



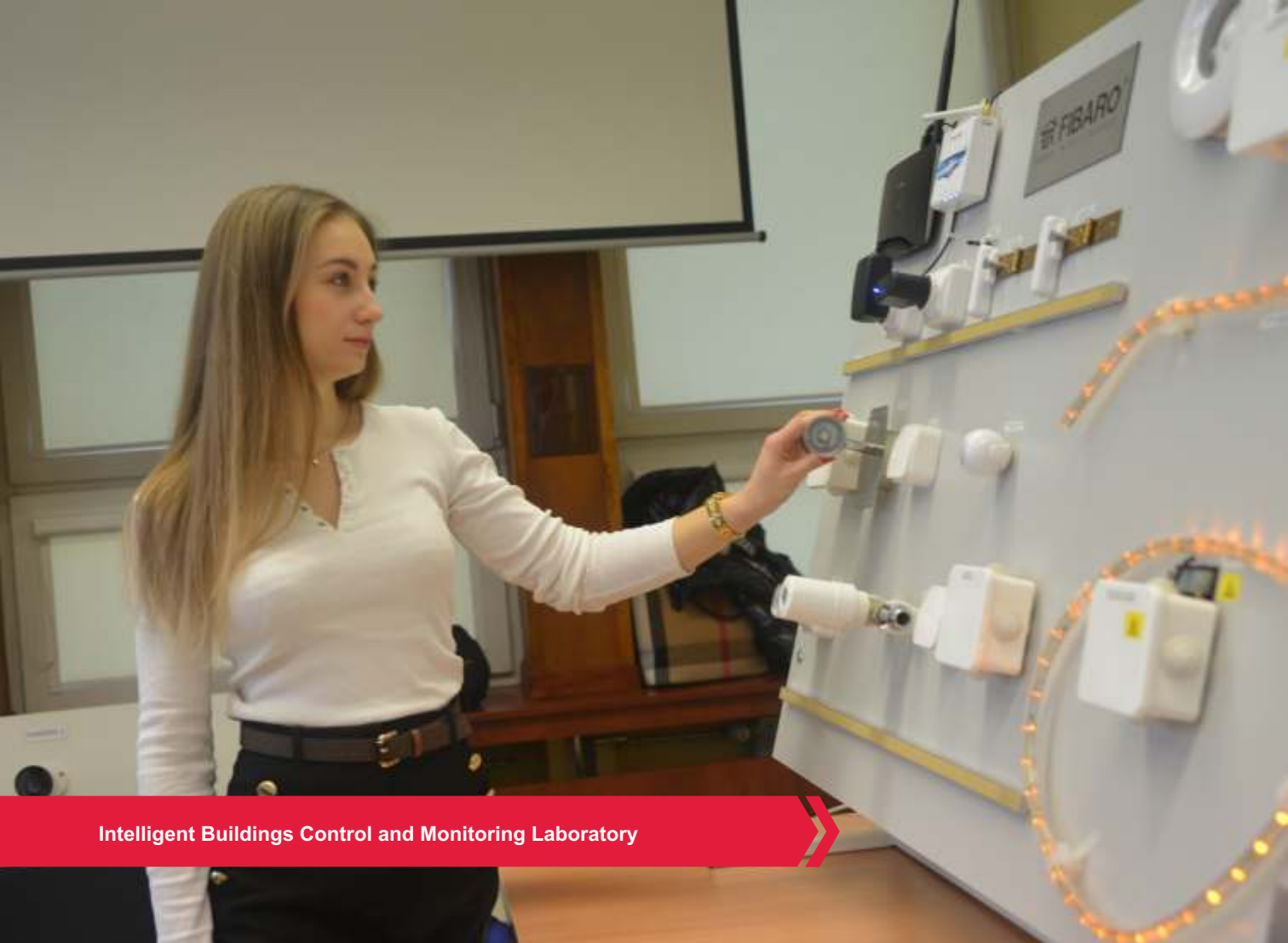


FACULTY OF ELECTRICAL ENGINEERING



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Intelligent Buildings Control and Monitoring Laboratory



Electronic Security Systems Laboratory



History of the Faculty and its main areas of activity

The Faculty of Electrical Engineering was established in 1966 having evolved from the Department of Electrical Engineering, which had existed at the Engineering School in Czestochowa since 1951. The Faculty boasts a building complex which was designed by the architect Jerzy Gottfried and is considered to be one of the most interesting architectural solutions for buildings of technical universities in Poland. The academic standing of the Faculty

is determined by its high scientific category A and the fact that it has full academic rights to confer PhD and DSc degrees. Currently, there are two Departments within the Faculty: the Department of Automatic Control, Electrical Engineering and Optoelectronics and the Department of Electric Power Engineering, which focus on scientific research and education of students in the area of electrical and related sciences.



