Who We Are and What We Do

Piacenza, Italia

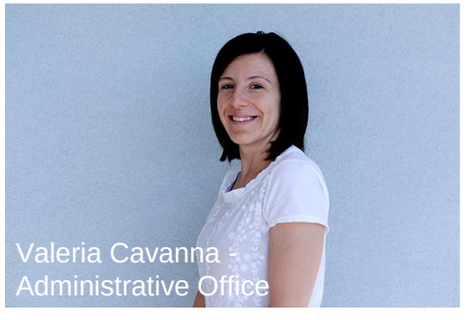
Data (opzionale) - Times (o simile) 17 pt

Our team


Alessandro Tassi - CEO


Anna Maggioni- Marketing Director


Ing. Luigi Rizzi - Technical Director

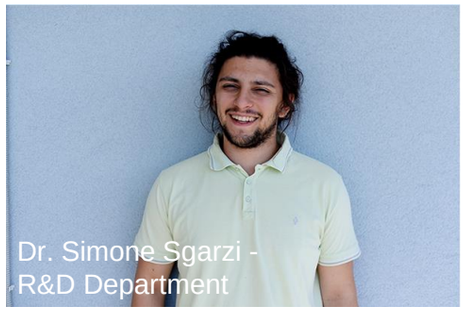

Valeria Cavanna - Administrative Office


Ing. Giuseppe Zanocchi - Technical Support Manager


Ing. Umberto Bottero - R&D Department

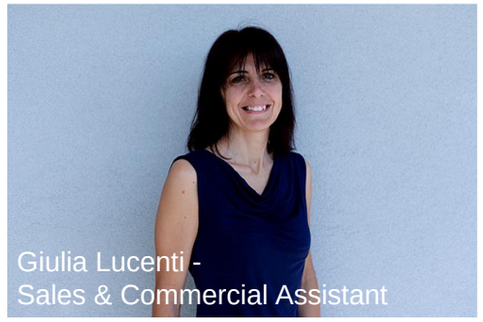

Ing. Alex Quantelli - Motor Design Department


Ing. Letizia Ferrara - R&D Department


Dr. Simone Sgarzi - R&D Department


Ing. Alberto Rubino - Motor Design Department


Ing. Jacopo Sammarchi - R&D Department


Giulia Lucenti - Sales & Commercial Assistant


Ing. Alberto Grava - Mechanical Design Department


Romina Albertini - Customer Care


Ing. Maurizio Presta - Mechanical Design Department


Ing. Maurizio Pauselli - R&D Department


Ing. Michele Orlando - Mechanical Design Department

Where We Are


Treviso
North East Office
Milano
Piacenza
Headquarters
Venezia

Who we are?

A skilled team for your technical needs.

Computational Software
Design and Consultancy
Customized Interfaces
Seminars and Courses
Characterization
Prototyping

for all Industrial Applications
of Electromechanical devices and Mechatronics
and Software Support
of Magnetic Materials and electric motors

Some Who Trust Us

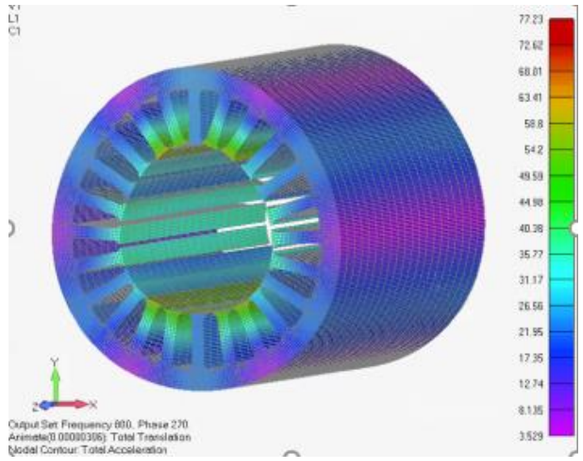
Audi, Ferrari, Bmw, Bonfiglioli, Brembo, Magneti Marelli, Magneti Marelli Motorsport, Nidec, Parker, Faulhaber, Crane, Hitachi-Rail, Technogym, Lafert, Fincantieri, Johnson Electric, ABB, Umbra Cuscinetti, Acm, Fime, Fir, Fmi, Magna, Sassi, Montanari, Sicor, Transfluid, Elvi, Comer , Ognibene, Texa, Meteor, Saccardo, Eldor, ST Microelectronics, Ak Steels, Terna, Prysmian, Gambro, Eltek, Sea Trasformatori, Bertelli, Loccioni, Zapi-Best-Motor, Università di Bologna, Catania, L'Aquila, Milano, Napoli, Padova, Torino and many more.

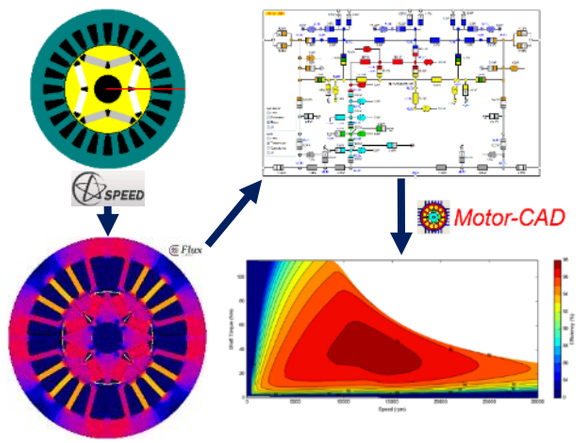
Working areas

- **Automotive**: electric traction, climatization, ignition coils, generators, mechanical analysis, vibroacoustics, fluidodynamics
- **Transportation**: electric traction, power switches
- **Biomedical**: pumps, sensors
- **Military-aerospace**: Sensors, signature, generators, motors, fuel control systems
- **Industry-machinery**: linear motors, electric motors, sensors, electromagnets, induction heating
- **Home appliance**: vibroacoustics, sensors, electric motors, linear motors, electromagnets
- **Materials**: characterization, losses and hysteresis modelization
- **Research-Universities**: free magnet electric motors, axial flux motors, cosimulation, optimization processes

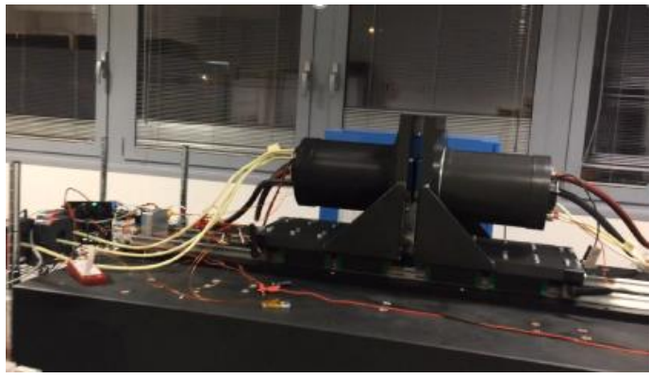
High power density BPM motor for E-traction - automotive application

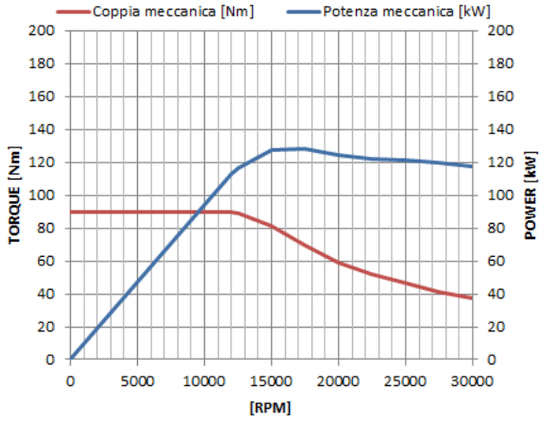
- Project fully developed in Spin
- From customer specification to prototype
- High power 120 kW, high speed 30.000 rpm
- Vibroacoustic and mechanical optimization
- Design of efficient water cooling system





400 VDC - 320 ARMS MAX

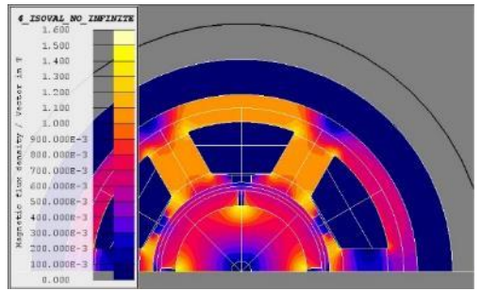


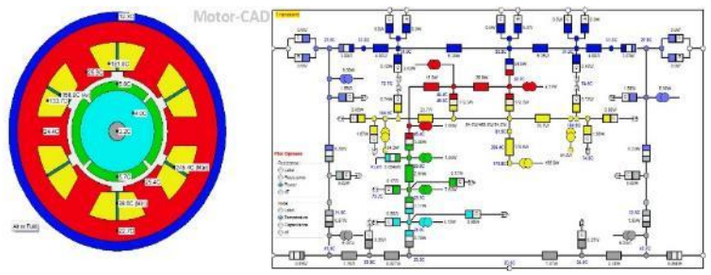


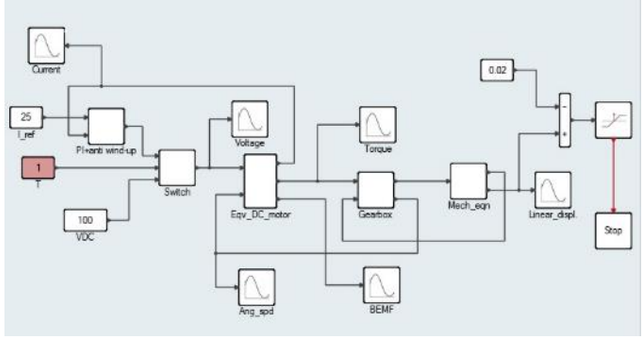
Electromagnetic-Thermal-Structural Co-simulation

Aerospace launch vehicle actuator for fuel nozzle control

- From customer specifications to prototype
- High power density
- High temperature environment
- Demanding dynamic response



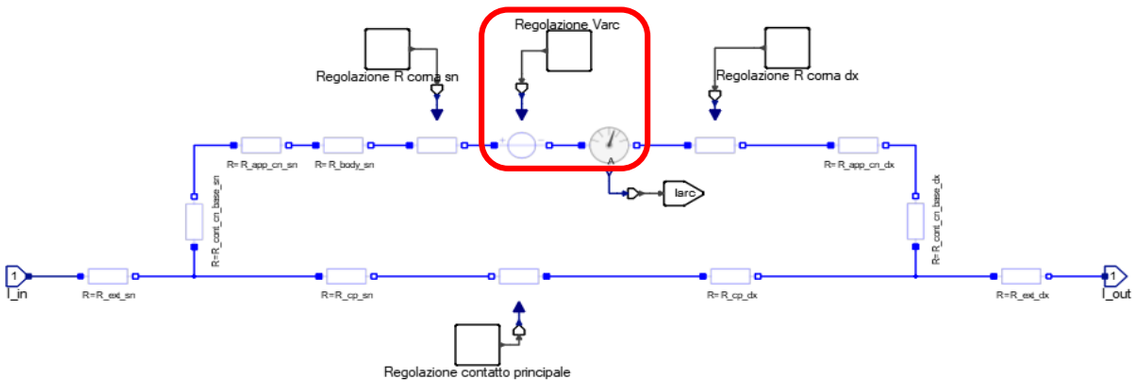


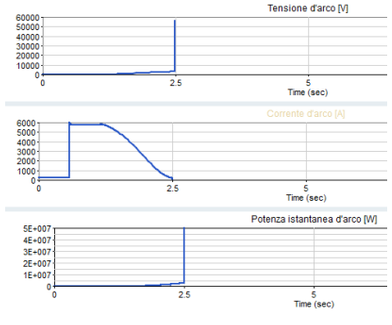


Electromagnetic-Thermal-System model Co-simulation

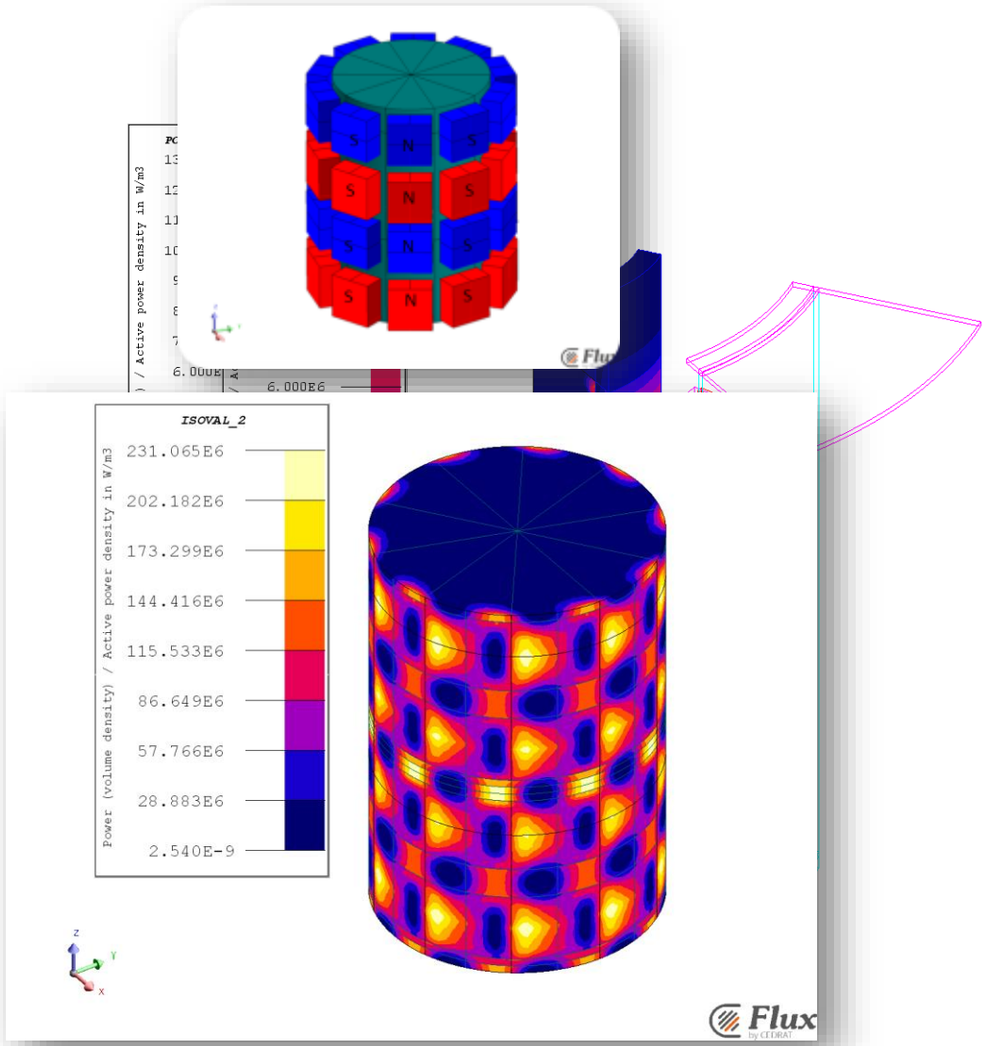
High voltage – high current switch for railway application

