# Significant Research Contributions of Prof. (Dr.) Pradipta Kishore Dash

Professor P.K. Dash has made pioneering contributions in the area of Power System Protection, Monitoring and Control. In the field of Protection Prof. Dash has introduced the Computational Intelligence and Advanced Signal Processing techniques to build Digital Relaying schemes for the protection of generators, transformers, and transmission lines. Further, during the last 5 years he introduced the concept of time frequency transforms and pattern recognition to build intelligent relays leading to a large number of research publications in IEEE Transactions and Proceedings IEE, London. In monitoring and instrumentation, he has postulated new techniques in building Fourier analyzer and Kalman filters for measuring voltage, current, power and frequency, and harmonics in Power systems facilitating the building of newer and faster protective devices. Further his research in the power quality has added a new dimension as he postulated the use of hybrid S-transform and Fuzzy Neural Information systems for power quality assessment and he edited the special issue of Eurasip Journal of Signal Processing on Power quality. This research on power quality studies has attracted a large number of citations. His research in the transformerless D.C. transmission (Voltage source converter based HVDC light transmission) has been supported by the Department of Science and Technology, and its findings will have a futuristic impact on newer form of Energy transportation in urban centres with a smooth power flow without interruption. Further the robust control of VSC-HVDC system by Prof. Dash and his students will facilitate the connection of wind farms to the power grid without power quality problems.

Professor Dash earned his D.Sc. degree from Utkal University for his research contributions on the application of Soft Computing to Power Engineering, particularly for power system disturbance monitoring and control of Flexible AC transmission systems (FACTS). His research work in the area of FACTS will facilitate the reduction of power losses in Power transmission and distribution systems and the improvement of transient stability of power system. Further the use of FACTS devices in restructured power systems can be useful in controlling the power flow and reducing the cost of electricity and improve

the Voltage stability. For his significant research contributions Dr. Dash was awarded the Samanta Chandrasekhar prize in 1990 and was elected to Fellowship of the Indian National Academy of Engineering (FNAE) in 1997 and Life Senior Member of IEEE since 2009.

Another area of research in which Professor Dash has contributed immensely is the development of fuzzy and neural system for power systems stabilization and forecasting of electrical loads (for Power System Planning). He has used the concept of swarm intelligence in optimizing the controller parameters, so as to reduce system oscillations quickly and thereby reduce the breakdown of power flow to the customers. He established several research laboratories on Energy Systems research, and Applied Artificial Intelligence at the National Institute of Technology, Rourkela and handled numerous research grants from DST, DOE, CSIR, UGC, CPRI, Ministry of Information Technology, National Science Foundation, U.S.A., etc. Till date Prof. Dash has guided 30 Ph.D. scholars (completed) and another 15 are at various stages of completion in Electrical Engg., Computer Science, and Electronics. He is the only supervisor, under whose supervision, 4 candidates have been already awarded Ph.D. in Engineering and three more submission and several in the pipeline. He has published nearly 200 research papers in International Journals of repute and more than 150 in International Conferences and has chaired several International and National Conferences.