

Slobodan N. Vukosavic

Curriculum Vitae

PERSONAL DETAILS

Address: Slobodan N. Vukosavic,
27, Electrical Engineering Department, University of Belgrade
73, Bulevar Kralja Aleksandra Obrenovica
11000 Beograd, Srbija

D.o.B: January 27. 1962., (Sarajevo)
Contact: email: boban@etf.rs
URL: vukosavic.etf.rs

EDUCATION

Slobodan N. Vukosavic graduated with honours at the Electrical Engineering Department, University of Belgrade. He got his diploma in Power engineering in 1985, and his diploma in Electronics in 1986. He defended the magisterial thesis entitled "Control algorithms for the voltage source inverters" in 1987. The doctoral dissertation "Adaptive digital control of induction motors" is defended 1989. with the same University.

EARLY EMPLOYMENT

Since 1985, he worked as an R/D engineer with "Nikola Tesla" Institute in Belgrade, engaged with research, development and design of static power converters, electrical drives and digital control systems for industrial and military applications. Relevant projects were closely related with his magisterial thesis, PhD thesis, and his first papers. In 1988, he joined Electronic Speed Control Division of Emerson-Electric in St. Louis, where he developed and patented sensorless controller for brushless permanent magnet motors in HVAC applications. He also developed asymmetrical switched reluctance machines and original power converter topology for SRM supply. Invited by Vickers-Electric, manufacturer of hydraulic actuators, he joined their new R/D team, developing electric actuators for industrial robots. As the team leader, he developed motion control products for the car manufacturers and automotive industry in Europe.

TEACHING

He started teaching at the Electrical Engineering Department, University of Belgrade part-time in 1993. and full time from 1995. He was elected associate professor in 1998. and full professor in 2003, teaching Electrical machines, Digital control of electrical drives, Electrical propulsion, Motion control systems and Power converters in renewable energy sources. He served as the Head of the Power Engineering Department in two successive terms, contributing to improving the learning standards, developing new curricula and increasing the enrollments. In 2003, he was elected adjunct

professor at the North Eastern University, Boston. In cooperation with Imperial College, London, he developed a new curriculum in Mechatronics. He was a guest lecturer at several Universities, where he also participated in supervising and examining PhD thesis. Along with his work at the University of Belgrade, he taught undergraduate and postgraduate power engineering courses at universities in Sarajevo, Banja Luka and Novi Sad, where he supervised PhD thesis of 5 assistants. He established two R/D laboratories: Laboratory for digital control of electrical drives and Laboratory for electrical vehicles. In cooperation with other universities and companies, the laboratories completed 13 international and 20 national R/D projects. He mentored 74 diploma thesis, 17 magisterial thesis, 12 master thesis and 12 PhD thesis.

SCIENTIFIC RESEARCH AND ENGINEERING DESIGN

His research interests include electromechanical energy conversion, digital control, industrial robotics and power electronics. Most contributions in electrical machines, motion control and control of energy conversion are available as patents, journal papers and monographs.

The results of his studies include theoretical background and practical solutions for designing electrical machines and power converters with reduced iron- and copper-weight and improved efficiency. Developed in early cooperation with Emerson-Electric-ESCD, asymmetrical topologies of switched reluctance machines, along with corresponding power converter topologies provided an extended torque-speed characteristic and enabled practical use of SRM drives. With the same group, he developed patented solutions for sensorless control of brushless permanent magnet motors.

He conducted research and design of motion control algorithms, servo-amplifiers and servo motors for production automation and industrial robots. As the team leader in R/D departments of Vickers-Electric and Moog, he conducted design and deployment of motion control solutions and several original methods and devices. Developments include one of the first multi-axis servo-amplifiers with proprietary algorithms for the suppression of the mechanical resonance and torsional oscillations, the algorithms for trajectory optimization and the control laws that reduce the losses and increase the energy efficiency. In his monograph *Digital Control of Electrical Drives* (Springer), he develops digital motion controllers with well-damped, time-optimized response, and an improved disturbance suppression. Developed motion control products and devices are mainly used at European car manufacturers, accounting for more than 80.000 servo axis. Large power, high reliability servo-amplifiers developed in cooperation with Moog are widely used for running the flight simulators and high-pressure injection molding machines.

Since 1995, he was involved in R/D and design of grid-side power converters, electrical generators and static power converters for renewable sources and micro-grids. A number of bilateral research projects related to multiphase electrical machines and multilevel inverters was completed with Liverpool John Moores University. He developed and designed first industrialized multi-phase matrix power converter for the needs of TAMUQ University of Qatar and LJMU. He completed IRADK10 project for IR, the first demonstration of the IRAMS high voltage integrated circuit (HVIC). He also delivered design and consultancy services to companies and universities such as International Rectifier, Emerson-Ceset, Ferrari, Texas A&M and others.

ORGANIZING R&D AND DESIGN ACTIVITY AT THE UNIVERSITY

In Laboratory for digital control of electrical drives and Laboratory for electrical vehicles at the University of Belgrade he organized research and conducted 6 project financed from the national funds, one Tempus project, 7 R/D projects completed for overseas companies and 5 R/D projects completed for overseas universities.

He initiated and coordinated R/D in developing methods and devices for the environment protection, involving several national universities, institutes and companies. Since 2004, he conducted the research, development and deployment of the methods and devices for reduction of the flue gas particle emission from coal-fired thermal power plants. Within the two laboratories that he founded at the University, he organized teams of PhD students and assistants and completed a number of R/D

projects for Lord-Baladyne, Msemicon, Gnd-Ups-Taiwan, Semicron, Polimotor, Elge, Iskra, Atech, Huawei and GE. In 1996. the teams developed *Elektra* zero-emission automobile. They also developed and deployed electronic soft-starter for 15 MVA synchronous machines in reversible hydro power plants and intermittent DSP controller for the ESP in coal-fired thermal power plants.

PUBLICATIONS

S. N. Vukosavic published 7 monographs, 5 textbooks, 80 papers and 12 electronic textbooks. He wrote 2 invited papers in international journals and gave 10 invited lectures/keynote lectures at international conferences. He also has 63 papers at international conferences and 56 papers at national conferences. According to Scopus data base, his papers were cited more than 1500 times, and his *h* factor is 24. The list of publications is given at <http://vukosavic.etf.rs/publications.pdf>

EDITORIAL ROLES

Associate editor of *IET Electric Power Applications*, member of editorial board and guest editor of international journal *Electronics*, member of editorial board of international journal *Facta Universitatis: Electronics and Energetics*. S. N. Vukosavic is member of program boards of *International Symposium on Industrial Electronics (INDEL)* and *International Symposium on Power Electronics*.

MEMBERSHIPS, AWARDS AND PUBLIC ACTIVITY

S. N. Vukosavic is an associate member of the Serbian Academy of Sciences and Arts. He is also a member of Academy of Engineering Sciences of Serbia and Senior member of the IEEE and member of Atiner institute for education and research.

He was awarded "Tesla award" for engineering achievements, award of the Belgrade Chamber of Commerce and the award "Prof. Branko Rakovic" for the best paper published in international journals. In 2003, he was elected adjunct professor at North Eastern University in Boston. He was Head of the Power Engineering Department at the University of Belgrade, member of the University council, member of IEC committees and other associations and bodies.