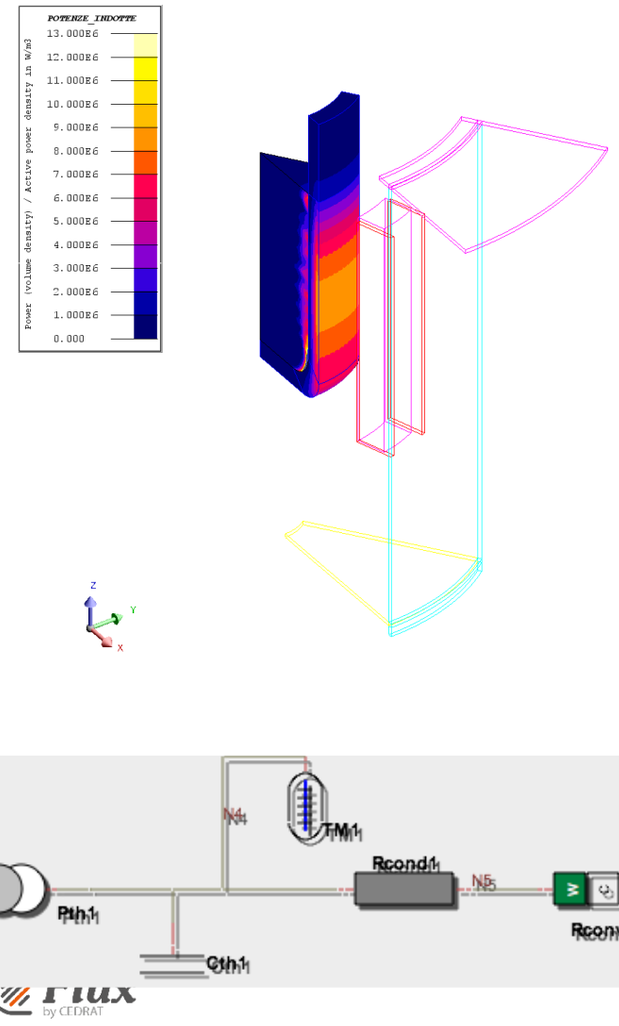
- High reliability device
- Mechanical, electromagnetic, electrical, and thermal modelization
- Included transient system modelling





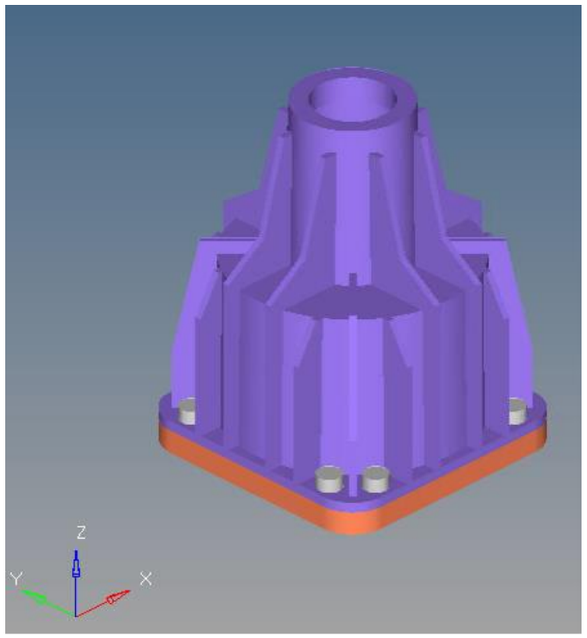
Induction heating: traditional and by permanent magnets

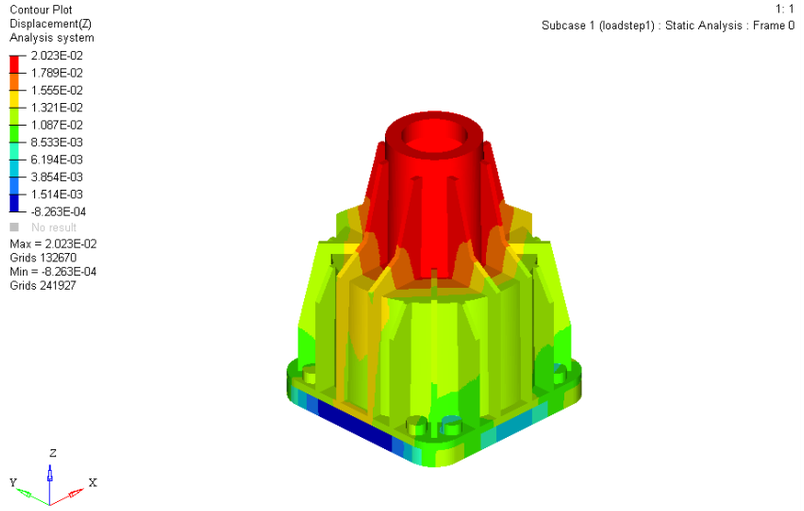


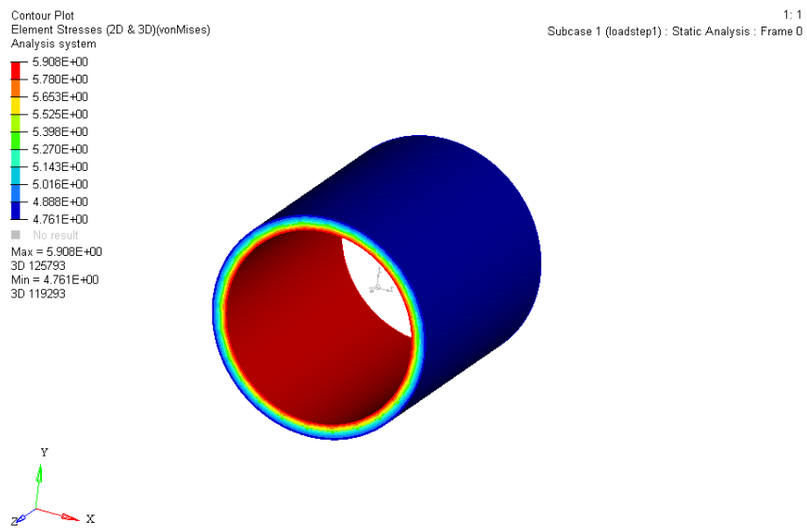


Structural and stress analysis

- Structural analysis of valve housing

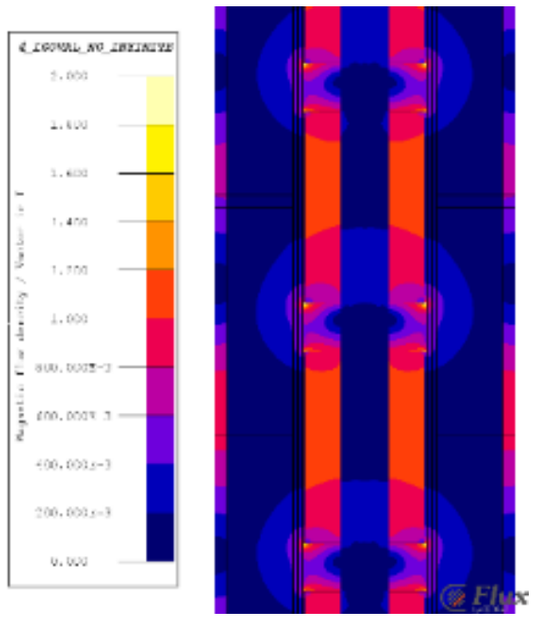


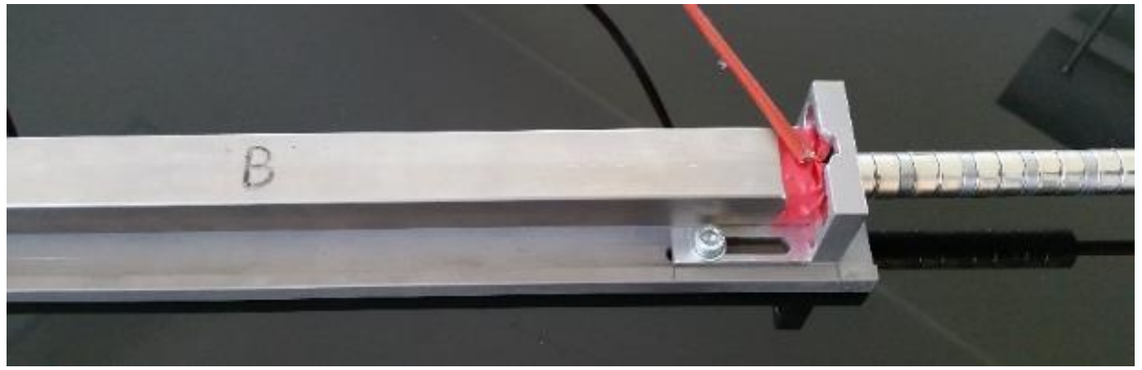




Home appliance linear motor

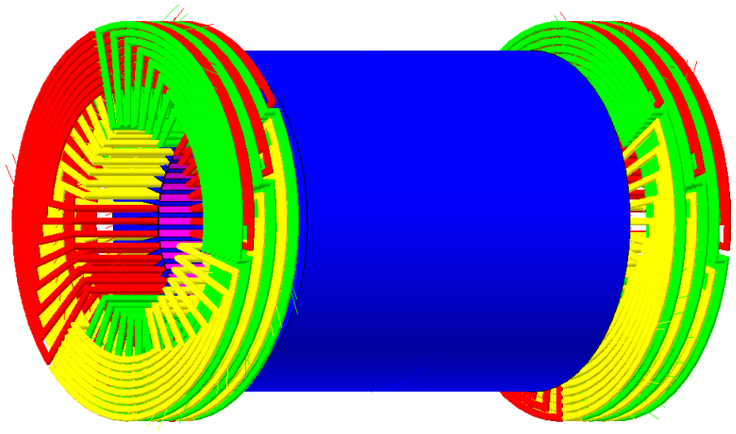
- From customer specifications to prototype
- Mechanical and thermal optimization

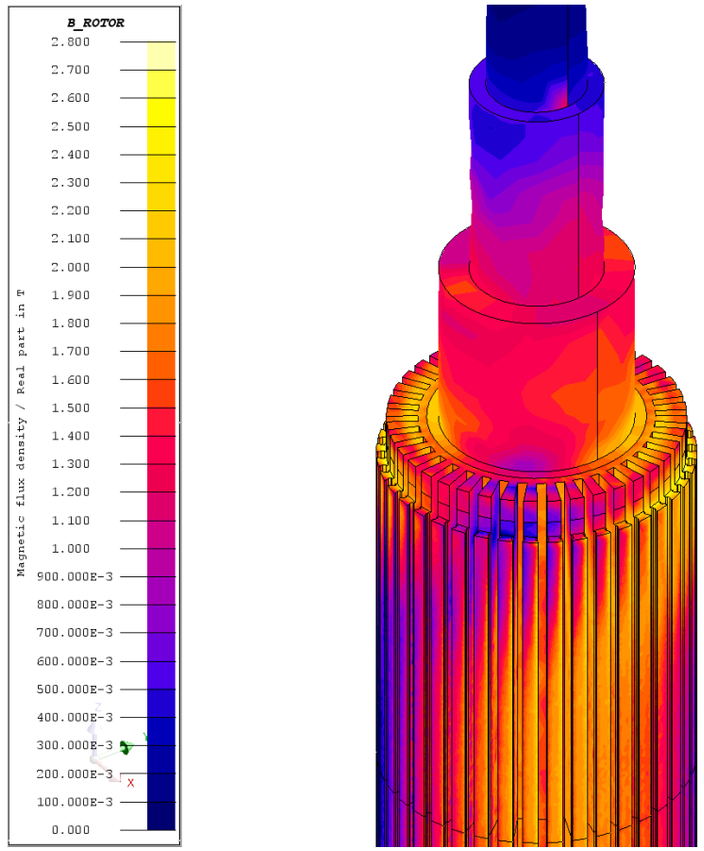




Medium-voltage induction generator

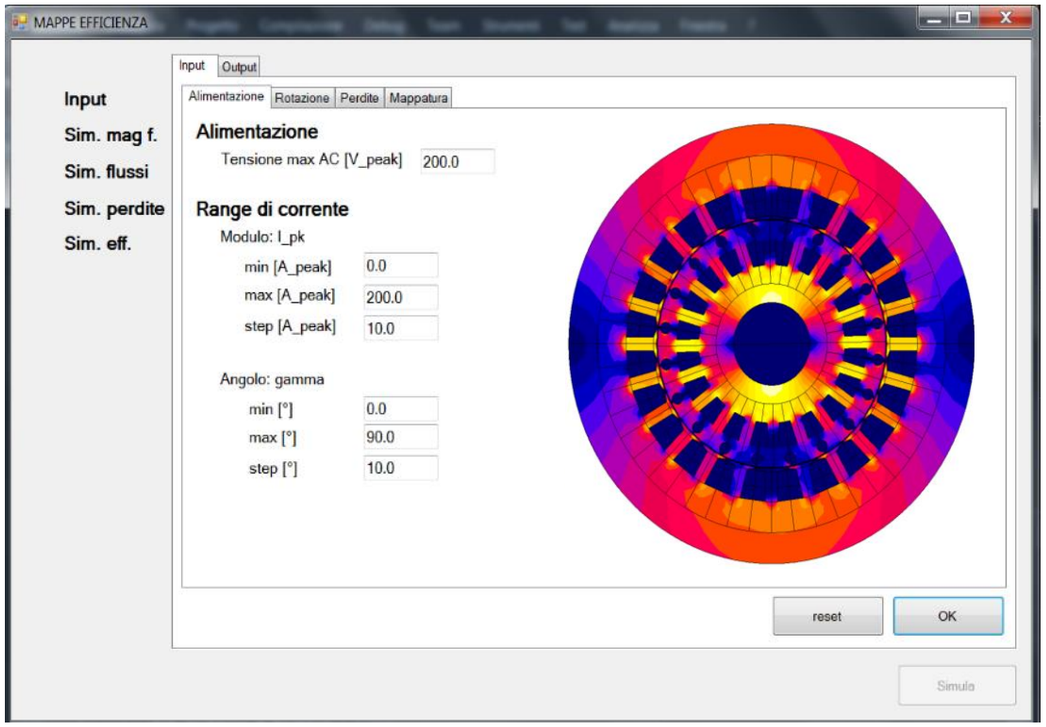
- Consultancy for 3D transient analysis
- Automated winding heads modelling
- Highly detailed analysis

