

IEEE NIKOLA TESLA AWARD - Prof. Ion Gheorghe BOLDEA, PhD

- The IEEE Nikola Tesla Award was established in 1975 through an agreement between the IEEE Power Engineering Society and the IEEE Board of Directors.
- The Award is named in honor of Nikola Tesla, an electrical engineer, a distinguished Yugoslav-American inventor, and a pioneer in many fields, who is most renowned for the development of the coil that bears his name and the a-c induction motor.
- The IEEE Nikola Tesla Award is granted for outstanding contributions to the generation and utilization of electric power.

BIOGRAPHY

Prof. Ion Gheorghe BOLDEA, PhD in Electrical Engineering in 1973 has worked exclusively for University Politehnica Timisoara Romania, but spent more than 5 years in total as visiting scholar in USA and UK, while delivering intensive courses, keynote addresses IA-IEEE DLs (since 2008) in USA, S. America, EU and Asia, with technical consulting over decades for companies like GM, Bosch, Vestas, Hilti, Hyosung, EMBRACO, Scumberger etc.

His technical expertise is related to electric energy conversion and control by power electronics for better industrial productivity, energy savings and air pollution reduction. Besides the academic involvement he was a founding co-owner for 20 years of an industrial digital electric automation (IDEA) private enterprise that has now more than 60 engineers.

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He worked and published on linear and rotary electric machinery design and control (18 books and more than 150 IEEEExplore papers, 30 patents etc.).

He received 4 IEEE paper awards, and is a member of Romanian Academy of Technical Sciences and of Romanian Academy.

Prof. Boldea initiated cooperation with many universities such as those of Kentucky, Oregon and Texas at Dallas in USA, Cassino, Bologna, Torino, Trieste in Italy, Hanyang in Korea, Aalborg University in Denmark where he holds a Doctor Honoris Causa.

Specific contributions

- The introduction of the optimum goodness factor for the design of linear induction motors of high speed(1976);
- First integrated-propulsion-levitation passive guideway MAGLEV –Magnibus(4 ton prototype on an 150m test track) with linear homopolar synchronous motors and over all power factor and energy conversion above 80% (1986);



- Generalization in 1988 of the to be DTC (in 1995), proposed initially (1985) only for IMs, under the name of TVC, for both voltage and current source inverter, for all ac motor drives;
- The design and testing the largest power factor(0.91, at 1500W and 3.6krpm) reluctance synchronous motor (2 poles, ALA rotor) in 1992;
- 3rpm full torque sensorless control for an IM DTC drive without signal injection, using sliding mode observers and regulators(2000);
- The introduction of the first matrix converter in the terminal box of an induction motor(2000);
- The introduction of BEGA(an IPMSM with additional dc excitation in an axis at 90 degrees with respect to magnets axis) to produce very large CPSR at unity power factor and pure resistive generator voltage drop by zero Id and zero Psiq active control (2006);
- Introducing the concept of “active flux” as a unifying concept to simplify sensorless(advanced) control of all ac motor drives(2008);
- Optimal design deterministic and evolutionary methodologies for IMs and SMs with embedded FEM (2010);
- Contribution to the revival and development of No-PM Brushless DC multiphase reluctance machines with dual flat top;
- current control for high performance over wide CPSR with simplified control and applications for electric transport and wind/hydro generators (2012);