

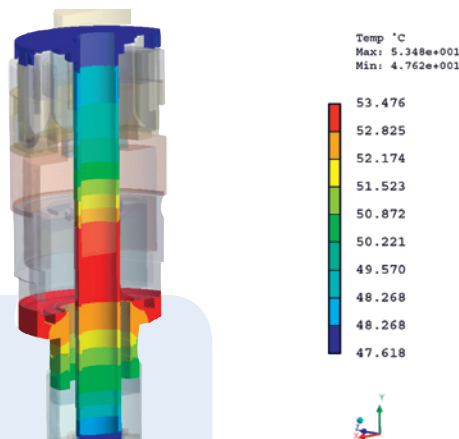
Principles & Simulations



Simulation of the performance of components and systems in their intended working environment, predictive modeling, is critical in the development of high-precision systems.

MECAL mobilises expertise in principal mechanical design and predictive modeling to control the design from specification to performance, from the earliest concept phase until the engineering phase. In this way a first time right product has been achieved on many occasions. MECAL's simulation models are used to develop dedicated motion.

An uncomplicated link between CAD and simulation tools, such as FEM, provides the optimal bridge between the design and simulation environment. The efficiency achieved this way enables us to fully focus on improvement and optimisation of the design according to our customers' performance specifications.



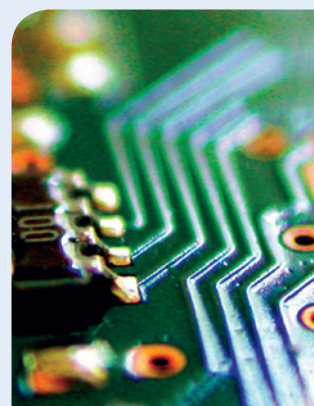
Specialists in

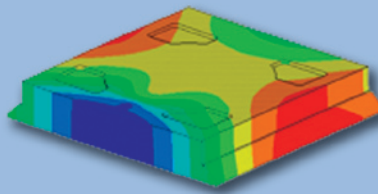
- > **Statics**
Stress, stiffness, tolerances, deformation, force path
- > **Dynamics**
Vibration, damping, mass, stickslip, mode shapes, natural frequencies
- > **Kinematics**
DOF, rigid body systems, acceleration, inertia, set point, friction
- > **Thermal Dynamics**
Conductivity, expansion, symmetry
- > **Fluid Dynamics**
Air-bearing stiffness and loads, contaminations, flow induced vibrations

Advantages

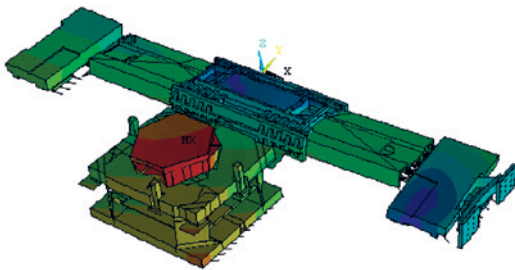
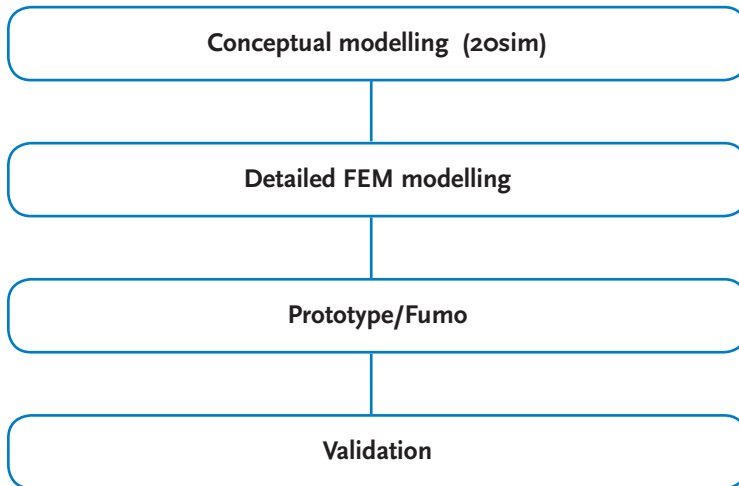
Simulations are used for:

- > Model-based design
- > First-time-right design
- > Decrease Time-to-market
- > Cost reduction
- > Improved customer design
- > Validated performance





Workflow



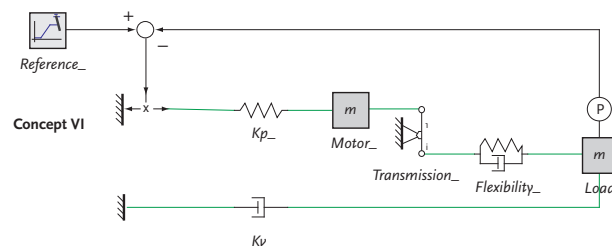
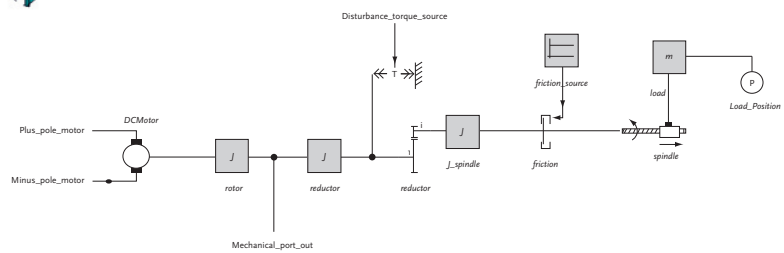
Tools/facilities

Flow & Thermal analyses

- > ANSYS
- > Fluent
- > Matlab
- > Mathcad

Mechanical & Dynamics

- > ANSYS / ANSYS Workbench
- > Pro-Mechanica
- > Matlab / Simulink
- > Mathcad
- > 2oSIM



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