Prospective supervisor's form

Personal data
The prospective supervisor's name: prof. dr hab. inż. Ryszard Strzelecki
Employment: Faculty of Electrical and Control Engineering, Department of Power Electronics and Electrical Machines
Phone: +48
E-mail address: ryszard.strzelecki@pg.edu.pl
Personal web page: http://pg.edu.pl/web/bad2786c53_ryszard.strzelecki
ORCID number: 0000-0001-9437-9450

Research interests
Discipline: Automation, electronic and electrical engineering
Research area: Power electronic converters, electrical machines and drives
Additional research area: Instantaneous power control, wireless power transfer
Key words: power electronics, power conditioning, wireless power systems, EV chargers

Research interests or topics offered for PhD research
- Optimization of the static and dynamic electromagnetic processes in a multi-terminal active bridge systems with high frequency isolation.
- Sensorless wireless power supply with self-activation in conditions of dynamic changes in the position of the powered object.
- Self-adaptive fast and ultra-fast charging systems, powered directly from the LV AC distribution network or the municipal DC catenary network (trolleybus and tramway) and cooperating with a hybrid energy storages (for example: batteries + supercapacitors + fuel cells).
- Multiphase modular voltage converters with special coupled reactors for use in systems with smooth variable of high output frequency over a wide range.
- Self-excited high-speed multiphase induction generator with parallel and series pure active and hybrid power electronic conditioners.
- Problems of separation and application of active compensation of harmonic components of instantaneous active power and instantaneous reactive power tensor in multiphase systems in based on generalized Fortescue transformations.
- Hybrid distribution transformers with multi-zone voltage regulation based on conventional transformers and additionally small power electronic converters for active Smart Grid systems.
- System studies and optimization of topology and control algorithms.

Supervision
The number of PhD students who have graduated under the prospective supervisor's supervision: 7
The number of PhD students currently supervised:
- within the current doctoral school: 0
- within doctoral studies (previous system): 3
Currently accepting new PhD students: Polish and foreign

Funding and equipment
Is funding available for experimental work: Yes
Is the equipment needed to complete a PhD project available in your lab/department: Yes
Bibliometric indicators

Number of journal publications in WoS/Scopus 134
Citations (excluding self-citations) - WoS 806
Citations (excluding self-citations) - Scopus 1299
Hirsch index - WoS 15
Hirsch index - Scopus 19

List of the selected key publications

**Modified Inductive Multi-Coil Wireless Power Transfer Approach Based On Z-Source Network**

Strzelecki R. , Pakhaliuk B. , Husev O. , Shevchenko V. , Zakis J. , Khomenko M. - IEEE JOURNAL OF EMERGING AND SELECTED TOPICS IN POWER ELECTRONICS

Journal article / In the printed version (also digital), Publication year: 2020, Points: 140.0
[https://dx.doi.org/10.1109/JESTPE.2020.3041565](https://dx.doi.org/10.1109/JESTPE.2020.3041565)

**Feasibility Study GaN Transistors Application in the Novel Split-Coils Inductive Power Transfer System with T-Type Inverter**

Strzelecki R. , Pakhaliuk B. , Husev O. , Shevchenko V. , Veligorskyi O. , Stepins D. - ENERGIES

Journal article / In the printed version (also digital), Publication year: 2020, Points: 140.0
[https://dx.doi.org/10.3390/en13174535](https://dx.doi.org/10.3390/en13174535)

**Hybrid Modulation for Modular Voltage Source Inverters with Coupled Reactors**

Nieznański J. , Szczepankowski P. , Szwarc K. J. , Swinarski C. , Strzelecki R. , Usoltsev A. - ENERGIES

Journal article / In the printed version (also digital), Publication year: 2020, Points: 140.0
[https://dx.doi.org/10.3390/en13174450](https://dx.doi.org/10.3390/en13174450)

**Dielectric Barrier Discharge Systems with HV Generators and Discharge Chambers for Surface Treatment and Decontamination of Organic Products**

Strzelecki R. , Mucko J. , Dobosz R. - ENERGIES

Journal article / In the printed version (also digital), Publication year: 2020, Points: 140.0
[https://dx.doi.org/10.3390/en13195181](https://dx.doi.org/10.3390/en13195181)

**Compensation Topologies in IPT Systems: Standards, Requirements, Classification, Analysis, Comparison and Application**

Strzelecki R. , Pakhaliuk B. , STRZELECKA N. , Husev O. , Poliakov N. , Shevchenko V. - IEEE Access

Journal article / In the printed version (also digital), Publication year: 2019, Points: 100.0
[https://dx.doi.org/10.1109/ACCESS.2019.2937891](https://dx.doi.org/10.1109/ACCESS.2019.2937891)

Most recent projects

**INNOTECH I - IT3/262/158747 "Intelligent AC-AC power electronic interface with galvanic separation at high frequency"**

Principal Investigator (PI) name  Ryszard Strzelecki
Name of the institution the project was carried out in  Gdynia Maritime University
Name of the granting institution  Narodowe Centrum Badań i Rozwoju (NCBR)
Starting year  2012
Ending year  2015
Role in project  Principal Investigator (PI)
**PBS2A4/10/2013 "Modular multilevel high-power converters with unconventional integrating magnetic circuits"**

- **Principal Investigator (PI) name**: Ryszard Strzelecki
- **Name of the institution the project was carried out in**: Łukasiewicz Research Network - Institute of Electrical Engineering + Elhand Transformatory Sp. z o. o.
- **Name of the granting institution**: Narodowe Centrum Badań i Rozwoju (NCBR)
- **Starting year**: 2013
- **Ending year**: 2016
- **Role in project**: Principal Investigator (PI)

**GEKON2/O2/266561/11/2015 "A mobile system for supplying ships with medium voltage from harbour quays as an element of increasing the environmental and economic efficiency of sea transport"**

- **Principal Investigator (PI) name**: Ryszard Strzelecki
- **Name of the institution the project was carried out in**: APATOR S.A + Łukasiewicz Research Network - Institute of Electrical Engineering
- **Name of the granting institution**: Narodowe Centrum Nauki (NCN)
- **Starting year**: 2015
- **Ending year**: 2017
- **Role in project**: Principal Investigator (PI)

**Additional information**

Current projects: 1) POIR.01.01.01-00-1399/20 “Self-adaptive fast and ultra-fast charging systems for electric vehicles using Cubic System technology”, 2020-2023 (R&D Manager), AREX Ltd, Gdynia. Under this project, technological support for a PhD student is possible 2) H2020-MSCA-ITN-2020 (HORYZONT 2020” “SMART Green energY Systems and bUsiness Models (SMARTGYsum), Accepted , 2021-2025, („Gdańsk Tech” supervisor/ coordinator). This project provides funding for doctoral internships and a part of the cost of research in electric vehicle charging systems, hybrid microgrids and smart transformers. 3) The PRELUDIUM BIS project is under evaluation, the acquisition of which will be connected with the contractor’s application for admission to the "Gdańsk Tech” Doctoral School