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Introduction of Our Laboratories

Institute of Electrical Engineering and Electrotechnologies and Centre of Excellence for Application of Superconductivity and Plasma in Power Engineering ASPPECT.

Review of Research and Activities.

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1. Introduction

Lublin University of Technology LUT is located in Poland in Lublin city. LUT was established in 1953 and it presently consists of 6 faculties. Many scientific publications and over 700 patents and copyrights are owned by the LUT.



Fig. 1 Lublin University of Technology.

The Faculty of Electrical Engineering was founded in 1964. The staff of the Faculty consists of 180 persons out of which 111 are academic teachers. The number of students is about 2160. The Faculty Council has the right to confer the degree of PhD and doctor habilitatus degree in the field of Electrical Engineering. The Faculty consists of 2 Institutes and 10 Departments.

We would like to introduce the vital branch of LUT: Institute of

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Electrical Engineering and Electrotechnologies - IPEE with the Centre of Excellence for the Application of Superconducting and Plasma Technologies in Power Engineering - ASPPECT established in 2003. Professor Tadeusz Janowski is the Chair of the ASPPECT from its establishment. At present five laboratories exist in the centre ASPPECT: superconductors' applications, plasma technologies, solar energy, electromagnetic compatibility and magnetic materials investigations and applications.

IPEE and centre ASPPECT play an important role in the development of new technologies and modern methods applied in power and plasma engineering. Centre is involved in many activities such as: Education Process, Courses, Post-graduate Studies, PhD Studies, Twinning Arrangements, Workshops, "Open Days", Seminars, and Thematic Conferences. Centre has active connections to institutions in United Kingdom, France, Germany, Japan, Finland, the Netherlands, Russia, Czech Republic, Slovakia and Ukraine.

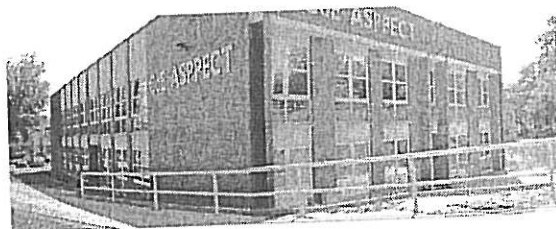


Fig. 2 Building of ASPPECT CoE.

2. A brief history of the IPEE

Chair of Electrical Engineering and Electrotechnologies was established in LUT in 1968. In 1999 it evolved into Institute of Electrical Engineering and Electrotechnologies with its 3 scientific sub-units: Theoretical Electrotechnology (Chair - prof. A. Wac-Włodarczyk), Computer Techniques in Electrotechnology (Chair-prof. H.D. Stryczewska) and General Electrotechnology (Chair - dr. K. Nalewaj). Institute employs 3 full professors, 12 assistant and associated professors, 5 PhD

students, 5 technicians and office staff. Prof. Dr Eng. H. D. Stryczewska is the Director of the Institute since 2004.

3. Research and education in our laboratories

Educational tasks of the Institute of Electrical Engineering and Electrotechnologies include lecturing students of Electrotechnology, Informatics and Mechatronics courses and Biomedical Engineering course on all levels of study.

The postgraduate studies financed from EU Social Fund and related to Renewable Energy Sources and Applications of Informatics have been organized in the Institute since 2009 and 1996 respectively.

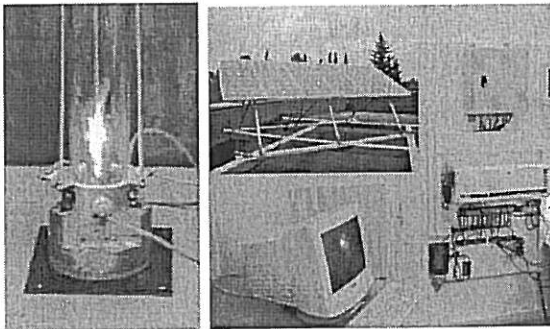


Fig. 3 Laboratories of plasma and solar energy.

