission of the TEI of Crete is to develop and manage a high-level learning and research infrastructure to the economic, social, and cultural benefit of Crete and the nation. It strives for excellence in world-class research, thus strengthening the role of Crete as a research pole in the South-Eastern Mediterranean. It's activities are in line with the objective set by the Region of Crete Authority (Regional Program of Crete / 3rd Community Support Framework Program for Greece) to promote Crete as a region of excellence in Research and Technological Development in the Southeastern Europe and Mediterranean area.

Concluding, as evidenced by the successful participation of TEIC in national and European projects (which allowed the development of institutional contracts with 150 partners), TEIC is driving regional development towards a knowledge-based economy and is committed towards the formation of the European Research Area. Since 1996, TEIC has established its International Relations Office and Career Office in order to promote its cooperation at an international level (180 Memoranda of Collaboration are currently active with other educational organizations in Europe and USA for students' exchange as well as academic staff for research and lecturing) and to strengthen its collaboration with Hellenic enterprises (to carry out research work, to facilitate the placement of students for practical experience, for technology transfer, etc.).

Furthermore, in 1995 a Jean Monnet Chair has been established targeting to the European dimension of TEIC educational activities. TEIC was one of the first higher education institutions in Greece to develop an active student mobility programme through participation in International and European Union projects, such as ERASMUS/SOCRATES, LINGUA, TEMPUS, COMET and LEONARDO. Within the framework of these projects the TEI of Crete now collaborates with over 170 Universities across Europe, South America and the USA. TEIC was one of the founding members of T.E.X.T. (Trans-European Exchange and Transfer) which set up the European Credit Transfer System (ECTS). TEIC also participates and organises seminars, conferences and exhibitions at national and international level, referring to European Union educational programs in Greece and abroad.

## **Laboratory of Renewable Energy Engineering**

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The Renewable Energy Engineering Laboratory (LREE) at School of Applied Technology fosters collaboration among industry, public & private enterprises, governmental & nongovernmental organizations, to address not only the complex interrelationships between energy and the environment, but also the technological, economic and social aspects of renewable energy sources and sustainable energy.

The mission of Renewable Energy Engineering Laboratory focuses on significant innovative contributions to renewable energy resources and energy sustainability, including the improvement of technologies, structures and policies, which will lead to cleaner, more effective, efficient and equitable products and processes.

### **Human Resources & Structure**

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LREE has built an excellent scientific team that brings together LREE's strengths in energy engineering & management, renewable energy sources and energy policies.

LREE's research staff (8 members) composed of mechanical, electrical & electronic, chemical and environmental engineers, with well-cited scientific contribution, in collaborative research to identify areas, where innovative technology and policy have the greatest potential to reverse unsustainable trends.

**Dr. Emmanuel Karapidakis** – Associate Professor

*Research Focus Areas:* Energy Policy, Electrical Power Systems, Diverse & Dispersed Generation, Micro-Grids, Renewable Energy Sources, Energy Management Systems and Artificial Intelligence techniques.

**Dr. Dimitris Katsaprakakis** - Assistant Professor

*Research Focus Areas:* Wind Power, Pump Storage Units, Distributed Energy Systems, Energy Efficiency and Energy Saving.

**Dr. Kyriakos Siderakis** - Lecturer

*Research Focus Areas:* Transmission and Distribution Systems, Protection Control and System Monitoring.

**Dr. John Katsigiannis** - Lecturer

Research Focus Areas: Renewable Energy Sources, Energy Policy, Artificial Intelligence, Building Automation, Energy Efficiency in Buildings, and Solar Energy.

**Dr. Antonis Tsikalakis** - Lecturer

Research Focus Areas: Renewable Energy Sources, Wind Forecasting and Economic Dispatch Analysis, Power Quality, Energy Policy, and Fuel Cells.