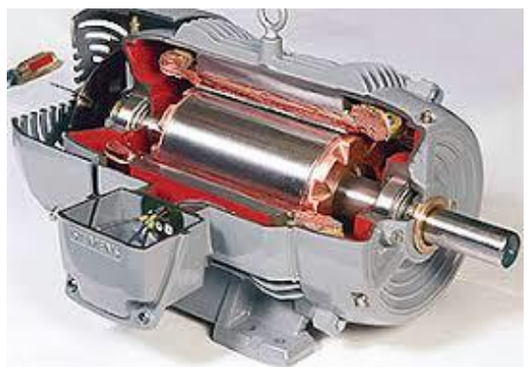


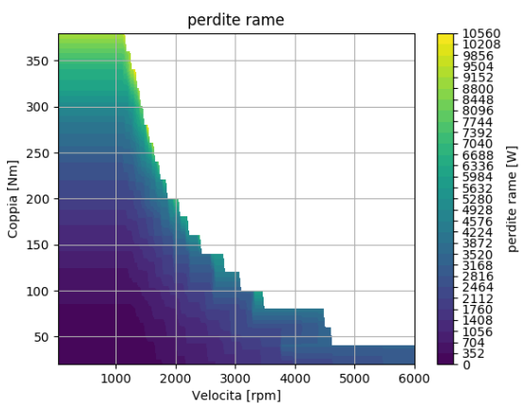


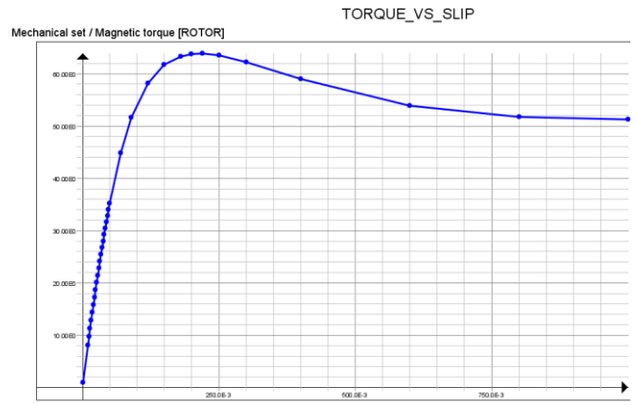
Customized Interfaces - Efficiency maps for Induction electric motors

- Fully automated procedure
- Induction motor efficiency map
- Single loss terms (copper losses, iron losses, mechanical losses…)
- Working points diagrams

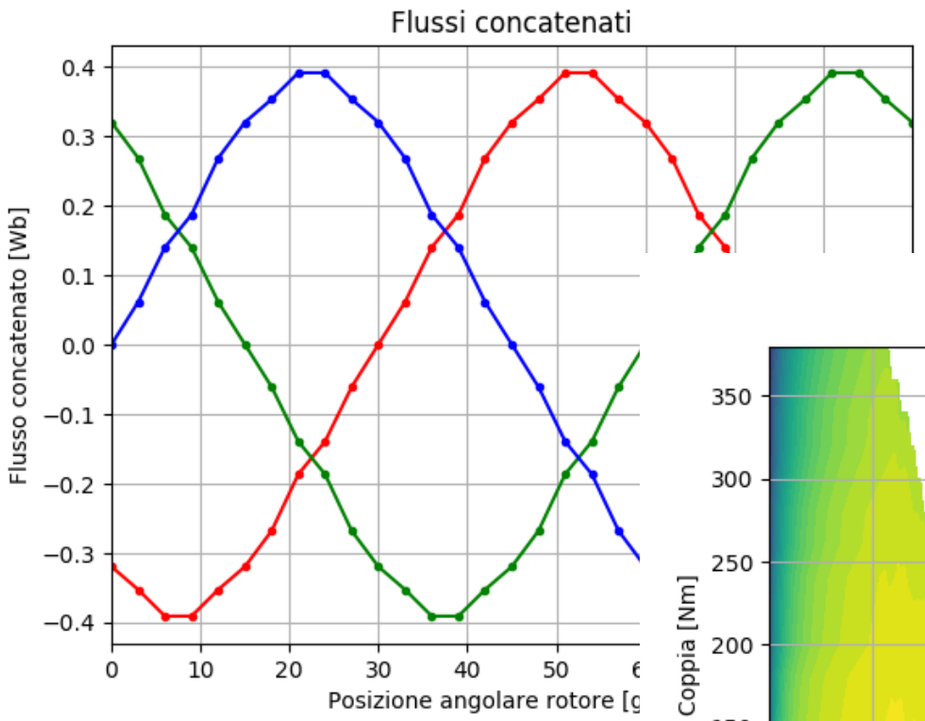


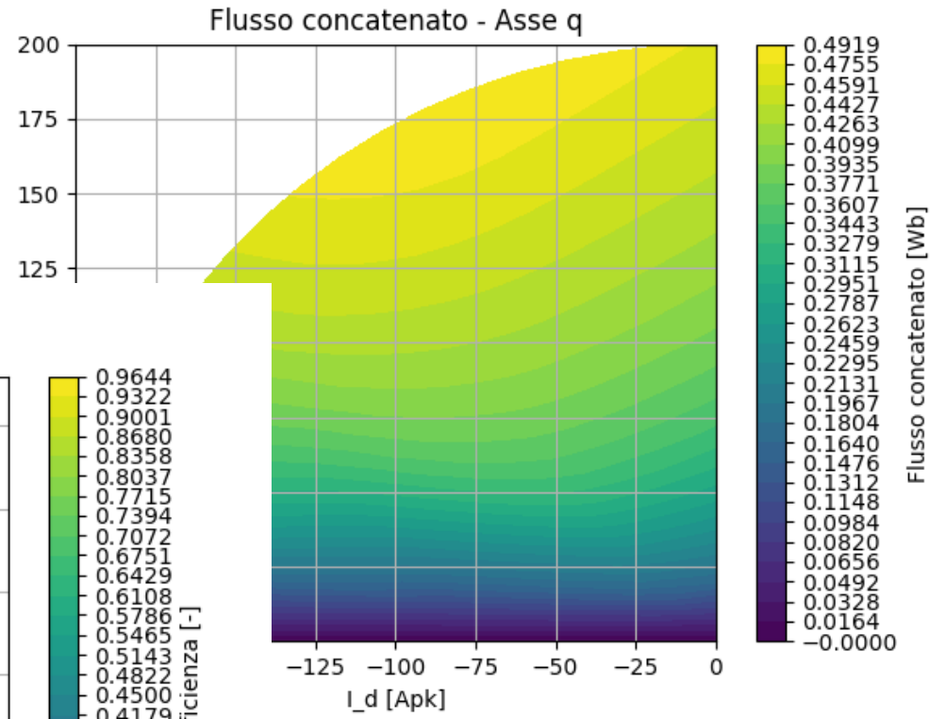


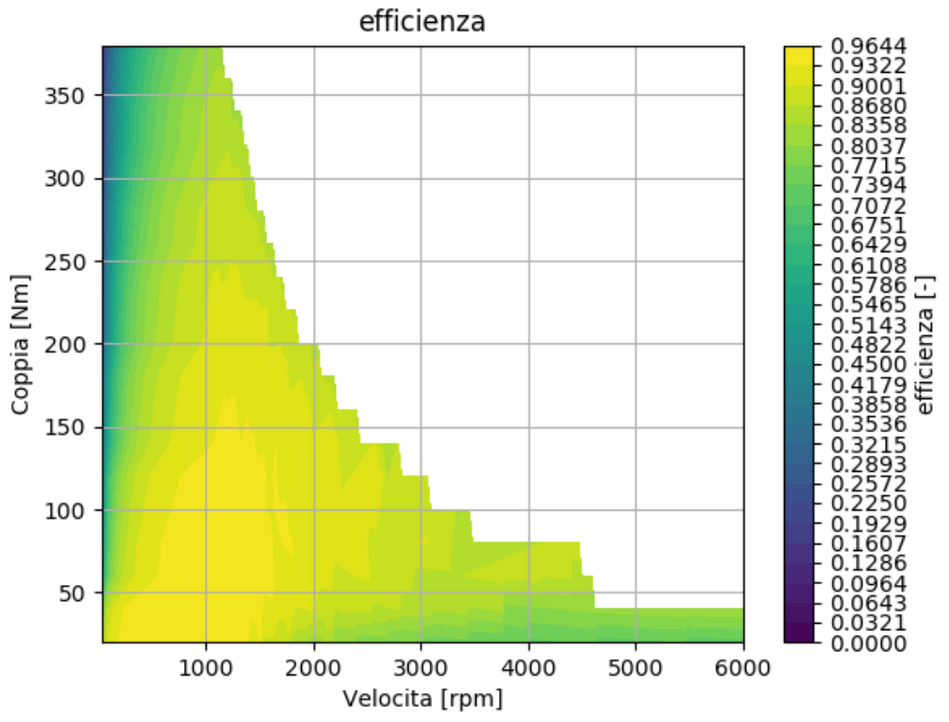


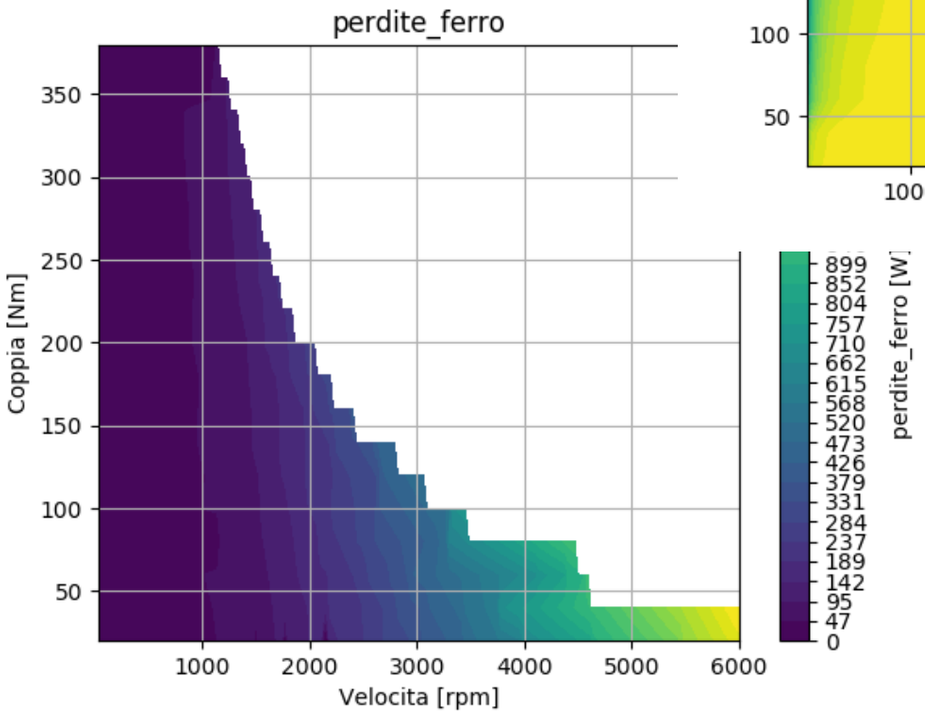


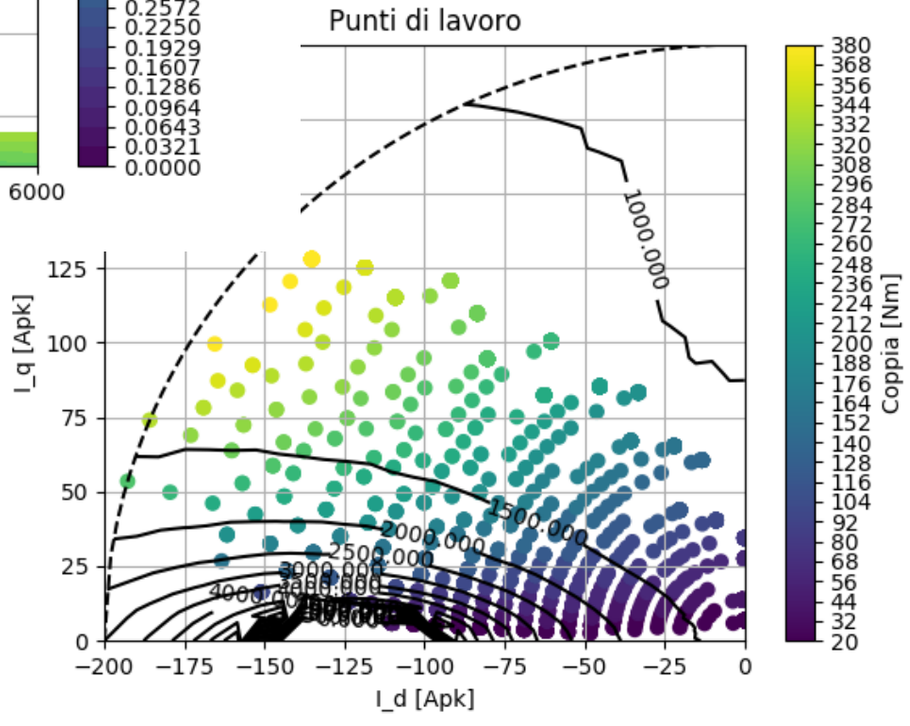
Customized Interfaces: special motors and devices