Pavilions of the Faculty of Electrical Engineering designed by J. Gottfried



Drone in the Faculty's laboratory



Faculty Authorities



*Marek Lis, MScEng, PhD, DSc,
CUT Associate Professor*

- **Dean of the Faculty**
Marek Lis, MScEng, PhD, DSc,
CUT Associate Professor
- **Director of Scientific Discipline**
Automatic Control, Electronics and Electrical Engineering
Krzysztof Chwastek, MScEng, PhD, DSc,
CUT Associate Professor
- **Director of Studies**
Andrzej Jąderko, MScEng, PhD
- **Director of Development**
Janusz Sowiński, MScEng, PhD, DSc,
CUT Associate Professor





Three-axis magnetic field camera



The scanning electron microscope tests
in the Supercapacitors Laboratory



Academic staff and their scientific achievements, research projects

The Faculty has highly qualified academic staff, who expand their knowledge and expertise by participating in internships in Poland and abroad. At present the Faculty has 61 academic staff, including 20 Professors and Doctors of Science, 31 Doctors of Philosophy, and 10 Masters of Science/Arts. Since its foundation, the Faculty's staff have published several thousand scientific papers in national and international journals; they are also authors or co-authors of several dozen books and

monographs. An important part of the achievements of the Faculty's staff is authoring over a hundred patents and patent applications. Moreover, the academic staff have presented the results of their research at several thousand scientific and technical conferences. They have prepared over a thousand expert opinions and documents for the industry. They have participated in numerous research projects, also abroad, including the EU framework programme HORIZON 2020.



Faculty's staff at the Science Picnic



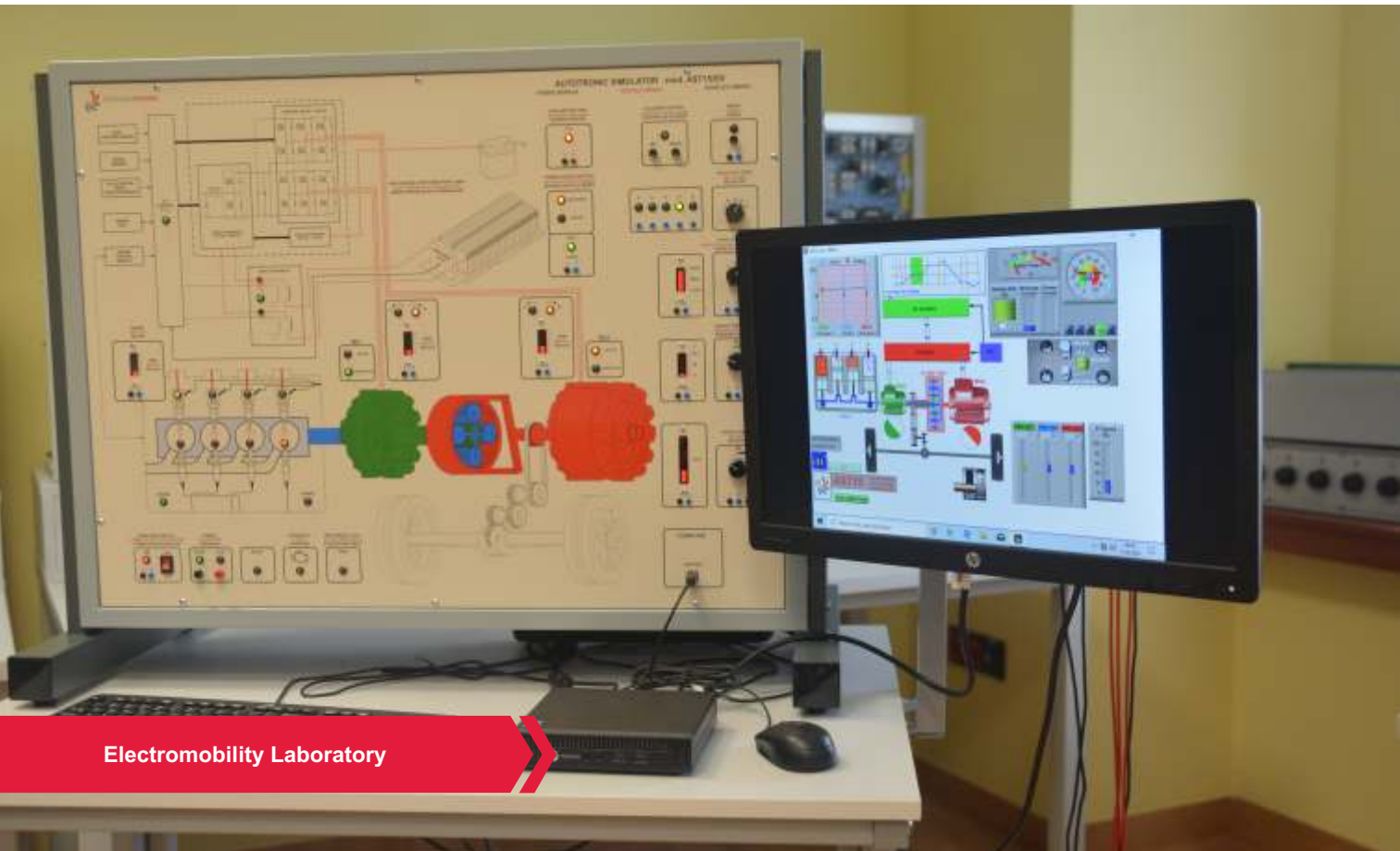
Electromechanical manipulator with pneumatic gripper of Kawasaki industrial robot – Robotics Laboratory



