

DUAL STATOR WINDING INDUCTION GENERATOR SYSTEM FOR WIDE-VARIABLE SPEED WIND POWER APPLICATION (DSWIG)

Goal of the project:

For wind power plants, the cage-type induction generator (IG), as a competent option, has many advantages for wind power applications, such as innate brushless construction, low maintenance demand, good overload protection ability, and so on. The most significant advantages of this machine lie in its ability to output good performance electric power at variable rotor speeds. To adapt the wide variation of wind speed and capture much more wind energy, the wind power system should have the variable-speed operation ability in a wide speed range.

Short description of the project:

The subject of the bilateral project, which relates to a wind power system with a dual stator-winding induction generator.

Project implemented by

Politehnica University Timisoara (UPT) - România
Nanjing University of Aeronautics and Astronautics (NUAA) - China

Implementation period:

02.07.2018-31.12.2019

Main activities:

The basic priority of the collaboration is the development of a scientific project for participation in competitions announced by Horizon 2020 and other international programs. The work plan proposed is based on regular meetings of the members of both teams alternately in Romania and China; a) a first visit will be in China, by a team from Romania. On this occasion the Romanian members will meet all the team members from China, will visit research labs; b) the next meeting will take place in Romania, at Timișoara at the Faculty of Electrical and Power Engineering, at the Romanian Academy Branch Timișoara and at the Hunedoara Engineering Faculty. On this occasion contact will be established with all members of the project team from Romania, visits will be carried out to the research laboratories of the two faculties, and there will be group discussions between members of both teams according to scientific areas of joint research.

Results:

The results for the Year 2018 are:

Between July 2 and December 31, 2018, was carried out on the topic of DSWIG Generator Design. At this stage, the Romanian team carried out the following activities: dimensioning of the experimental model, analytical design, optimal design, finite element validation, design of the electric drive system and the experimental test bench. Between August 26 and 30, 2018, a team (Deaconu Sorin Ioan, Topor Marcel and Hulea Dan Cornel) from the Politehnica University Timisoara (UPT), made a trip to Budapest where he attended the IEEE International Conference on Power Electronics and Motion Control (PEMC), where they met a team from the Nanjing University of Aeronautics and Astronautics, China, led by BU Feifei, project director from the Chinese team.



Applicability and transferability of the results:

The results obtained through this project are of interest to the industry of the construction of electrical machinery, renewable energy converters, wind systems, hydro systems, and producers of autonomous generators for vehicles, boats, river and sea vessels, and aircrafts. Based on the project developed by the team in Romania, the Chinese team will realize the experimental model and its control system. Following experimental testing, parameters and features will be obtained, and based on them, a Chinese producer will be identified to introduce these systems into production.

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Research Center

Intelligent Control of Energy Conversion and Storage

Research team

The research team of UPT consists in coordinator, Associate professor Sorin Ioan DEACONU, PhD teachers (PhD's):

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