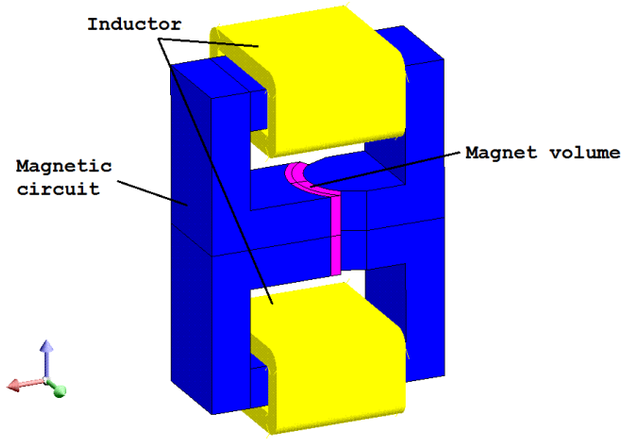


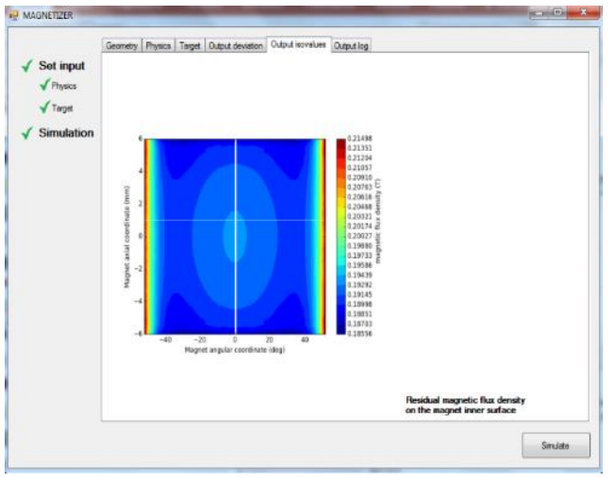


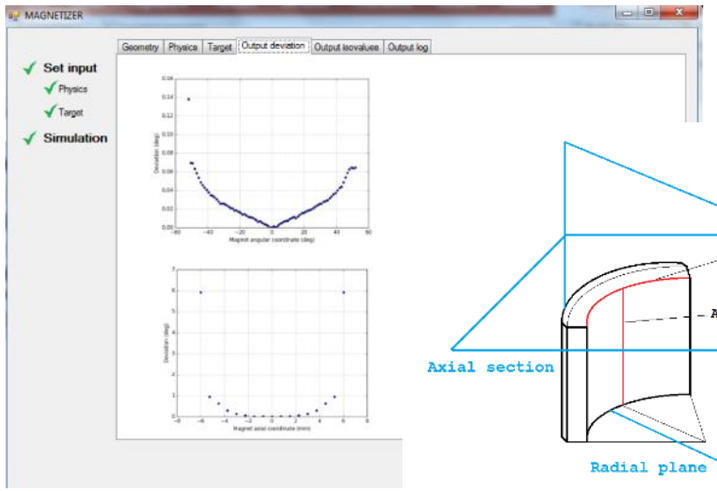


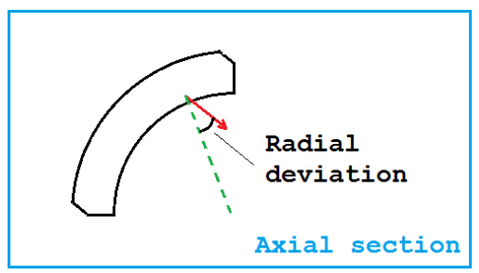
Customized Interfaces for Magnetizer performance

- Custom interface for repetitive calculation
- Magnet remanence
- Induction radiality check on different paths



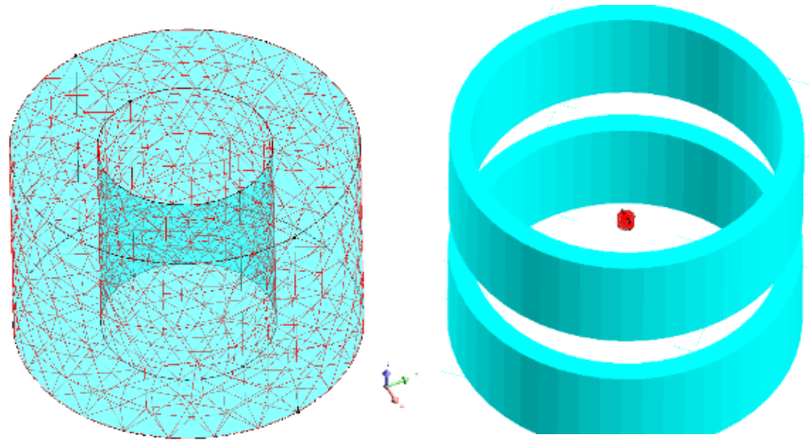


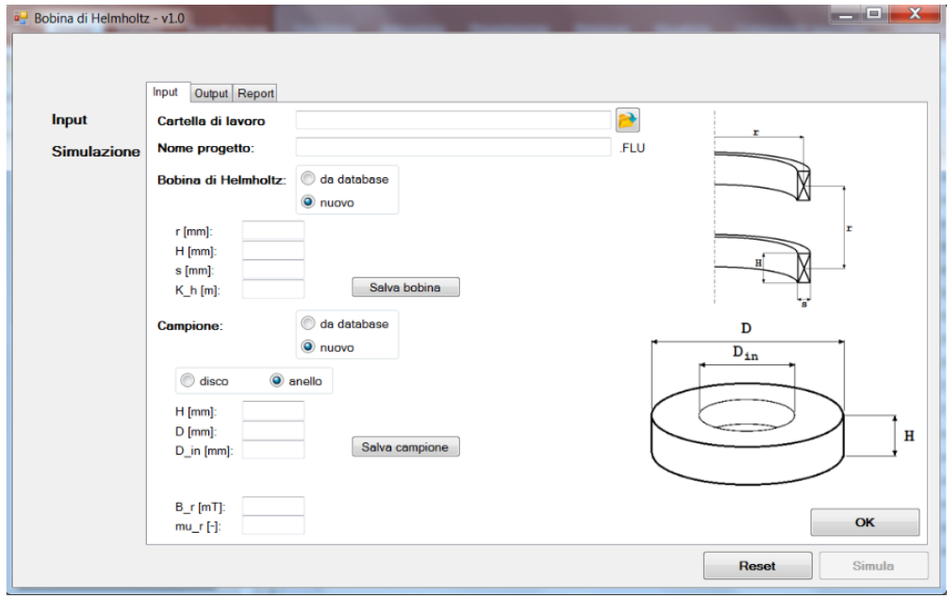




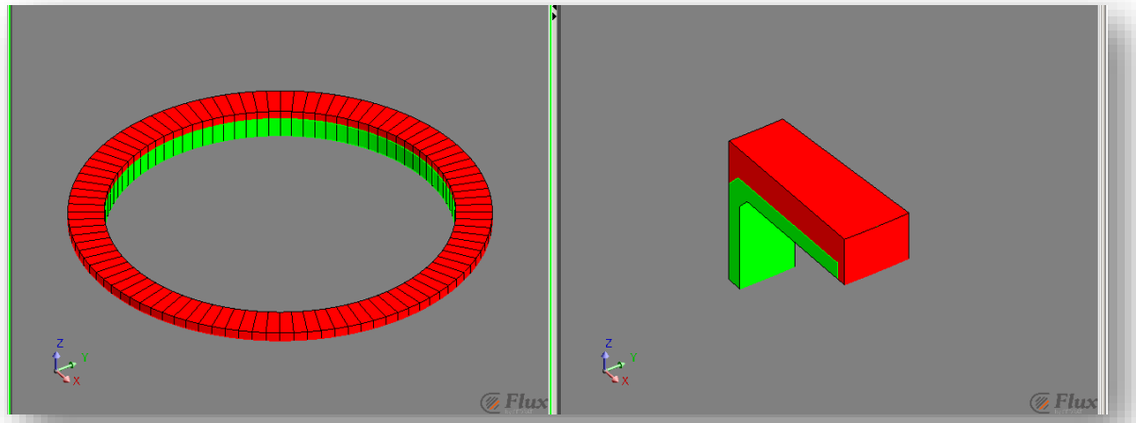
Customized Interfaces for Permanent Magnet characterization

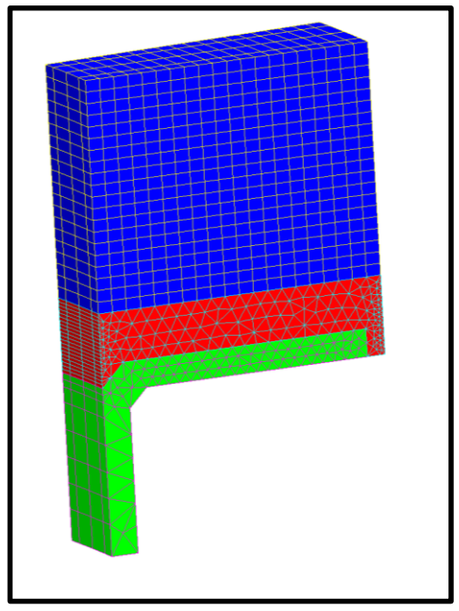
- Virtual Helmholtz coil test for permanent magnets
- Induction computation around magnets
- Force computation
- Really fast simulation