**Laboratory Assistants:**

**Dr Anastasia Katsamaki** – Mechanical & Production Engineer

**G. Tsakaloudis** – Electrical Engineer

**S. Apostolakis** – Electrical Engineer

**LREE's Research**

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LREE brings together collaborating faculty and staff of several departments to carry out multidisciplinary research that leads to holistic assessment issues in energy generation & demand and resource production & use. There is a strong focus on engineering and science based activities in key technology, modeling, monitoring and development arenas. Specifically, its research interests focus on:

- Utilisation Analysis of Renewable Energy Sources,
- Design and Installation Procedures of Renewable Energy Technologies,
- Estimation of Methodologies and Processes on Energy Performance and Environmental Quality in Buildings.
- Development of Energy Efficiency Networking Activities,
- Energy Management Systems,

LREE laboratory carries out research, specialised studies, application projects, related to the above topics, through participation in various European and National research projects relevant with energy efficiency, energy management systems, building energy systems. A list of projects that have been carried out by the Laboratory of Renewable Energy Engineering is represented in the following table.

<b>ALTENER</b>	Courses and Seminar Centers for Renewable Energies - AL/98/563 - COSCREEN	EC
<b>E.U.-INCO-DC</b>	Waste water recycling supplied by renewable energies in the Near East (IC18-CT96-0099)	EC
<b>TASK FORCE</b>	Laicizing Higher Education Institutes & courses to Industrial & Socio-Economic Needs	EC
<b>EPEAEK</b>	Distance Learning Course in «Renewable Energy Sources and Environmental Management»	National Project
<b>EPEAEK Archimidis I</b>	Development of an expert system for energy efficiency and indoor environment in greenhouses EY-THERMO”	National Project
<b>EPEAEK Pythagoras I</b>	“Development of an training system for indoor air quality in buildings”	National Project
<b>Energy Intelligence Europe</b>	Development of an interactive vocational Web training tool for the take-off of the building, EEBD - SAVE Programme, Intelligent Energy Europe EIE/2003-143	EC
<b>INTERREG IIIC</b>	Network of pioneering communities and regions workings on innovative heat energy solutions - REGENERGY	EC
<b>LEONARDO DA VINCI</b>	Developing distance training courses for Smart Buildings Energy management (SMART-BE)	National Project
<b>ALTENER</b>	Studies on the exploration of carob for bioethanol production	EC
<b>ALTENER</b>	Creation of energy plantations irrigated by processed urban liquid wastes and use of the produced biomass for heat generation	EC
<b>RESCHOOL</b>	Three (3) years Intensive Courses of the European financed project, entitled «Small Scale Renewable Energy Sources and Energy Saving» implemented by five (5) European Countries.	EC
<b>REE_TROFIT</b>	Intelligent Energy for Europe IEE - SAVE, entitled «REE_TROFIT - Training on Renewable Energy solutions and energy Efficiency in reTROFITting» implemented by six (6) European Countries. From 1/5/2010 to 31/4/2013	EC
<b>PV-LaSIREs</b>	«PV-LaSIREs: PV Large Scale integration in	EC

	<p>Island grids with currently high RES penetration» within bilateral (Greece-France) European financed project of PV ERA NET.</p> <p>From 1/9/2010 to 31/8/2011</p>	
<b>PSUs_Net</b>	<p>«Impact of Pump Storage Units in Crete's Power System Operation and Stability», project funded by EEN Hellas Ltd.</p> <p>From 2/1/2011 to 31/12/2011</p>	Private Project
<b>IntEMRES</b>	<p>«Research and Development of an Intelligent Real Time Energy and Power Management for Crete's Power SYSTEM with High RES Penetration», national funded project.</p> <p>From 2/1/2012 to 31/10/2013</p>	National Project
<b>UwipoCrete</b>	<p>«Ultra High Wind Power Penetration in Crete and Interconnection case», project funded by TERNA Ltd.</p> <p>From 6/2/2011 to 31/12/2013</p>	Private Project

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