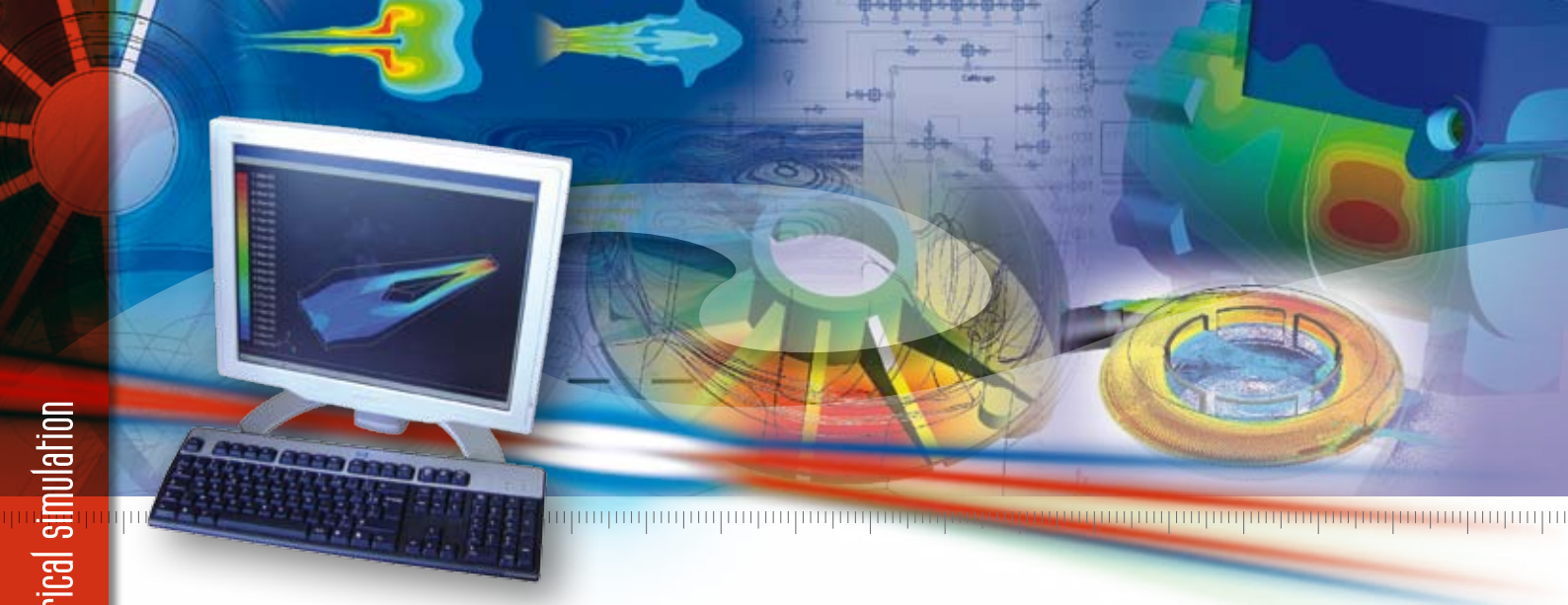


A virtual tool for controlling reality.

Controlling the physical phenomena involved in fluid flows and heat transfer has become crucially important in the land transport, aeronautical, space and energy sectors. It is a technological and financial challenge that must be faced in order to increase commercial competitiveness.

- ➜ Liquid or gas flows
  - Laminar, turbulent
  - Transient phenomena
  - Compressible and non-compressible
- ➜ Reactive flows
- ➜ Internal and external aerodynamics
  - Multiphase flows (spraying, cavitation,…)
  - Heat and mass transfers (convection, conduction, radiation, exchangers, evaporation,…)
  - Thermal simulation of electronic components
  - Fluid- structure interaction
  - Cryogenics
  - Combustion (boilers, burners, engines, furnaces, ...)
  - Pressure drop

➜ Numerical simulation is vital

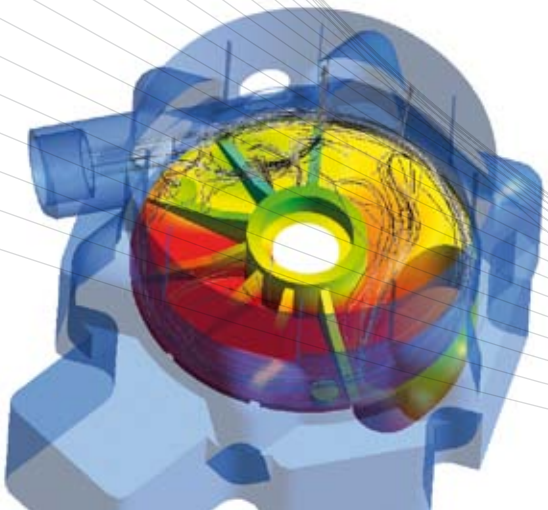
- To optimize how your processes and products work.
- To predict the multi-disciplinary performance of your products and systems.
- To size your systems and processes.
- To access all of the physical parameters of a modeled system.
- To protect your investments by reducing development times.