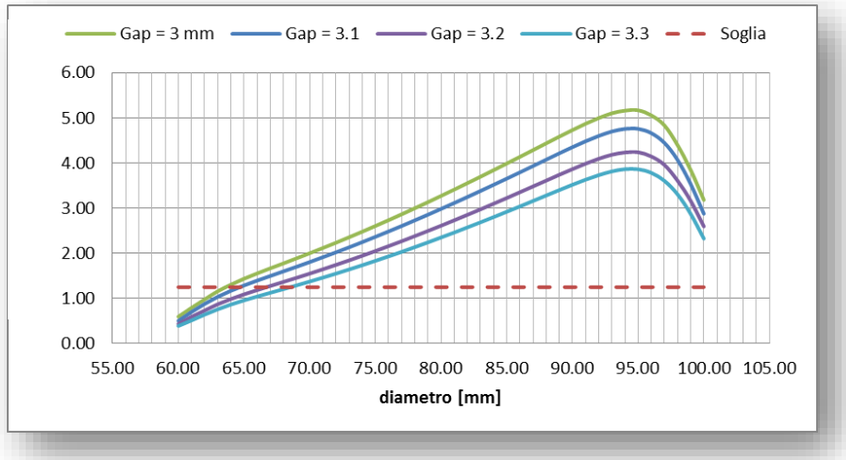


Encoder magnetici



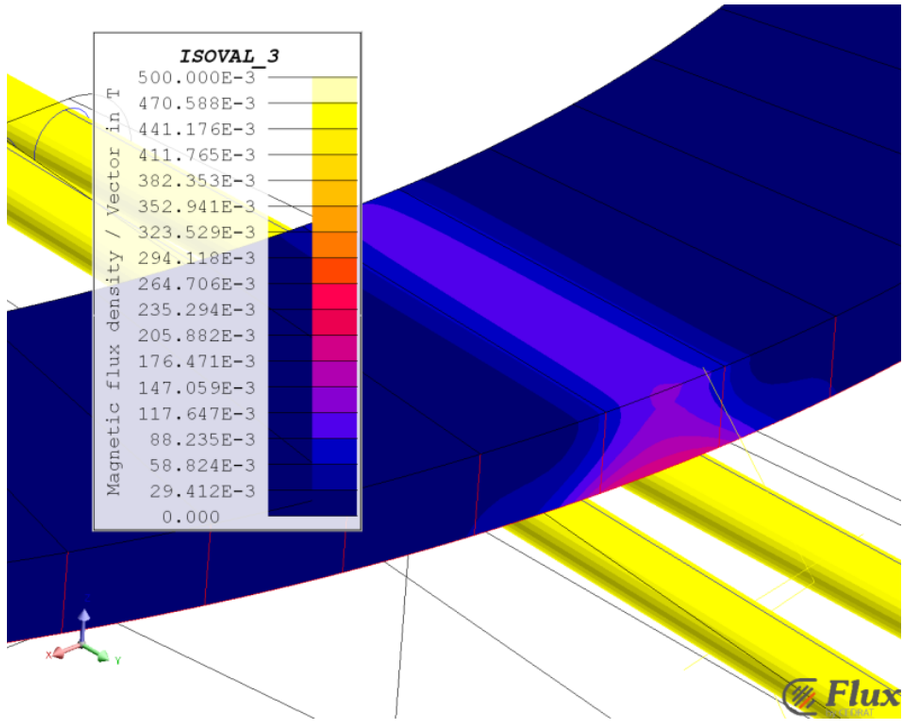


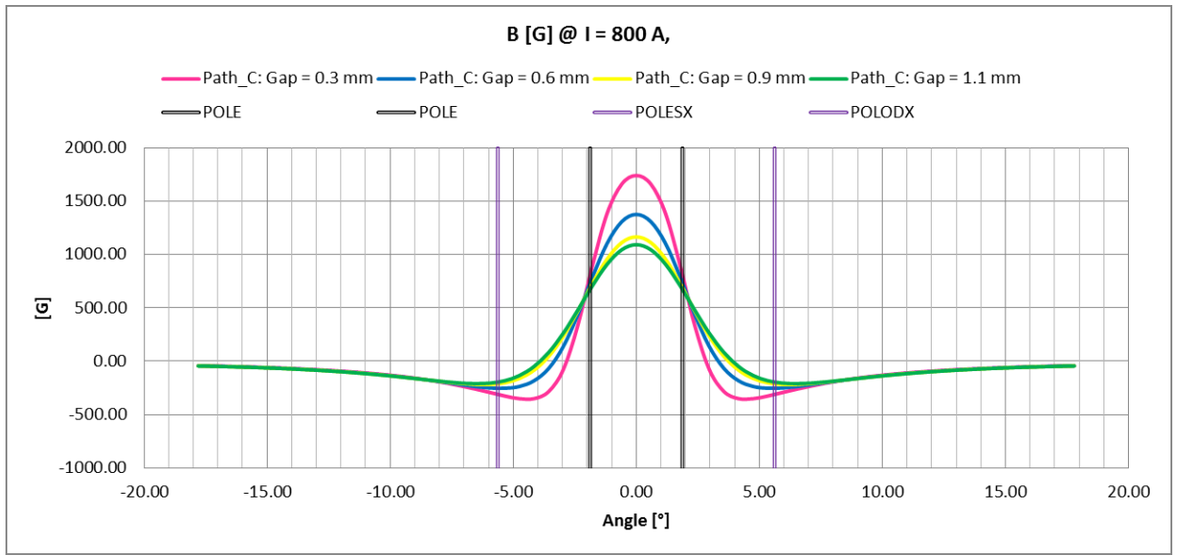
- Mesh mappata regolare

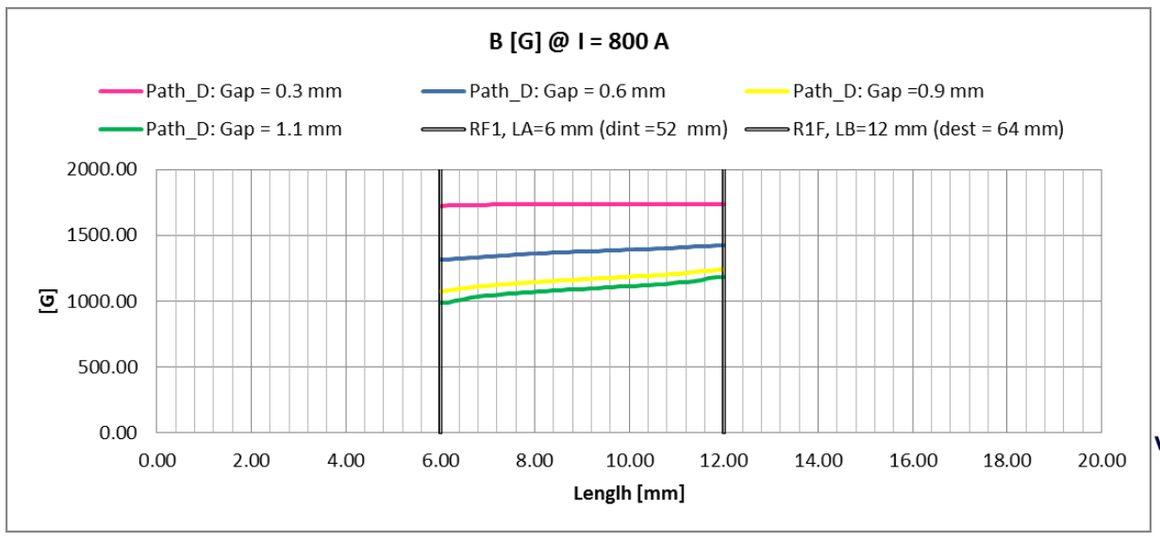


Sistemi di magnetizzazione

@ Gap =0.3 mm



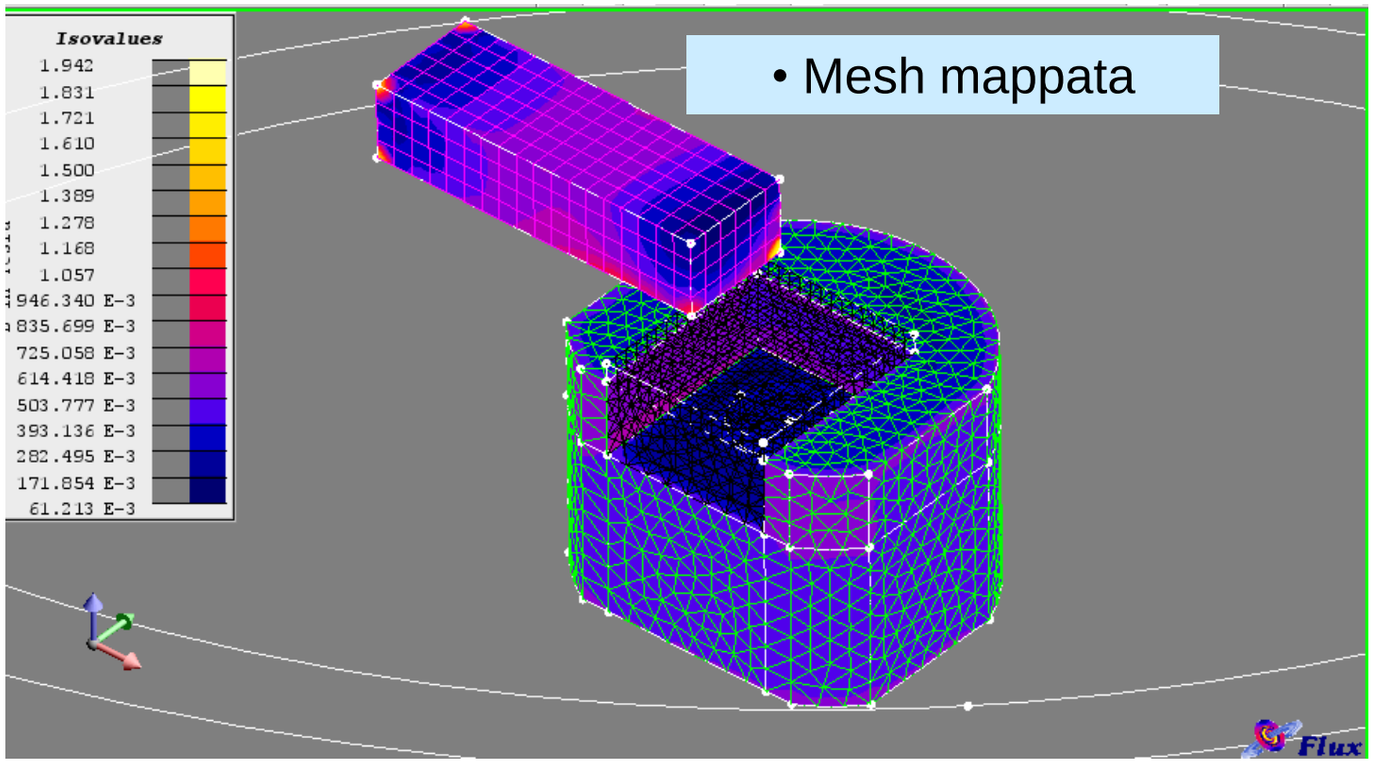


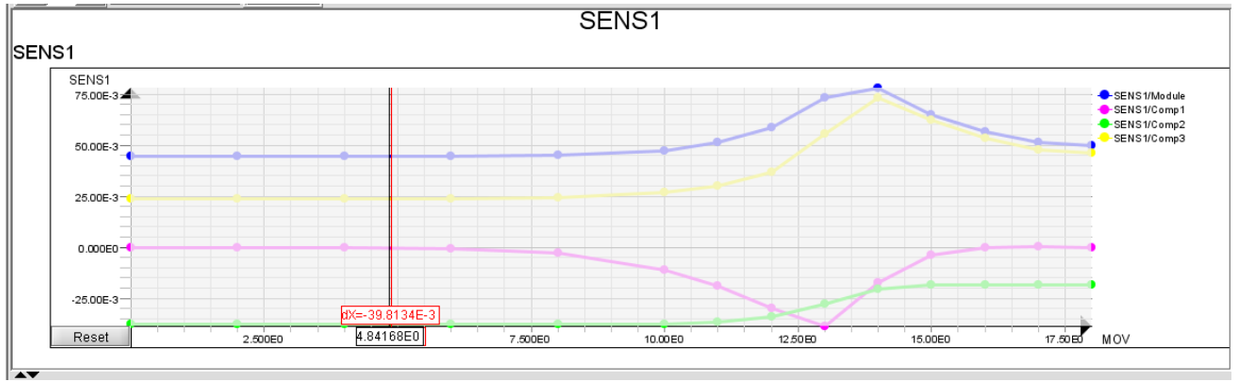


Spin

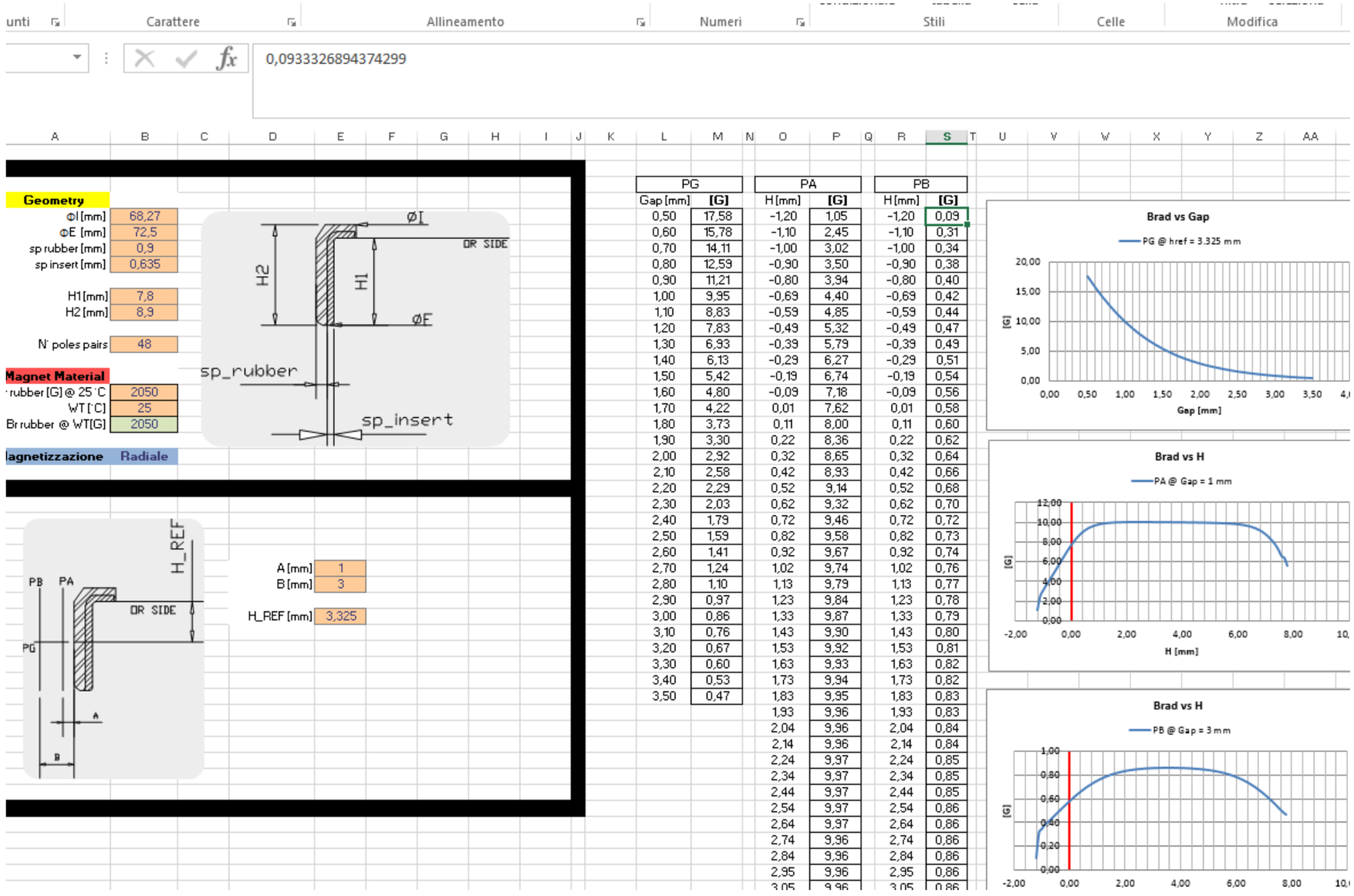
www.spinmag.it

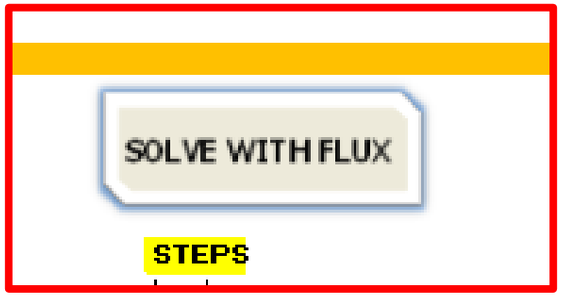
Sensore di presenza in campo zero





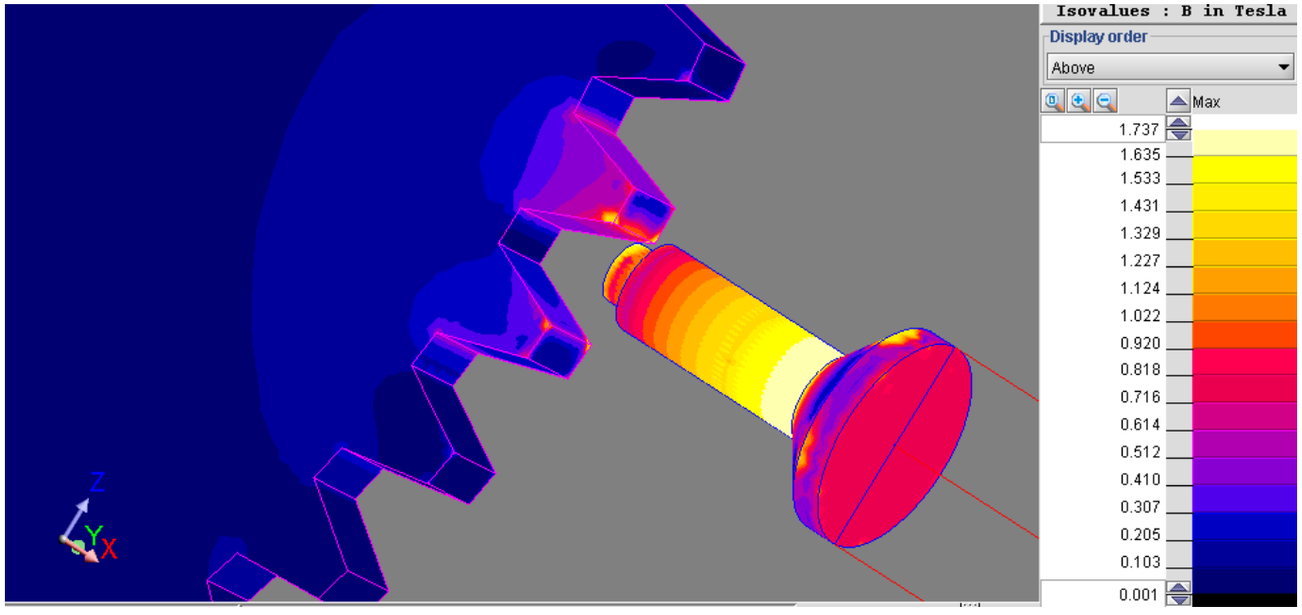
Analisi automatizzate

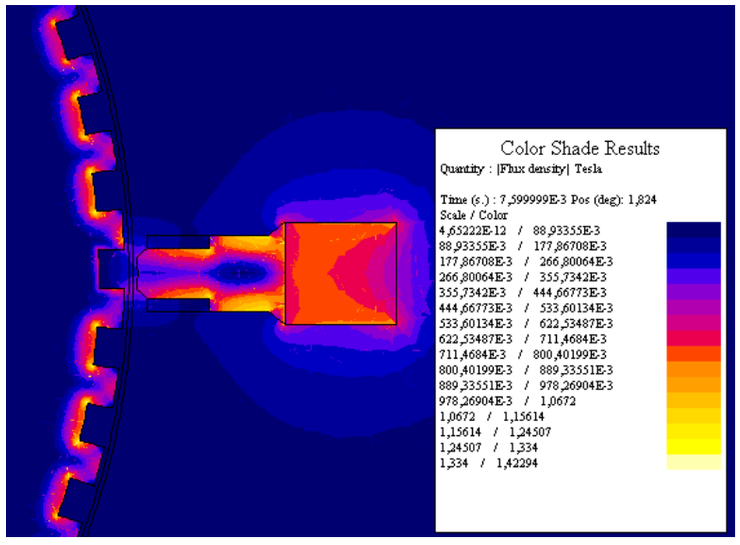


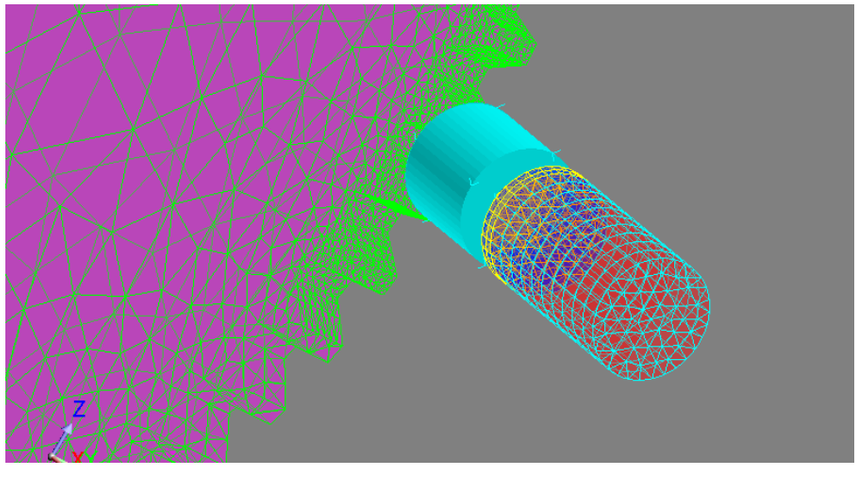


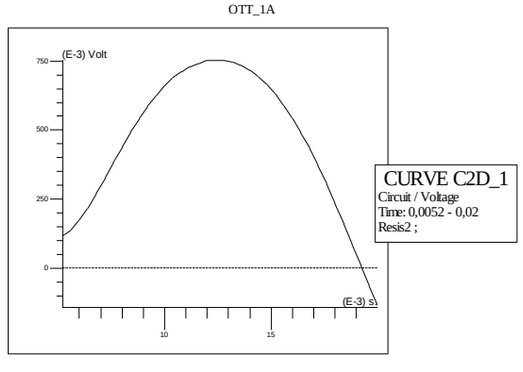
Sensore di velocità

Effetti di campo magnetico assiale

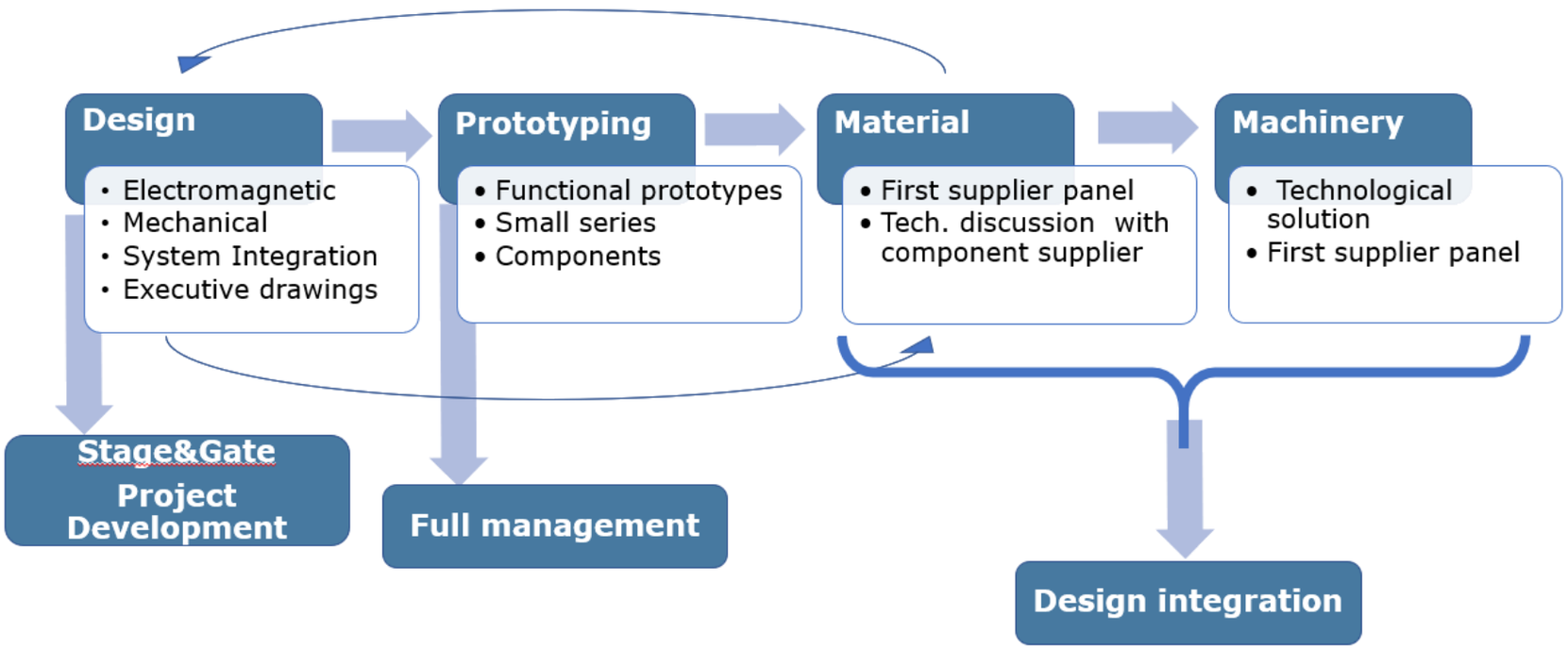








Prototyping service and Engineering support



- Turnkey project management
- Functional prototypes service
- First material and machinery supplier panel

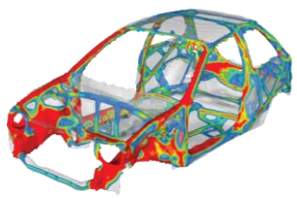
SPIN ACTIVITY: EXPANDING SECTIONS

- Increased **working group** with competences in mechanics, thermal analysis, fluidodynamics
- Increasing activity in **mechanical and Cfd analysis**
- Very specialized skill in **vibroacoustics**
- Customized **interfaces** for computation software
- Distribution of **multidisciplinary** software tools: Altair
- Distribution of **fluidodynamic** software tools: Star Ccm+ by Siemens
- Distribution of **electric motors** software tools: Altair, MotorCad, Speed
- **Prototyping**
- Electric motor and magnetic materials characterization

Finite elements for structural analysis

OptiStruct® + HyperMesh®

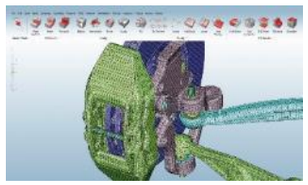
The most advanced solver for NVH analysis and market leading preprocessor

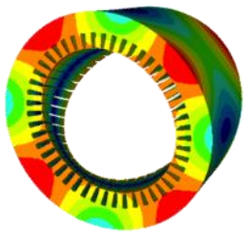


- For extremely complex analysis
- Full featured solver for nonlinear analysis
- Highly parallelized solver
- Advanced Laminated Composite Optimization Capability
- 20-year legacy of award-winning structural optimization technology
- Full mesh control

SimLab®

Process oriented, feature based FEA software

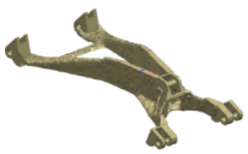




- For complex nonlinear and linear analysis
- All in one pre- and post-processing software
- Automated mesh generation with operator control
- Reusable mesh specifications at feature level; for example fillets, cylinders, holes