Facilities

The Faculty boasts buildings with an area of over 8,000 m² and a volume of almost 34,000 m³, which were thoroughly modernised between 2011 and 2016. The following facilities were installed: a 45 kW photovoltaic battery, three wind turbines with vertical axis turbines with a total power of 30 kW, and three electric car charging stations with 2 x 22 kW each. The Faculty has a number of laboratories equipped with modern stations, such as:

Laboratory of Renewable Energy Sources, Laboratory of Electric Drive Automation, Robotics and Automation Laboratory, Supercapacitors and Energy Storage Laboratory, Intelligent Buildings Laboratory, and Laser Techniques Laboratory. The Faculty has an auditorium seating 182 people, 14 lecture halls and classrooms, and 17 computer laboratories equipped with computers and modern engineering software.



Electromobility Laboratory



Tests conducted with the use of an electromechanical manipulator in the Robotics and Automation Laboratory



Educational offer

The Faculty of Electrical Engineering offers five degree programmes. As a result of the analysis of the job market, two modern and unique programmes have been established, i.e.: Electromobility and Renewable Energy, Smart Cities. The Faculty also offers three programmes which have existed for a number of years now, i.e. Electrical Engineering, Automatic Control and Robotics, Electronics and Telecommunications. The Faculty's graduates

become valued and sought-after specialists. The knowledge, skills and competences acquired during the studies meet the expectations of the job market in the key areas of the country's economy and development. The Faculty cooperates with many domestic and international institutions and companies. In this way, the Faculty has been able to adapt the degree programmes to the current needs of the region's economic environment.



Students during the class in the Fundamentals of Electrical Engineering Laboratory



Electrical Micromachines Laboratory



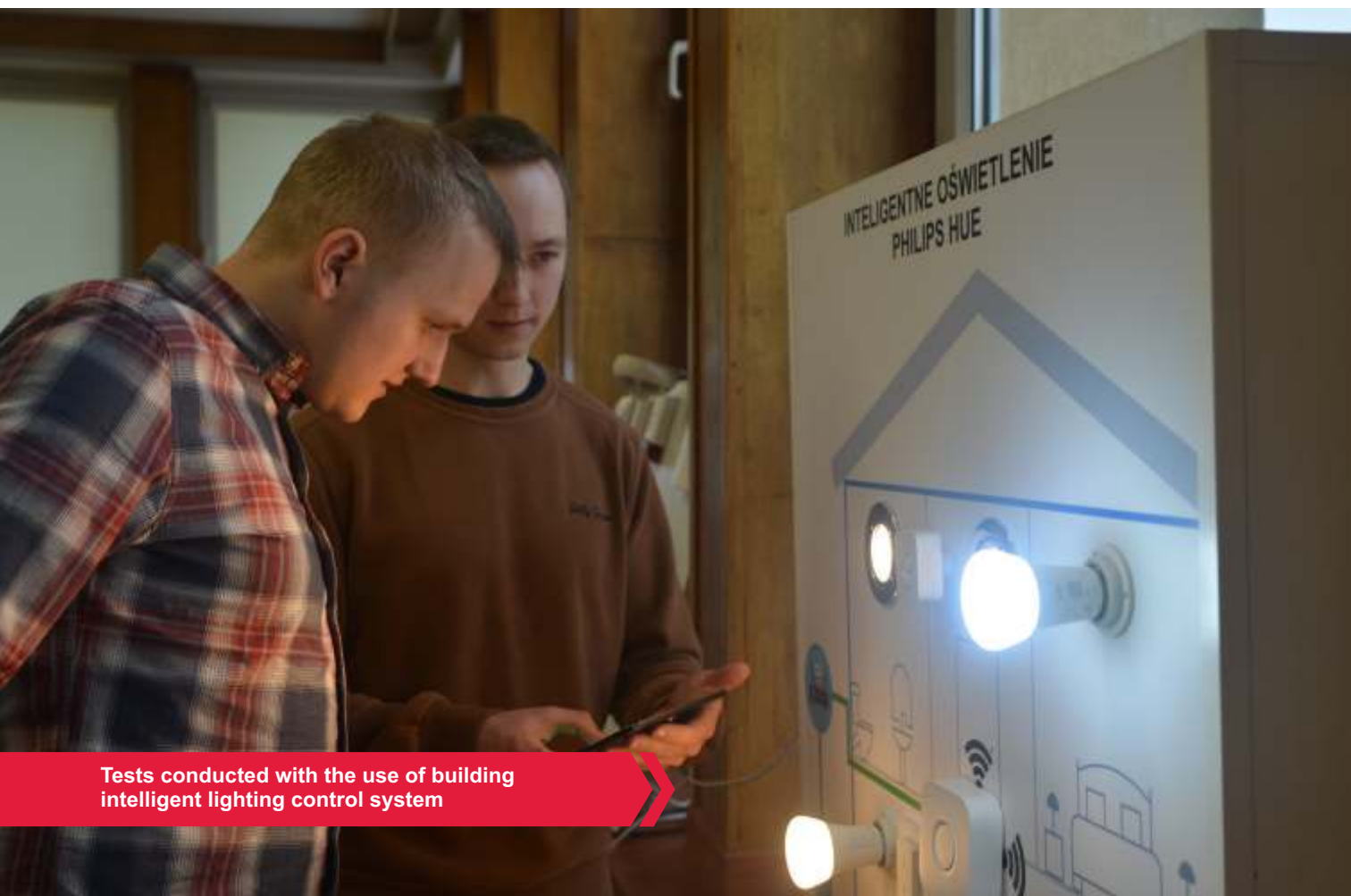
Electric vehicle designed and built by students



