RELIABILITY AND MAINTENANCE ENGINEERING: FOR INNOVATIVE, HIGH-PERFORMANCE AND SUSTAINABLE SOLUTIONS

Production systems increasingly involve sophisticated equipment that integrates mechanical, electrical, electronic and software components, which significantly affects their reliability, maintainability, availability and operational efficiency.

The random nature of breakdowns occurrence dramatically complicates both production and maintenance planning. The activities of the maintenance staff were, and still are, dominated by corrective actions.

In the chart of accounts, maintenance was, purely and simply, considered as a cost centre (workforce, spare parts, production losses, delayed penalties, company image, etc.). These costs can represent 30 to 40% of the turnover for heavy industry. They are higher in areas such as aviation, the army, nuclear power plants, mining, metallurgy and chemical industry.

In this conference we will briefly discuss the theoretical foundations and practical aspects of validating and optimizing the performance of systems over their entire lifecycle and we will also discuss the potential contributions of Industry 4.0 in the maintenance industry.

Biography

Professor Daoud Ait-Kadi obtained a degree in Mechanical Engineering (1973), a Master of Sciences (1980) and a PhD in Industrial Engineering, Computer Science and Operational Research (1985).

He is currently a professor in the Department of Mechanical Engineering at Laval University. In September 2019, he joined Université Mohamed 6 Polytechnique (UM6P) as a professor-researcher. He is currently leading a research team of about 20 researchers at the graduate and post-graduate levels as well as three post-doctoral researchers. His research interests focus on the development of tools for analyzing, modeling and optimizing the performance of systems whose operating characteristics deteriorate over time and after use.

Professor Ait-Kadi also conducts researches on designing and steering value-creation networks integrating reverse logistics, life-cycle engineering and integrated logistics support. He currently collaborates as an expert with several international companies in the automotive, energy production and distribution, telecommunications, food processing, forestry and furniture, aeronautics, mining and chemical processing industries. He is a member of the research centres CIRRELT, CIRISS and CIRODD. He maintains permanent contacts with several research centres throughout the world. He is a senior member of the IEEE and IIE and a member of several scientific societies.

Professor Ait-Kadi has authored and co-authored nearly 400 articles published in scientific journals and refereed international conferences. He is co-author of several recent books including one on Stochastic Systems, Reliability and Maintenance Management (Handbook), Sustainable Development, Reverse Logistics and others.

Professor Ait-Kadi has received several honours in research, teaching and community service. He has just been awarded an honorary doctorate from the Polytechnic University of the Hautes de France

(Valenciennes). He is a resident member of the Hassan II Academy of Science and Technology (Morocco).