- Templates for contact detection, bolt, and crankshaft modeling

Inspire®

User friendly with extremely short learning



- For linear static and normal modes analysis
- Structurally efficient concept generation and analysis
- Topology optimization, a support for optimization and analysis of parts and assemblies
- Quickly and easily cleanup and defeature problem areas in the geometry

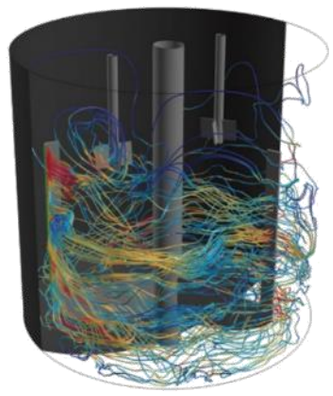
Everything you need for:

- Structural analysis
- Vibroacoustic analysis
- Optimization
- Manage nonlinear materials
- Multi-body analysis

Computational Fluid Dynamics Analysis

AcuSolve®

Simulations involving flow, heat transfer, turbulence and non-Newtonian materials

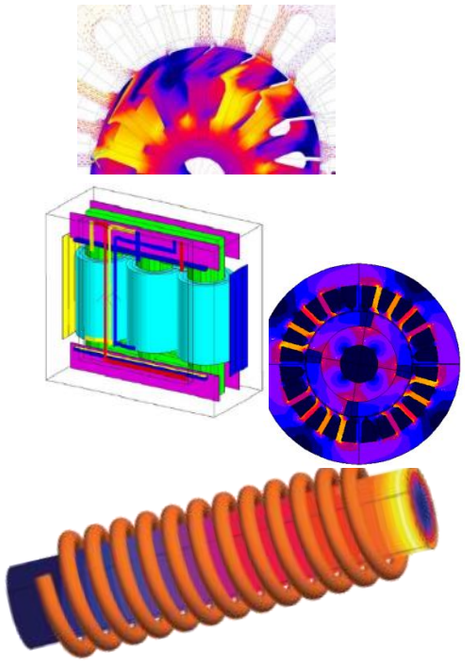


- Efficient and flexible workflow
- Full set of physical models for flow, turbulence, immiscible multiphase and heat transfer simulations
- Accurate and stable even on highly skewed meshes
- Fast and efficient solutions for both transient and steady-state simulations
- Parallel scalability demonstrated on thousands of computing cores
- Advanced multi-physics capabilities including rigid body and flexible body coupling with Altair’s solvers as well as third party applications

Multi Purpose Electromagnetic Finite Element Analysis

Flux®

Low Frequency Electromagnetic FEA for Electrical Engineering

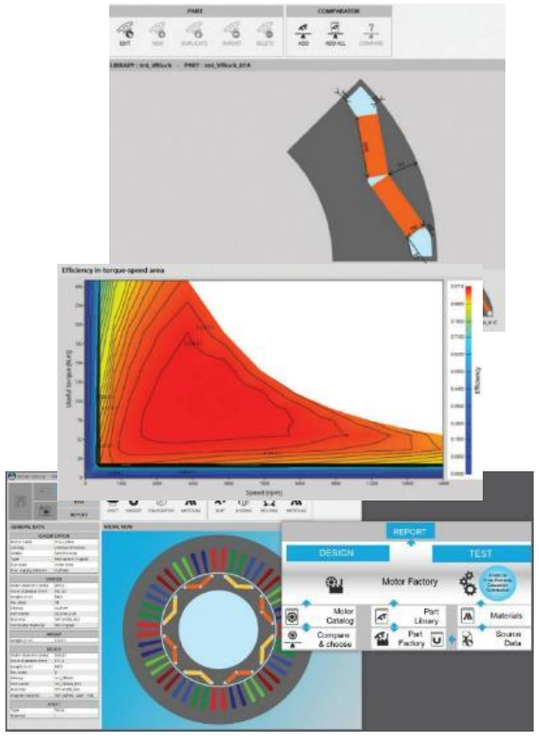


- Magnetic, electric, and thermal fields Magnetic/dieletric/thermal coupling
- Mechanical coupling Multiphysics coupling for vibroacoustic analysis
- Static, harmonic, and transient analysis
- External circuit connection
- An easy sketcher of 2D geometry, including parametric capabilities
- Embedded 3D modeler with fully parametrized modeling constructs
- Advanced CAD import & export functions
- Dedicated environment for electric rotating machines designed in 2D and 3D

Electromagnetic Finite Element Analysis for Rotating Machines

FluxMotor™

Dedicated to Electric Rotating Motor FEA

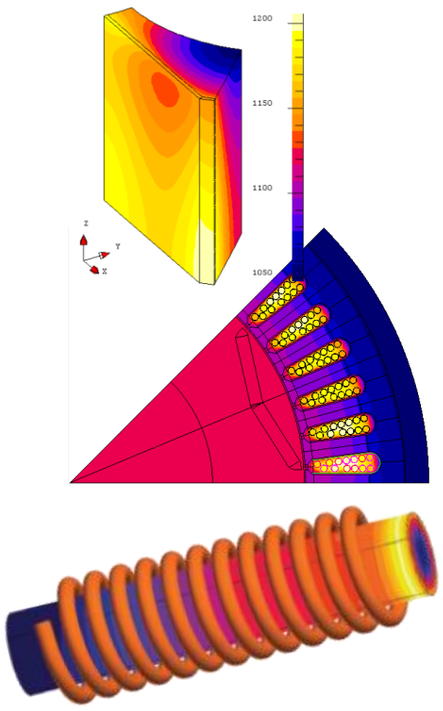


- Rapidity of design, Automated tests and reports allowing quick evaluation of machine efficiency
- Fast without compromising accuracy
- Open material database
- Effective machine parts management (slots, magnet shapes, etc.) with possible customizations
- An innovative way to manage projects with catalogs

