



## **IEEE Sekcija Srbija i Crna Gora / PES ogranak**

**18. 05. 2017. god. u prostorijama Elektrotehničkog fakulteta Univerziteta u Beogradu,  
u 19h, sala 70**

**Bulevar kralja Aleksandra 73, 11000 Beograd, Srbija**

**organizuje predavanje pod nazivom:**

### **“High Precision Active Suppression of DC Bias in AC Grids by Grid Connected Power Converters”**

Parasitic dc currents injection is caused by imperfections of grid connected power converters. Recent distribution transformers have an increased sensitivity to dc bias. These trends call for an increased precision of detecting very small dc bias voltages. With high precision sensing and with minor software changes, the grid connected power converters can be turned into active means for the dc bias suppression.

With an improved sensing method and an optimized design of the sensing reactor, residual errors in 0.4 kV grid can be reduced below 0.1 mV, the level acceptable by the recent distribution transformers.



**SLOBODAN N. VUKOSAVIĆ**, Ph.D. EE, was born on January 27, 1962. He obtained his B.Sc. and Ph.D. degrees at the School of Electrical Engineering, University of Belgrade in 1985 and 1989, respectively. He is elected an associate professor at the University Belgrade in 1998, and for full professor in 2003. He was the Head of The Power Engineering Department. He was visiting professor, lecturer at postgraduate courses, and gave seminars at technical institutes and universities in Boston (NEU), Novi Sad, in Italy (TO, GE), and Banja Luka. With Vickers Electric since '91, his R/D team developed motion control products for industrial robots in use at major EU car manufacturers.

Joined ESCD Laboratory of Emerson Electric, St. Louis, in '88, conducted research in the field of SR drives and sensorless drives.

His interests include Electrical machines, motion control (MC) technologies applied to general automation, embedded DSP solutions in power electronics and electrical drives (PED), power conversion, clean and renewable energy technologies. In the field of electrical machines, design and control resulting in an increased efficiency and reliability, multiphase machines, SR machines, and the application of DSP technologies in monitoring and diagnostics of large machines. MC research is focused on transmission-less structures with linear motors, and performance improvement of conventional robots by anti-resonant controllers, suppressing the mechanical resonance in compliance-critical, flexible transmission. Proprietary control & tuning for MC systems extend the bandwidth, reduce stiffness and allow for shorter cycles. His R/D activity in PED include the motor-converter integration, efficiency optimized control, switching

techniques reducing the insulation stress, state reconstruction for sensorless drives and parameter estimation focused on efficiency, robustness and diagnostics. Efforts in the field of energy conversion include novel topologies and embedded control providing reduced conversion losses, and concede savings on iron, copper and power semiconductors. His interest include electrostatic precipitation (ESP) applied to filtering pollution gasses released by power plants and industry. He has been elected corresponding member of Serbian academy of sciences and arts since 2015.

His over 100 scientific papers are cited in leading international publications, including Wiley Encyclopaedia of E&E Engineering). Author of patented technical inventions. Member of the Serbian national academy of engineering, adjunct professor at the North Eastern University (Boston), IEC TC9 member, IEEE and IEE reviewer, member of the of the Belgrade University Council, Head of the Power engineering department. His students won the 1st prize at the IEEE "FEC" contest in 2005. He published several textbooks and monographs, the most recent one being *Digital Control of Electrical Drives*, published in 2007. by Springer.

He founded The Laboratory for Digital Control of Electrical Drives and Power Converters at the School of Electrical Engineering, at The University of Belgrade (DDC Lab), with the goal of applying the DSP technology in power electronics and drives, with the motto to save on iron and copper by smart use of silicon and software.

The Laboratory founded by Slobodan Vukosavić works in the field of DSP-controlled power conversion, general purpose drives, Automotive, Military, Appliances, Electrical drives, Motion control systems, UPS, electrical traction, fork lifts, golf carts, alternative energy. Technical expertise includes long, mature experience in designing servo drives and motion control systems. Consulting in power electronics and industrial drives. Analytical studies, experimental and prototyping capability in building low-cost appliance drives designed to the norms. Complete product development cycle, potentials and risks, rapid prototyping, Compliance to applicable standards. Providing design and manufacturing documentation tested and qualified samples. Development and design of converter topologies, Hardware, software & firmware, Analog & digital, Circuit & PCB designs. Reliability, safety and compliance. Fresh ideas are generated from a synergy of DDC-Lab mature experience of our engineers and the energy brought in by our new University postgraduates. Experience and flexibility we gained over the years turned us into a cost-effective, one-stop service provider for your product design, prototyping, qualification and production needs. Our outsource design capacity and flexibility ensure correct product integration, technical and post-production support. Our technical expertise and references are the unique benefits, completing our service provider offer. The DDC Lab offers quick and simple one-stop product design services, with both the cost and technical effectiveness. The Lab performed research for Sever-Subotica, Sprade-COM India, Serbain Railways, Nikola Tesla Power Plant, Zastava-automobili, Vickers-Electric, MOOG-Electric, International Rectifier, Lord-Baladyne Corp., Emerson Electric, Msemicon-IRL, GND-UPS Taiwan, Semicron, ELGE-Mi, Polimotor-GE, Iskra-avtoelektrika, Atech-SI, and other domestic and international companies and centers.

**Слободан Н. Вукосавић** је рођен 27. јануара 1962. године. Дипломирао је 1985., магистрирао 1987., а докторирао 1989. године на Електротехничком факултету Универзитета у Београду. Прво запослење налази у Институту "Никола Тесла". У истраживачком центру компаније Emerson-Electric у Сент Луису развија оригинална решења релуктантних мотора и 1988. патентира решења за електронско управљање синхроним моторима. Од 1991. године учествује у формирању истраживачког центра компаније Vickers за развој управљачких система индустријских робота и преузима руковођење истраживачким тимом. Од 2000. године сарађује са компанијом MOOG и развија алгоритме и уређаје за управљање производним хелијама у аутомобилској индустрији. У настави на Електротехничком факултету Универзитета у Београду сарађује од 1993. године. У звање редовног професора изабран је 2003. године. Сарађивао је са North-Eastern универзитетом у Бостону, где је 2003. године изабран за придруженог професора, са Imperial колеџом у Лондону, као и са Liverpool John Moores универзитетом. Држао је наставу и радио на формирању наставног кадра на факултетима у Бањалуци, Сарајеву и Новом Саду. Област његовог научног рада укључује енергетску електронику, електричне машине, дигитално управљање у енергетици и индустријску роботiku. Формирао је две научно истраживачке лабораторије у којима је реализовано 13 међународних и 20 националних пројеката. Публиковао је уџбенике и монографије на српском, енглеском и кинеском језику. Његови научни радови су цитирани више од 1400 пута. Члан је уређивачког одбора три међународна часописа, члан програмског одбора међународних конференција и аутор већег броја радова по позиву. Радио је као консултант за водеће светске компаније и добио Теслину награду за врхунска инжењерска достигнућа као и друге награде. За дописног члана Српске академије наука и уметности изабран је 2015. године.