

Multiphysics analysis and design of rotating machines- PMSM- considering different aspects: electromagnetic, thermal, control and mechanical constraints

SPEAKERS

Abdessamed Soualmi
lead technical specialist

Philippe Wendling
Vice President Business Development
LFEM
Simulation & Design Support_GTT



About The Speakers:

Abdessamed Soualmi:

Abdessamed Soualmi earned an M.S. in Electrical Engineering from the University of Havre in 2009 and a Ph.D. in 2013 from SPIM Graduate School in collaboration with Alstom Transport. His research focused on designing and optimizing permanent magnet (PM) machines for railway applications. His expertise includes PM machines, electric motor design, and propulsion systems. Since 2013, he has worked with CEDRAT's application team and is currently a Technical Specialist at Altair.

Philippe Wendling:

Philippe Wendling, a Senior Lifetime IEEE Member, earned his master's degree from École Centrale de Lille in 1979. As Vice President of GTT Electromagnetics Applications at Altair Engineering Inc., he focuses on modeling power systems and electromechanical conversion in Multiphysics environments. With expertise in finite element modeling of electromagnetic fields since the 1980s, he leads technical support and training. Philippe is an active participant and author at IEEE conferences, including CEFC, IAS, IEMDC, ECCE, and ITEC.

ABSTRACT

Manufacturers and designers of rotating machines are increasingly confronted with constraints (technical and environmental) in the design of electrical machines imposed by new standards, particularly environmental ones. Among the technical constraints: mass reduction, acoustic noise, quality and properties of the materials...etc. To meet these constraints, engineers are led to consider the environmental and technical aspects (electromagnetic, thermal, control and mechanical). Hence the need to consider multiphysics aspect (electromagnetic, thermal, control and mechanical) in the design of rotating machines. Multiphysics analysis and study is driving a multi-physics study of a motor concept: electromagnetic, thermal, control, structural constraints have to be considered and coupled defining an analysis scenario. The multiphysics workflow analysis helps engineers to do an accurate analysis and design of rotating machines considering electromagnetic, thermal, control, structural aspects with different constraints.