Finite Element Thermal Analysis

Flux®

2D and 3D strong coupling between magnetic and thermal computation

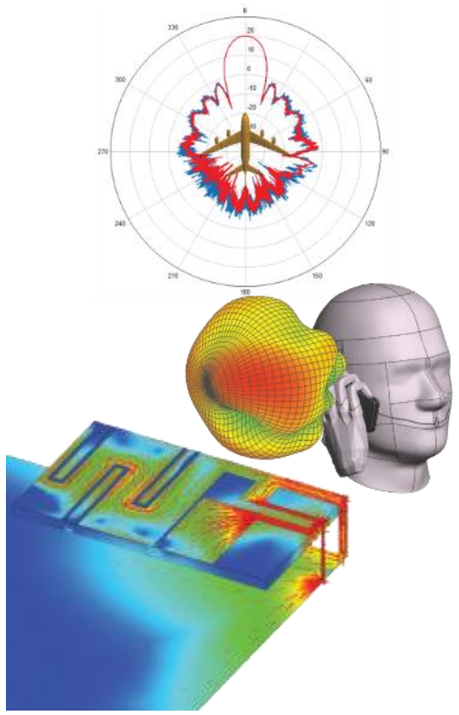


- Fully Multiphysics Simulation Magnetic and electric properties (permeability, resistivity) Thermal properties (thermal conductivity, heat capacity) Exchange conditions (convection, radiation) are taken in account
- Electromechanical coupling in 2D and 3D makes it possible to take into account of the motion of a part during the computation (scanning)
- Multiparametric solver allows any parameter to vary (geometric dimension, mesh, materials, sources, frequency)

High Frequency Electromagnetics Finite Element Analysis

FEKO®

High Frequency Electromagnetics and Antenna Design



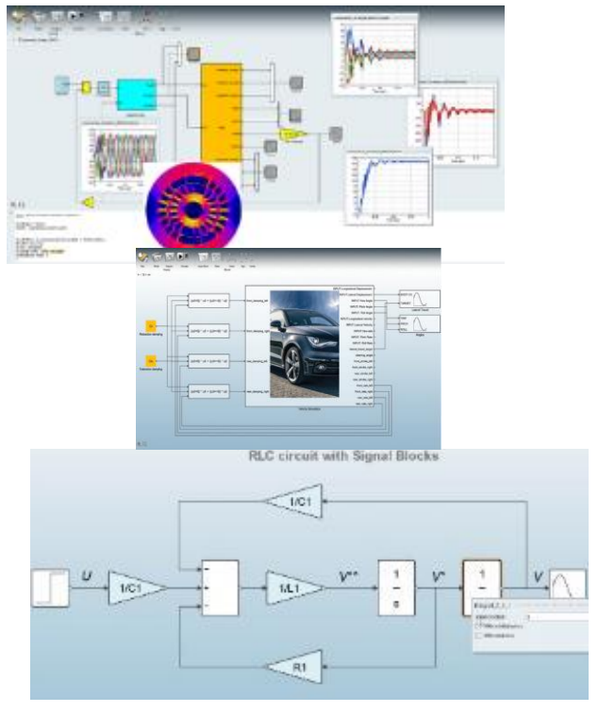
- Simulation tool for antenna design and placement, and RCS
- EMC analysis, including emissions, immunity, and shielding effectiveness
- Wide set of hybridized methods to solve large and complex problems
- Specialized tools, including windscreen antennas, arrays, cable modeling, and CMA
- HPC-enabled efficient, reliable, and accurate solvers

System Simulation

ACTIVATE™ solidThinking

Model-based Development of Hybrid Systems

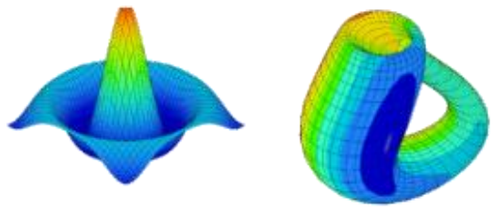
- Construct hierarchical, parameterized multi-disciplinary models
- Mix signal-based and physical components in the same diagram
- Co-simulation with multi-body dynamics
- Co-simulation with Flux
- Compile models into executable code

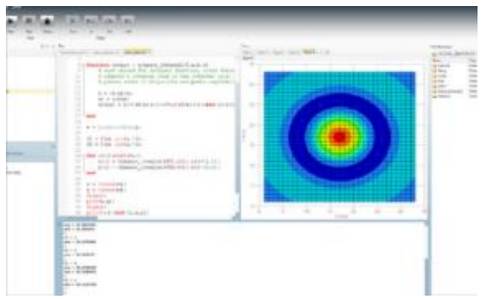


COMPOSE™ solidThinking

Matrix-based Environment for Math Operations

- Integrated development environment for authoring and debugging all types of math including multilanguage support
- Built-in connectivity to pre/postprocess Engineering and Computer
- Aided Engineering (CAE) data
  - Extensive math libraries:
  - Statistical data analysis
  - Matrix analysis & number theory
  - Signal processing
  - Interactive 2D & 3D plotting
  - Differential equations
  - Optimization

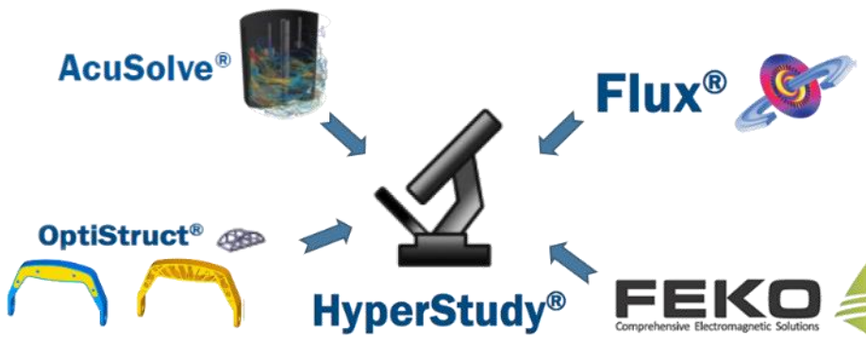




Multi-Platform Optimization

HyperStudy®

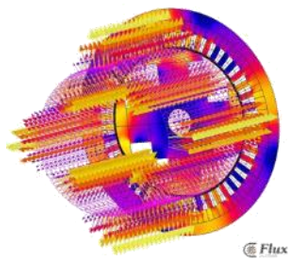
Multi-disciplinary Design Exploration & Optimization



- Design exploration, metamodeling, and optimization methods
- Data mining tools that are easy to understand and interpret
- Direct interface to the most popular CAE solvers
- Fully integrated with all Altair SW
- Several DOE methods included:
  - Box-Behnken
  - Fractional factorial
  - Full factorial
  - Taguchi
  - And much more

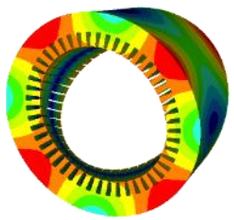
Multiphysics Analysis

Flux®



Magnetic

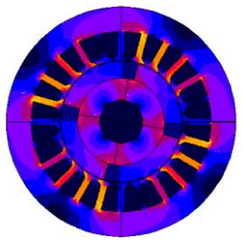
OptiStruct®



Vibration

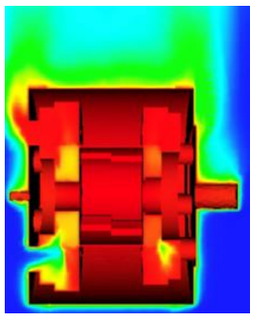
Flux coupled to OptiStruct for **vibroacoustics** analysis

Flux®



Losses

AcuSolve®



CFD

Thermal-fluid-dynamic simulation given the device's power losses

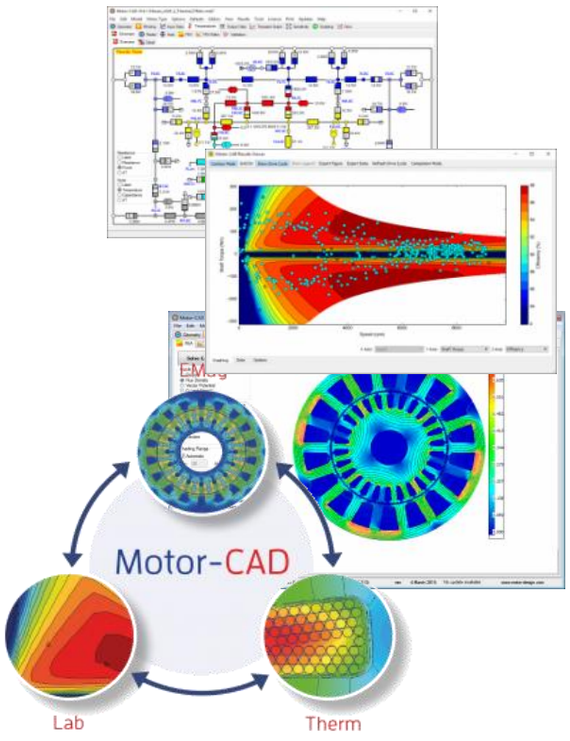
Flux®

Advanced electric device control strategies
Co-simulation with a lumped parameter model
Equivalent thermal network for motors and electromagnets

Electric Motors Analysis

MotorCAD[1]

Unique software package dedicated to electric motor



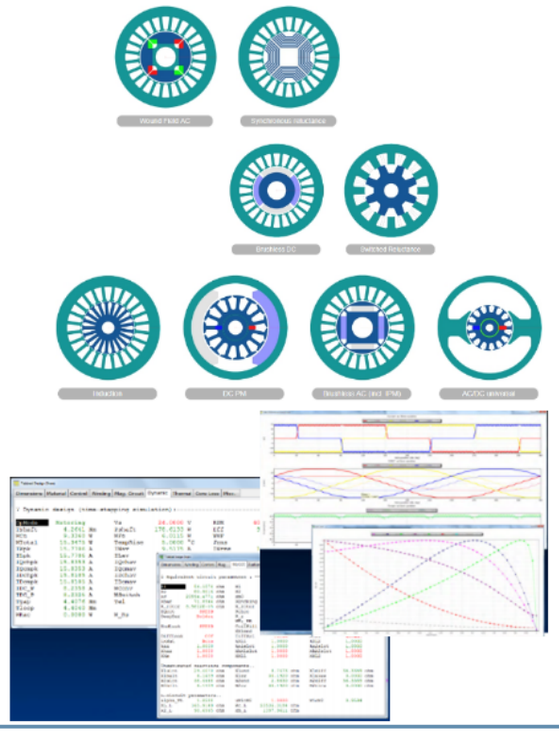
- 3 Software fully integrated, co-simulation
- Emag: lumped parameter plus fast 2D finite element module for accurate electromagnetic and electrical performance predictions.
- Therm: Combines a lumped circuit and finite element thermal calculation for optimising the cooling system of a machine
- Lab: Accurate electromagnetic and thermal calculations can be done in minutes. The results are presented in an easy to understand format and allows design decisions to be taken efficiently

[1]:software outside the Altair suite, not included in HWU

Electric Motors Analysis

SIEMENS

CD-adapco



SPEED™ [1]

Fast Automated Design Exploration for Electric Machine

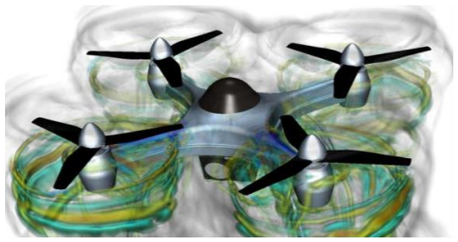
- All-in-one tool for characterizing almost all main classes of electric machines and drives
- Fast parametric geometry design
- Fast but approximate initial design within minutes, thanks to lumped parameter analysis
- Problem analysis, product characterization and design optimization after calibrating
- Classical Electrical Machine Theory based code, first released in 1987

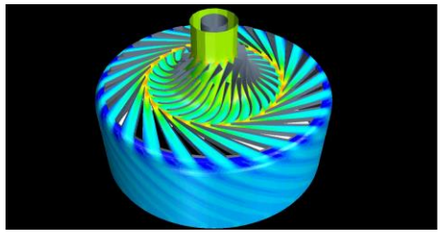
[1]:software outside the Altair suite, not included in HWU

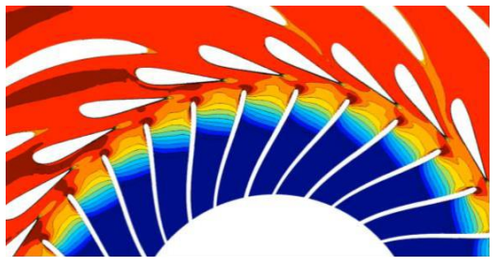
CFD – Fluidodynamics Analysis

SIEMENS
CD-adapco

STAR-CCM+

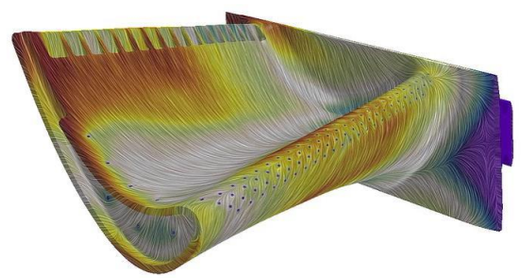






Integrated Multiphysics from a single user interface
• Improved accuracy by taking into account a greater range of interconnected physical phenomena[1]
• Built on a backbone of state-of-the-art, industry leading CFD capabilities
• Both finite element and finite volume approaches
• Choose the scheme appropriate to the physics
• Integration with CAE tools to expand simulation scope
• Flexibility to us the right tool for the job
• Loose and fully coupled co-simulation with 1D & 3D software solutions

[1]:software outside the Altair suite, not included in HWU



Dedicated Training and Courses

Some of our events

CORSO SPIN	Progettazione motori elettrici con FLUX & ACTIVATE	Padova	21-22 febbraio
CORSO SPIN	Analisi meccanica e vibroacustica	Piacenza	6-7 marzo
CAE MEETING	Simulazione	Bologna	10 marzo
CORSO SPIN	FEKO, alta frequenza	Piacenza	3-4 aprile
MOTORCAD	Motori elettrici	Piacenza	22-23 maggio
CWIEME BERLINO	Coil Winding	Berlino	19-21 giugno
SPEEDAM	Motori elettrici	Amalfi	20-22 giugno
ICEM	Macchine elettriche	Grecia	3-6 settembre
COILTECH	Coil Winding	Pordenone	26-27 settembre
ATC EUROPE	Conferenza utilizzatori Suite Altair	Parigi	16-18 ottobre
MAGNETICS	Conferenza utilizzatori Flux	Piacenza	14 novembre

- Strong collaboration with Universities
- Thesis programs, Ph.D, Seminars, Courses

Soft magnetic materials characterization

Have you modeled the right material?

