

(C.V. in 1000 words)

Slobodan N. Vukosavić was born on January 27, 1962, in Sarajevo (Yugoslavia). He got his PhD in 1989 at the University of Belgrade, Department of Electrical Engineering. Since 1985, he has been working at the Nikola Tesla Institute on the development of power converters and control systems for industrial and military purposes. In 1988, he worked at the Emerson-ESCD research center in St. Louis, developing patented solutions for electronic control of electric machines. From 1991, he worked for Vickers-Electric on establishing the research center for motion control, assuming the leadership of the research and development team and focusing on designing the motion control products and systems for industrial robots.

Since 2000, he continued collaboration with MOOG, expanding research and development into grid-side inverters for renewable sources. In 1993, he started teaching at the Department of Electrical Engineering at the University of Belgrade. He was appointed as a full professor in 2003. As the Head of the Department of Energy, he initiated changes in education that significantly increased student interest. At the University of Belgrade, he established laboratories for scientific research in the fields of digital motion control, power electronics, electric machines, industrial robotics, and electric vehicles. The work of these laboratories involved international collaboration, consulting services, and projects undertaken for companies such as MOOG, Huawei, Ferrari, International Rectifier, Emerson, Semicron, General Electric, Lord-Baladyne, Msemicon, Elge, Iskra, Atech, Gnd-Ups-Taiwan, and others. He collaborated in education and implemented bilateral projects in the field of electrical energy with universities such as Liverpool John Moores, Imperial College, North Eastern, Texas A&M, as well as with electrical engineering departments at universities in Banja Luka, Sarajevo, and Novi Sad, where he delivered lectures and worked on education and training of teaching staff.

Scientific and professional work: Slobodan Vukosavić's primary areas of scientific interest include electromechanical energy conversion, digital control, robotics, and power electronics. A significant part of his research and development activities involves industrial robotics and automated manufacturing. He has led research teams at companies Vickers and MOOG, where he developed methodologies and algorithms for motion control and designed a series of original solutions, devices, and systems. He pioneered the development of the first multi-axis modular servo amplifiers (DBM, IDBM and DBS), control algorithms addressing mechanical resonance and torsional oscillation issues, as well as programming solutions for trajectory optimization to reduce energy consumption. He designed three-phase PWM inverters of high specific power (DS2000, DMS2000, and DM2020). Large power, high reliability products developed in cooperation with Moog are widely used for running the flight simulators and high-pressure injection molding machines. For industrial servo products manufactured by Vickers and MOOG, he developed algorithms for automated adjustment of control actions for multi-axis robots, suppressing known disturbances and enhancing resilience to stochastic disturbances. In the production facilities of European automotive industry giants Michelin, Renault, Peugeot, and Fiat, more than 80,000 servo systems from the DBM, DBS, DS2000, and DM2020 series are utilized.

In collaboration with the Emerson-ESCD research center (St. Louis), he developed original asymmetric topologies for switched reluctance drives, with corresponding magnetic

circuits, winding sets, switching power converters and control algorithms that significantly expand operational characteristics of switched reluctance motors. He devised patented solutions for electronic speed control of appliance-grade electrical machines without shaft sensors and provided theoretical foundations and practical approaches to converter design that increase specific power and reduce the weight of consumed iron and copper.

Since 2000, he has collaborated with MOOG-Electric on the development of grid inverters, energy converters that connect wind and solar power plants to the electrical grid with alternating currents, and he has developed control algorithms for modern electrical grids (smart grids). He has developed a series of control solutions for stability and quality issues in ac grids with a large number of electronically controlled sources and loads. He is the author of pioneering works and implementations in the field of matrix converters and multi-phase, multi-level converters, developed in collaboration with LJMU and Texas A&M - TAMUQ universities. He is the author of the IRADK project carried out for International Rectifier, the first demonstration of the HVIC concept (High Voltage Integrated Circuit) that integrates power semiconductor switches with analog and digital signal and control circuits. He is the initiator and coordinator of scientific research work at domestic universities and institutes in the field of environmental protection.

Publications: He authored over 250 papers, including 64 papers in journals listed in the JCR. He has written ten books, among them *Digital Control of Electrical Drives*, "电机" (*Electric Motors*), *Electrical Machines*, and *Grid-Side Converters Design and Control* published by Springer. According to data from the Springer publishing house, electronic versions of chapters from the book *Electrical Machines* have been downloaded 4.5 million times. According to the SCOPUS index, he has published 117 papers, been cited 3381 times (excluding self-citations), and has a Hirsch index $h = 35$.

Activities: He is a member of the editorial board and a guest editor for the journals *Electronics* and *Facta Universitatis*. He serves as an associate editor for the *IEEE Transactions on Energy Conversion* and is a member of the editorial board for the *International Journal of Electrical Power & Energy Systems*. Additionally, he has been an associate editor for the *IET-EPA* journal. He is a member of the program committee for the *International Symposium on Industrial Electronics* and the *International Symposium on Power Electronics*. He has mentored 79 bachelor's theses, 35 master's theses, and 16 doctoral dissertations.

Awards and Recognitions: He received the "Nikola Tesla" award for engineering achievements, the Belgrade Chamber of Commerce award, and the "Prof. Branko Raković" award for the best-published scientific work. He was elected as an adjunct professor at North Eastern University in Boston in 2003. He was elected corresponding member of the Academy of Engineering Sciences of Serbia in 2002, and full member in 2007. He was elected corresponding member of the Serbian Academy of Sciences and Arts (SASA) in 2015, and appointed 2018. as president of the Academic Committee for Energy. In 2021, he was elected as a full member of SANU and secretary of the Department of Technical Sciences.