



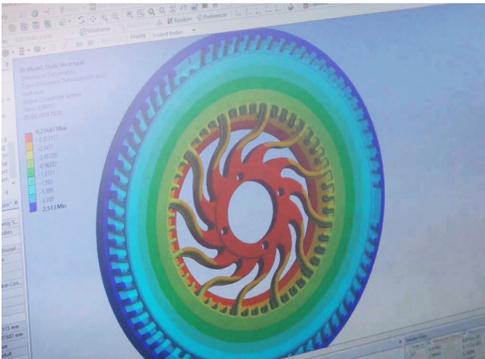
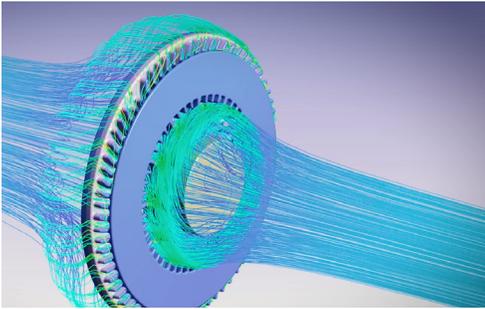
ANSYS® + **Telma**
Friction Free Efficiency ©

“With the solutions from ANSYS, we now have complete control over all three physics [electromagnetics, structural mechanics and fluid mechanics] and can validate our models in one go. Our engineers can easily duplicate these models in order to simulate all or part of the products, which also boosts innovation.”

Nicolas Quennet

*Director of Research and Development
Telma*

Digital Simulation to Aid Vehicle Safety and Reduce Emissions



Introduction

Telma has been the world leader in frictionless braking systems based on electromagnetic induction for over 70 years. Their products also help to meet environmental requirements by reducing the fine-particle emissions associated with braking systems by up to 90%. The company wants to make frictionless induction brakes a requirement on all passenger and freight transport vehicles to improve road safety and reduce the impact of traffic on the environment.

Challenges

Telma frictionless brakes must be able to dissipate a significant amount of energy while meeting the current braking safety regulations. Hence the products must be tested and validated in all conditions for their electromagnetics, structural mechanics and fluid mechanics properties. Using 2D electromagnetic calculations to develop the prototypes yielded only approximate results, which led to an increase the number of prototypes and bench tests. A digital simulation solution was needed.

Technology Used

ANSYS Maxwell
ANSYS Mechanical
ANSYS Fluent

Engineering Solution

ANSYS Maxwell enabled Telma engineers to model, simulate and validate virtual prototypes of electronic systems based on a variety of electromagnetic scenarios and concepts. To further reduce the time and cost of product development, the company increased its multiphysics simulation capabilities by adding the ANSYS Mechanical software (mechanical simulation) and the ANSYS Fluent software (computational fluid dynamics, or CFD) to its range of tools. Telma engineers also relied on the ANSYS consulting team, who supported them for six months while they developed complete digital models combining calculations from all three software solutions.

Benefits

- Using ANSYS multiphysics simulations has helped Telma significantly reduce the cost and time of designing induction braking systems. In 10 years, the number of prototypes required to validate the models has been reduced from 10 to one.
- Today, 30% of the company's turnover is generated by products designed using simulation; this figure may well reach 100% in the future.
- Used initially to optimize the performance of its existing products, ANSYS simulation solutions quickly enabled Telma to increase the number of innovations it could produce, creating three full series of new brakes for vehicles over 3.5 tons (trucks, buses, etc.).

Company Description

Since 1946, Telma has been the world leader in frictionless braking systems based on the physical principle of electromagnetic induction. Telma's unique expertise in the field of induction braking systems has been built on 60 years of presence in the market. Since its inception, Telma has significantly contributed to the improvement of road safety.