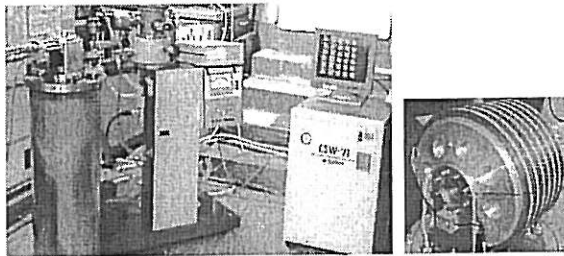


Fig. 4 Experimental stand in superconductivity lab.

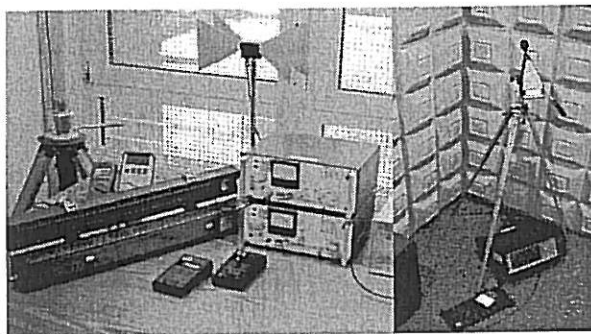


Fig. 5 Experimental stand in electromagnetic compatibility lab.

Institute laboratories undertake research in a broad range of subjects related to:

1. Plasma Technologies and their applications in the environmental protection (purification of exhaust gases, water

disinfection in the swimming pools, wastewater treatment, decontamination of soil, biodecontamination, surface treatment, design of power supply for variety of plasma generators, mathematical modeling of the arc discharge reactors). Recent research projects are related to gliding arc reactors construction and application (Fig. 3), temperature distribution of in the gliding arc discharge plasma (Fig. 6) and atmospheric pressure plasma jets for biomedical applications and surface treatment.

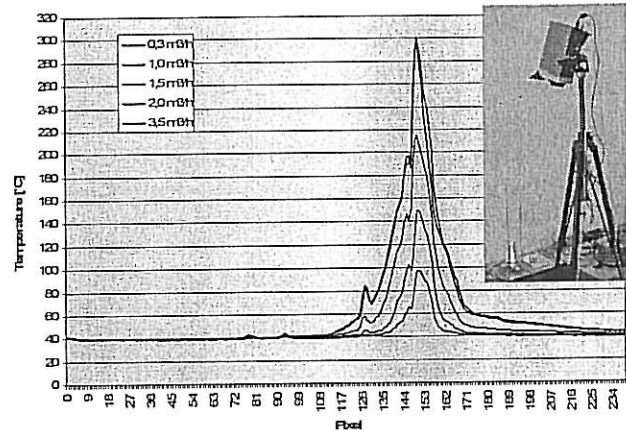


Fig. 6 Results of temperature distribution of in the gliding arc plasma reactor with thermovision camera for different air flow rates.

2. Renewable energy sources (application of solar energy for the power supply of discharge plasma reactors for air, water and soil treatment).

3. Superconductivity applications (current limiters, transformers, energy storage, magnetic separation, Fig. 4).

4. Electromagnetic compatibility and influence of magnetic field on living organisms (Fig. 5).

Research projects co-funded by European Union (TEMPUS, Framework Programs, Maria-Curie, etc.) and Polish government are realized in the Institute every year.

4. Conferences

Institute of Electrical Engineering and Electrotechnologies is organizing following conferences:

-*Electromagnetic Devices and Processes in Environment Protection - ELMECO*, international conference every 3 years since 1994,

-*Superconductivity Applications* - yearly seminar since 2000.

In September 9-14th 2012 Institute of Electrical Engineering and Electrotechnologies will be the organizer of XIII International Symposium on High Pressure, Low Temperature Plasma Chemistry - HAKONE which will be held in Kazimierz Dolny in Poland.