Student Research Clubs and other student activities

Students at the Faculty have the opportunity to develop their engineering interests in nine student research clubs, whose scope of activities includes computer graphics, information and communications technology, automatic control and microprocessor technology, electrical machines and drives, modern energy storage, electrical metrology

and lighting technology. Student research clubs have carried out projects which resulted, among others, in the development of an electric vehicle, a video monitoring system for wind power plants, a safe braking system for wind farms, a vibration detection system, an alarm system with access control, and laboratory workstations.



Tests conducted with the use of building intelligent lighting control system



Intelligent building model built by the Faculty's students



Cooperation with business

The Faculty cooperates with many institutions and companies operating both in Poland and abroad. More than 30 current cooperation agreements with scientific and research institutions and business partners result in numerous commissioned jobs. The most important research and implementation projects of the Faculty, carried out in consortium or commissioned by Polish and international business entities, are those with partner companies and institutions, including AGH University of Science and Technology, IOŚ-PIB (Institute of Environmental Protection-National

Research Institute), PIME (Polish Chamber of Energy Storage), NILU (Norwegian Institute for Air Research), Gdańsk University of Technology, ABB, Tauron (Polish Energy, Generation, Heat), IBM, EMU Sp. z o.o., ZF Group, Connect Point, Pozyton Sp. z o.o., ELQ S.A., PSE Innowacje Sp. z o.o., Exact Systems, and Huta Częstochowa (Czestochowa Steelworks). The Faculty is committed to continuous acquisition of partners in the area of cooperation with the business environment, aiming at increasing the innovativeness of the economy.



Plasmatron



Erasmus+ exchange student



International cooperation

The Faculty is a member of the Erasmus+ programme, which allows students to complete part of their studies (so-called mobility semester) or work placements at universities of the European Union. Under this programme students of the Faculty have studied at universities in Belgium, Germany, Portugal, the Czech Republic, Great Britain, Italy, Romania, and Slovakia. The Faculty of Electrical Engineering has also hosted a large group

of foreign students, mainly from Ukraine, Belarus, Turkey, Spain, Portugal, and Romania. The Faculty's staff maintain particularly close contact with universities in Slovakia, Ukraine, Slovenia and Romania, by participating in numerous internships and scholarships abroad. Every year the Faculty invites professors from abroad, who usually give a series of lectures during their academic visits.



Erasmus+ exchange student during the class in the Laboratory of Renewable Energy Sources



Surface area and pore size analyser tests in the Supercapacitors Laboratory



Significant accomplishments

Leading scientific research trends at the Faculty include works on liquid crystal nanocomposites, new materials for optoelectronics, computer simulations of advanced digital control systems, development of data mining methods, as well as predictive models for electric power engineering with the use of artificial intelligence and machine learning methods. The Faculty has also received awards and distinctions for innovative technological

solutions concerning new functional materials and methods of detecting pollutants in the atmosphere. Important events co-organised by the Faculty of Electrical Engineering are international scientific conferences that include the Symposium of Magnetic Measurements & Modelling, the International Scientific Conference on Forecasting in Electric Power Engineering, and the Inter-University Metrology Conference.



Photovoltaic cells on the roof of a building