➜ Our works

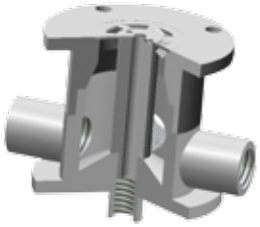
- To help you optimize flow and heat transfer in your systems.
- To provide support with the development and validation of your new products.
- To assist you with the sizing of your processes and technology.
- To increase the number of numerical tests in order to consolidate the reliability of your new products.
- To perform static/dynamic tests on your systems.
- To integrate sub-systems for an effective assessment of their interaction.

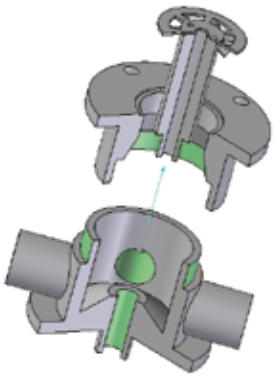
➜ Our services

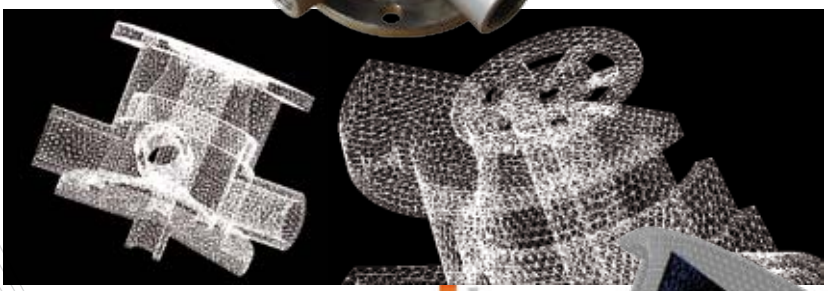
- Numerical modeling engineering.
  - > Selection of computer codes and numerical models to meet your needs.
  - > Development of specific numerical tools (codes, UDF (User Defined Function), AMESim component).
  - > Software interaction.
- 3D meshing based on your drawings (paper, CATIA).
  - > Making the package.
  - > Identification of areas that need refining.
  - > Adaptive meshing.
- Validation of results.
  - > Relevance.
  - > Computation/measurement comparison.
  - > Computation/design comparison.
- Compilation, analysis and exploitation of results.
- Scientific assessment and engineering consultancy.

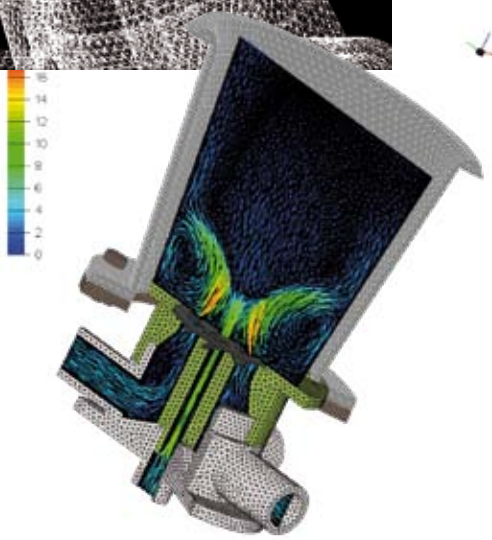


Numerical simulation









Our means

- Software for numerical 3D simulation of flows (CFD): ANSYS, Open-Foam, Saturne, MM5, …
- Software for numerical 3D simulation of macroscopic potentials: AMESim, Simulink.
- CAO software: CATIA.
- Various programming languages (fortran, C, C++, VB,...).
- Multiprocessor computer, PC cluster.

Some achievements:

- Advice on the optimization of head losses from a suction line in a glassmaking process (porous medium, high temperature).
- Thermal study of a car injection device.
- Sizing of a part and confirmation of the feasibility of tests on a Turbo pump on a cryogenic experimental facility for a rocket engine.
- Study of the design of a Wind tunnel for extreme usage conditions (-50 °C).
- Characterization of the flow from a suction tank for a centrifugal separator.
- Study of the production of NOx in a low NOx emission burner (combustion, NOx treatment).
- Study of the cooling of electronic components and optimization of the cooling box.

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