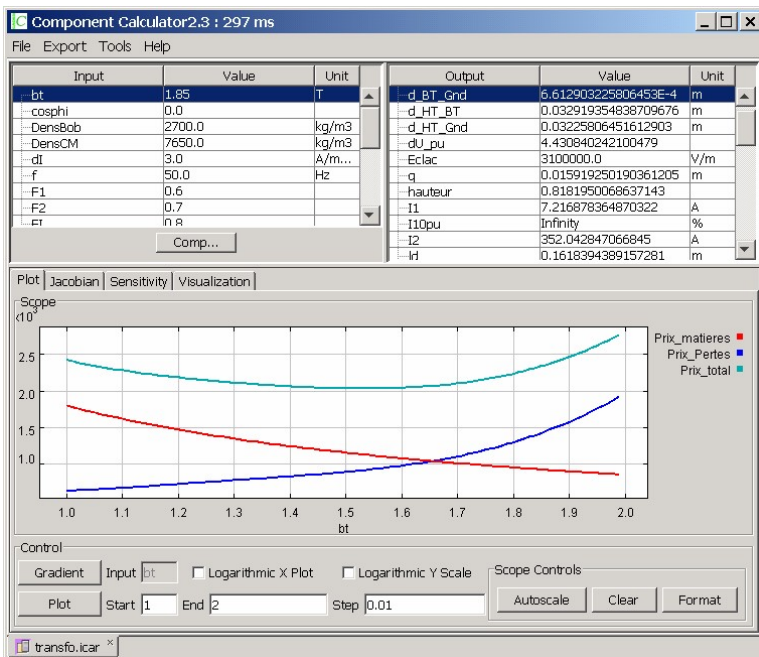


Cades

Optimal choice

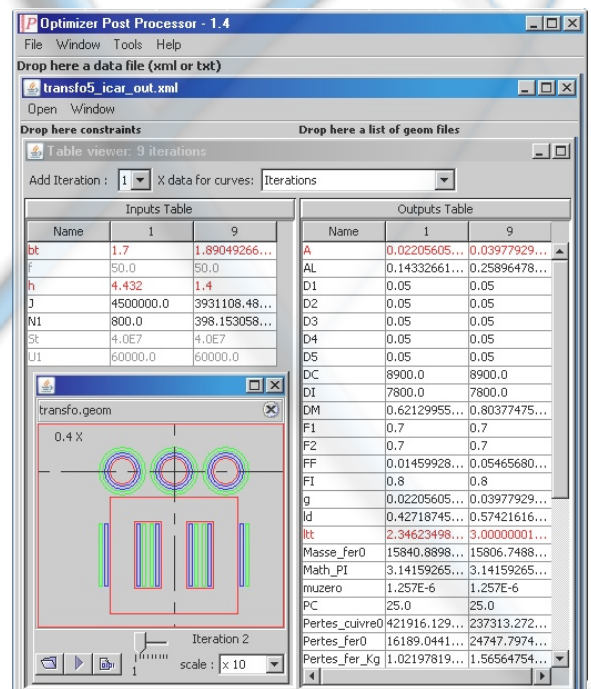


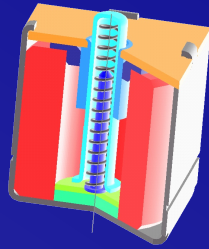
Cades is a software solution allowing to pre-design and optimize unlimited variety of physical devices or systems.

Essentially multiphysics, it is both fast to pre-design devices and systems, and also extremely efficient to optimize those devices & systems.

In design process, Cades framework addresses precisely sketch stage needs to:

- limit risks at a stage where **75 % of technological choices are made**,
- prove the **existence of at least one solution** or negotiate specifications to allow one solution,
- **validate** a technology or compare several,
- pre-design components or systems accounting for **several physical domains**.





Some use cases

- Mass minimization of a dynamic linear actuator with constant response time,
- Cost minimization of a complete mechanical structure for oil&gas application (fitting international standards and discrete range of materials),
- Comparison of technologies potential (best efficiency/mass ratio) for micro drones motors,
- Claw pole machine optimization with 100+ parameters, ...

Physical models without limit

Physical model can be described variously: analytic equations, reluctance network (especially for electromechanical actuators), vectors, Java/C++ code or composing several models.

Hence, it allows:

- no limit in terms of type and number of physical domains adressed (electrical, mechanical, economical, electronic, ...),
- capability to model complex systems composing several components (as white, grey or black box).

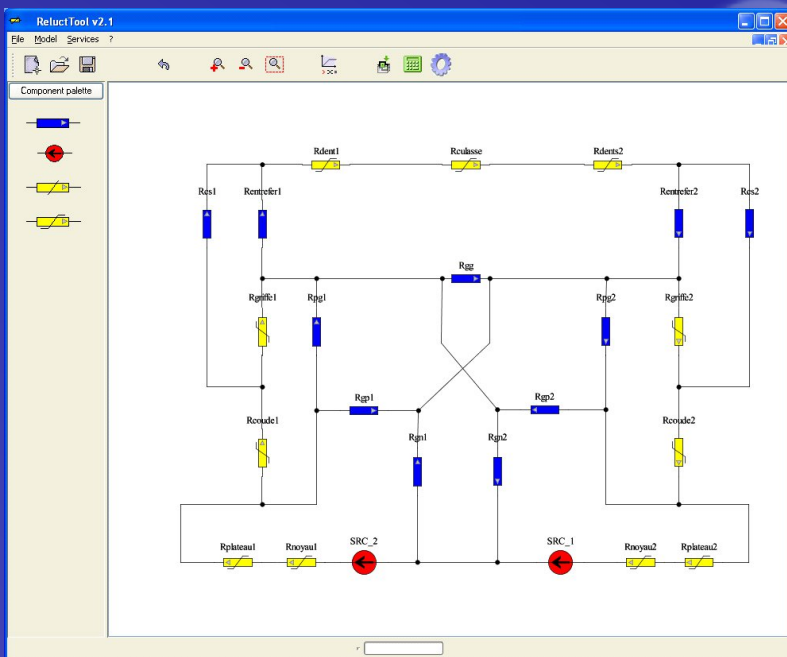
Computation power

Model equations being automatically differentiated in Cades (symbolic differentiation or code automatic differentiation), hundreds of parameters can be handled with instantaneous availability when processing:

- output parameters, curves and geometry plots vs input parameters,
- output sensitivity analysis as function of input parameters (Monte Carlo, global),
- identification of limiting parameters if lack of optimized solution, ...

Efficient optimization

With optimization algorithms suitable for many use cases (discrete, stochastic, genetic, hybrid, ...), Cades allows to get local or global optima for energetic performance, volume, cost, ... or Pareto plots in case of multiple objectives. And let users study optimization results (for each iteration) as input / output tables, plots, ...



Data entry with various forms, such as reluctance diagram

Key references

Leroy-Somer, Schneider-Electric, Thales Avionics Systems, Valeo, ...



Vesta-System
 22 avenue Doyen Louis Weil
 F-38000 Grenoble
 +33 458 005 225
 info@vesta-system.com

www.cades-solutions.com