Do you know what are you’re using?

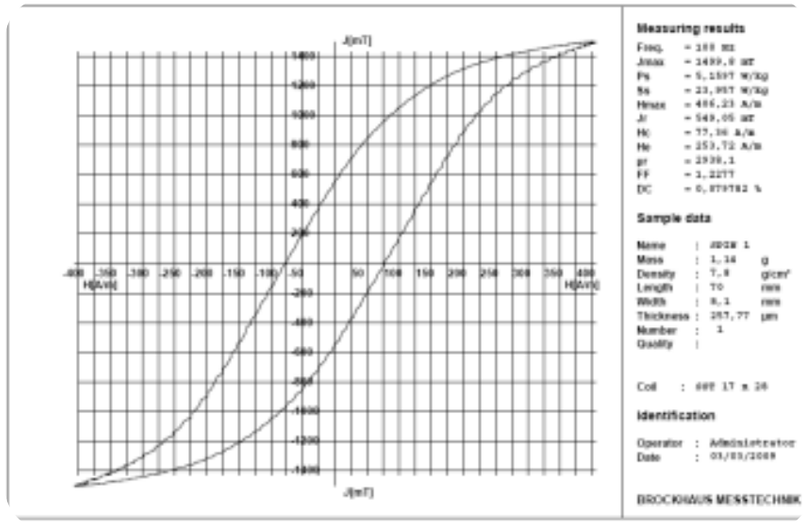
Spin exploits a complete service of ferromagnetic materials characterization, in order to perform magnetization curves, hysteresis curves and losses measurements.

We are equipped with an advanced measurement system to get data from d.c. to 1 kHz.
Measured materials can be :

- Fe-Si
- Fe-Ni
- Fe-Co

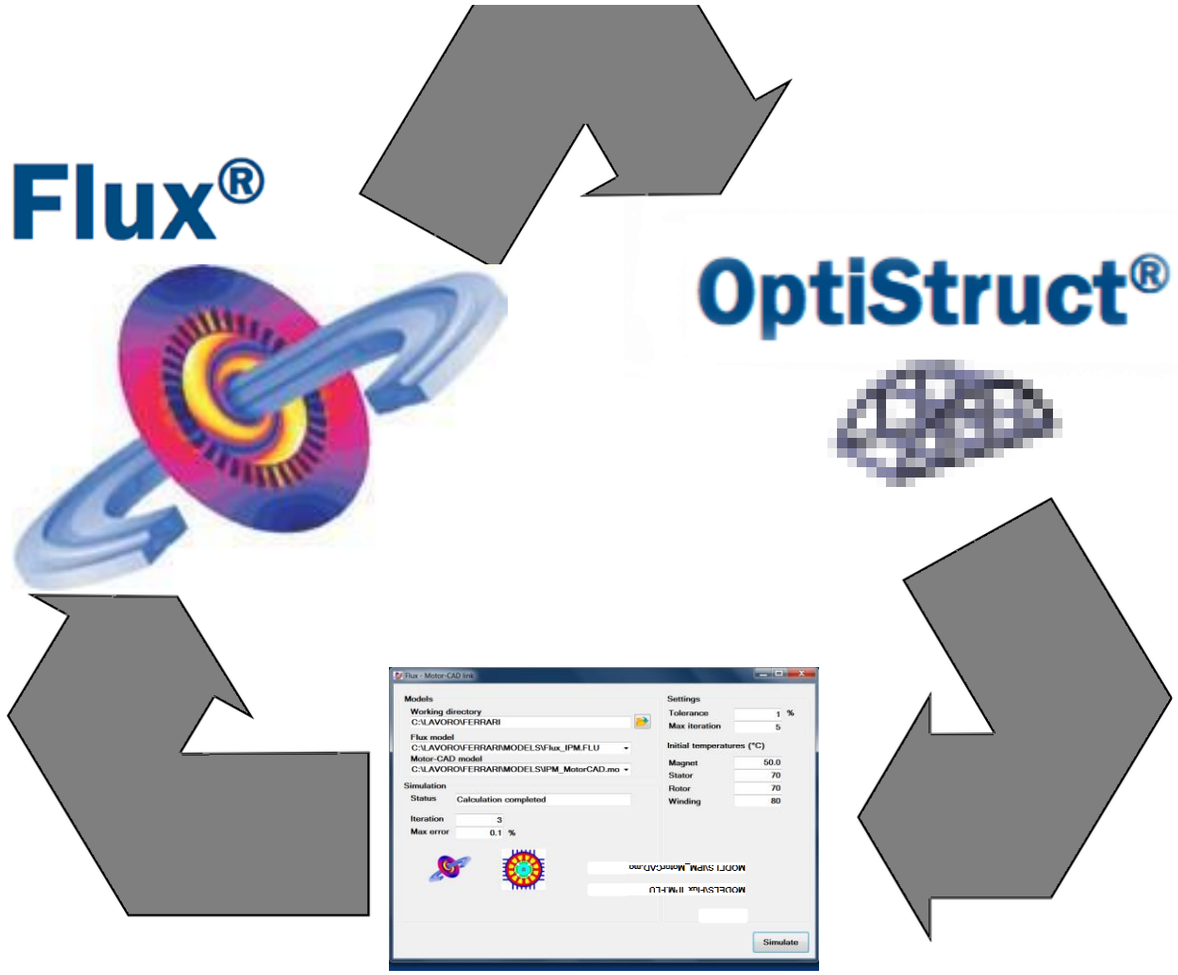
and many other materials

(C10, C40, C100 and similar
Fe360, Fe340 10SPb20 and similar
AISI400 series materials
P01, sintered, compacted and much more)



Proposta tesi 1

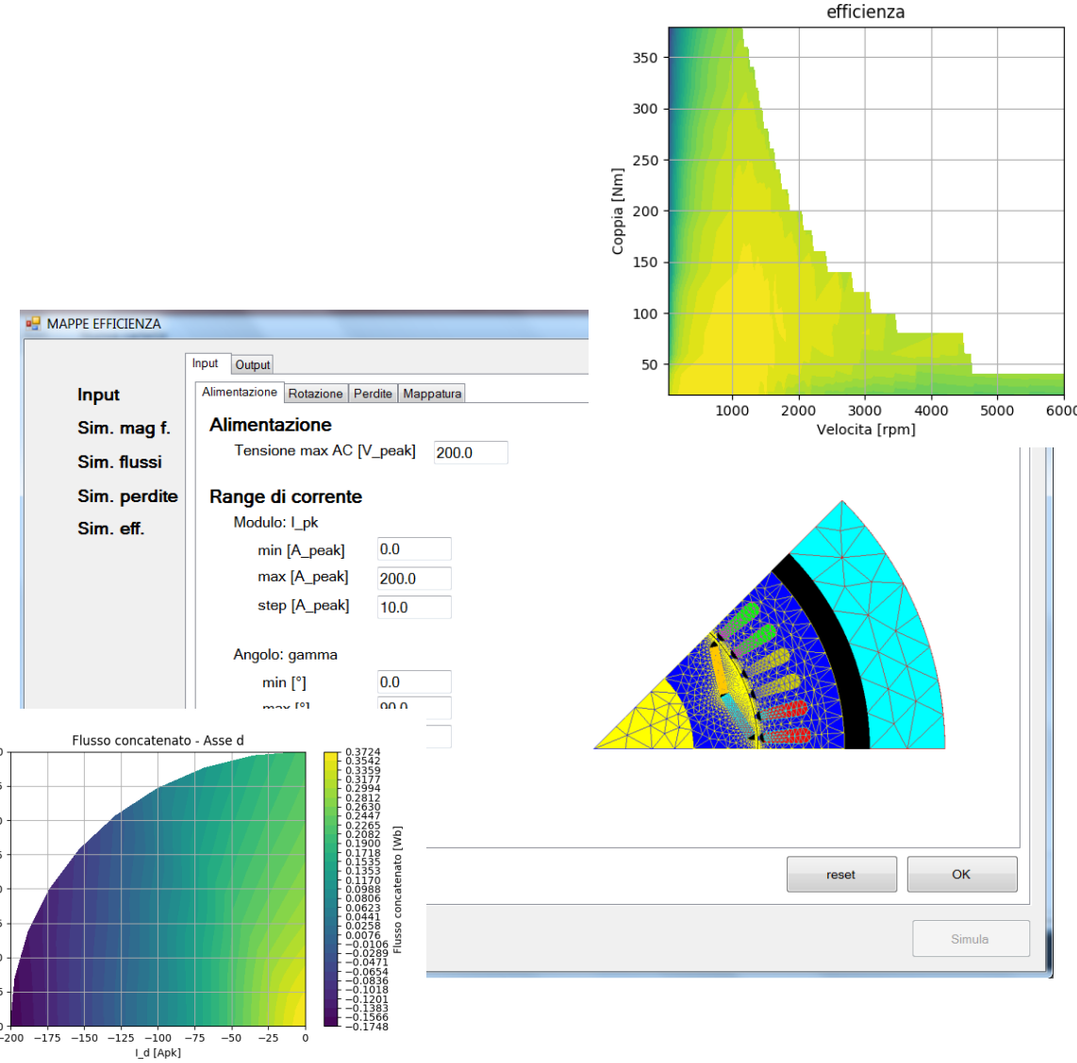
Link Flux-OptiStruct, gestione di software per il calcolo di motori elettrici mediante interfaccia grafica



Flux e OptiStruct sono software della suite Altair per il calcolo elettromagnetico e meccanico.
Mediante un'interfaccia grafica che gestisca in modo opportuno lo scambio di dati è possibile sfruttare le potenzialità dei due programmi per analizzare un motore elettrico dal punto di vista elettromagnetico e meccanico.

Proposta tesi 2

Interfaccia personalizzata per il calcolo di motori elettrici, gestione delle informazioni e consultazione interattiva dei risultati



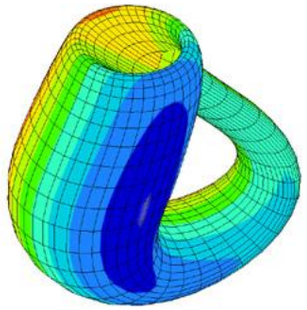
La mappatura di efficienza di un motore elettrico è un processo articolato e dispendioso in termini di risorse di calcolo e di tempo.
Tramite un'interfaccia grafica personalizzata è possibile guidare l'utente nel corretto inserimento dei dati di input, ridurre i tempi di calcolo, ottimizzare le risorse della macchina e proporre i risultati in modo interattivo.

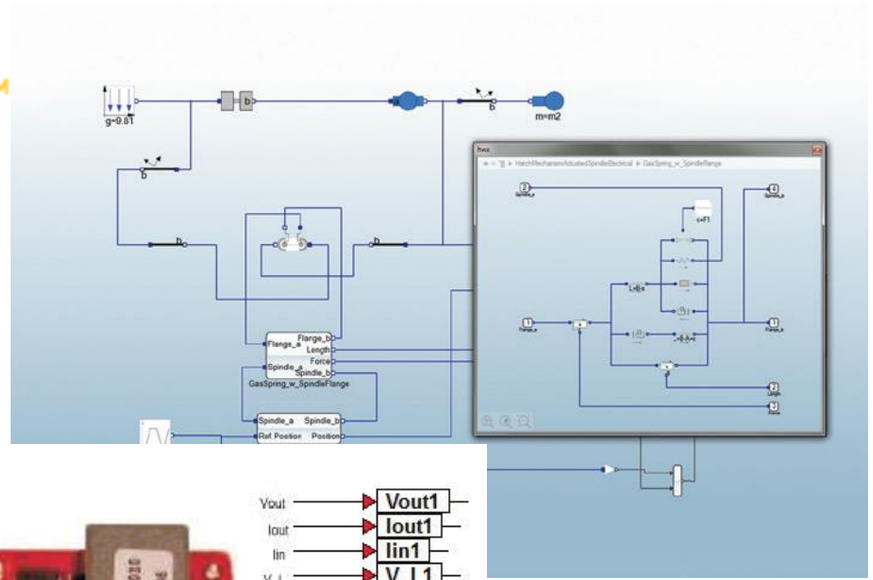
Analisi di azionamenti e simulazione del controllo di dispositivi elettromeccanici

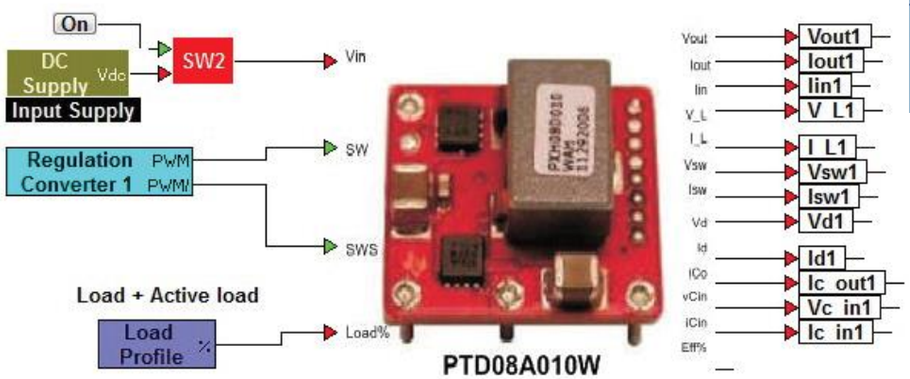
COMPOSE™ solidThinking

ACTIVATE™ solidThinking

EMBED™ solidThinking







Il pacchetto software solidThinking di Altair consente di progettare un sistema di controllo per un generico dispositivo elettromeccanico dalla fase di concetto alla configurazione del microcontrollore.
Il progettista ha la possibilità di sviluppare algoritmi, simularli con sistemi a parametri concentrati e scaricare il codice così sviluppato sull'hardware di controllo.

Thank you for your attention!

www.spinmag.it