

Pellenc SA: Makers and constructors of wine-growing equipments.

Jean-Louis FERRANDIS - PELLENC SA.



PELLENC SA, a French group started in 1973, benefits from a worldwide distribution network. Makers and constructors of viticulture equipments and arboriculture, our complete series of products meet all the expectations from the cutting to the picking.

Our main business fields are:

1. Wine-growing
2. Olive-growing
3. Professional electroportable tools
4. Grassy areas

The parent company established in Pertuis gathers 300 employees. This number reaches 600 with the subsidiaries located in Australia, Spain, Italy, Morocco, Turkey, the United-States, Chile, Slovakia and China.

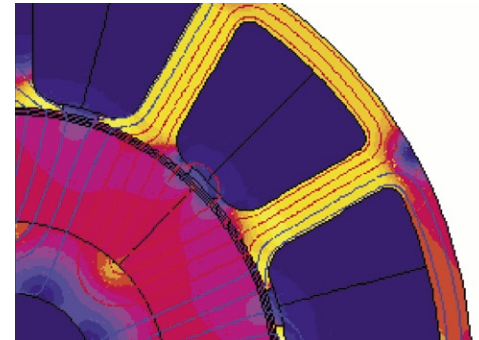
The Group's turnover is about 100M€ with 77M€ realized by PELLENC SA.

PELENC SA integrates magnetic structures in a considerable numbers of its realizations (magnet motors and alternators, asynchronous motors, transformers, inductances, electromagnetic valves...)

These realizations are often associated to perturbed electrical sources of energy.

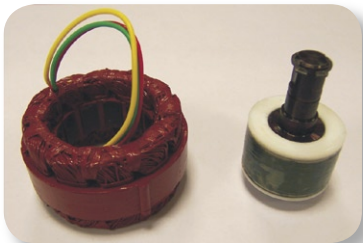
The Flux 2D software was essential in nearly all our studies relative to these tools...

- » Harmonic spectrum of electro-motive forces
- » Study of the saturation and the flux magnetic trajet sizing
- » Magnetic forces and couples in various hypothesis
- » Loss in massive components due to flux interferences or mechanical fluctuation...



Distribution of induction lines at a given time instant. 8 poles permanent magnet motor (SELION chainsaw). 2D transient magnetic study.

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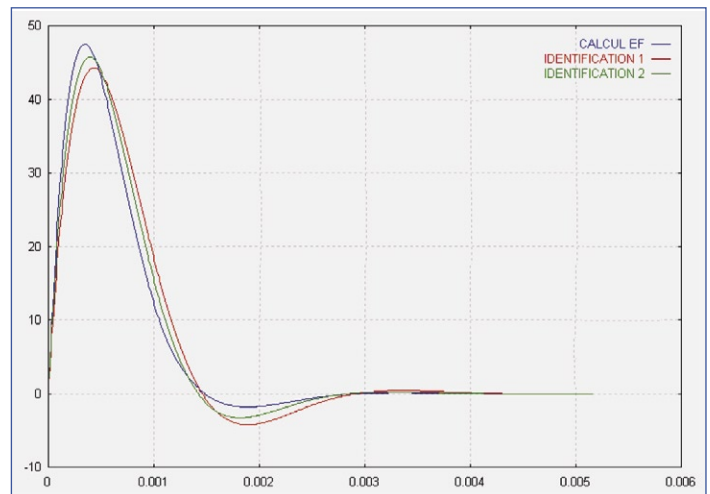
Synchronous motor 5000tr/mn 68mm



Synchronous motor 16000tr/mn 30mm

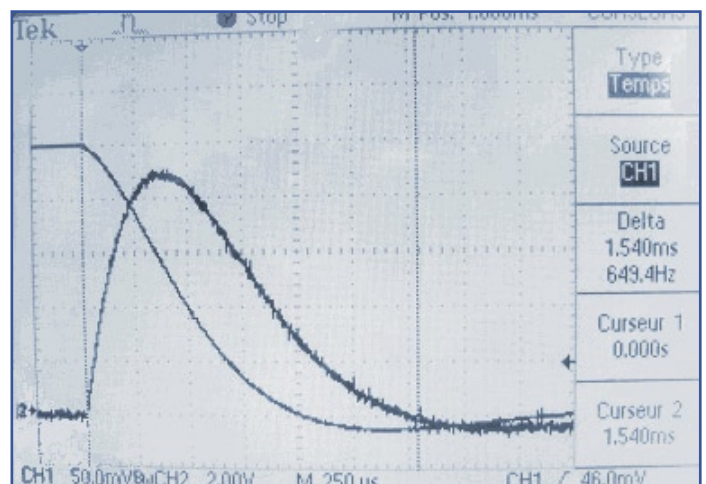


SELION (chainsaw)



Current variation according to a discharge between phases A and B with an electrical angle of 120°:

- Transient computation with Flux 2D.
- Analytical answers (two methods).



Results of the same computation with the real device => Simulations and tests are well correlated. This last study can be seen as one of all the transient magnetic applications that can be done by the software Flux 2D.

(see continued on page 7)

Pellenc SA: Makers and constructors of wine-growing ... (continued)

Jean-Louis FERRANDIS - PELLENC SA.

In every instance we have noticed a very satisfactory correlation between the results obtained by Flux and the test after realization.

With an open and user-friendly interface this software solution ensures both performance and reliability. It is an excellent tool for the conception of a large number of our products.

The overall goal is partly in this paper is to quantify the behavior of a system of currents which imposes on growth or decreases rapidly in the presence of certain types of magnets.

The significant results found using Flux 2D software, were compared with measurements on our test bench.

This led us to integrate our devices into control commands, several processes of great interest. They are currently being developed in our laboratories.



Lixion (pruning shear)

InCa3D: Advanced simulations of interconnection performances.

Enrico Vialardi, Yann Le Floch - CEDRAT Group.

InCa3D, our simulation tool dedicated to the **modelling of electric connections**, continues its growth thanks to several new developments which are now planned and which will be available soon. With this software CEDRAT aims to become a major actor of virtual prototyping in the fields of **power electronics and electromagnetic compatibility**.

Based on a **PEEC** (Partial Element Equivalent Circuit) solver which proved to be very efficient for any electrical distribution system, InCa3D is well adapted for almost any connector like: busbars, power modules, PCB tracks and ground planes, electronic and microelectronic circuits... It allows one to study parasitic effects of cables, to optimise the cable paths, to decrease copper mass, to study radiated magnetic fields by a system...

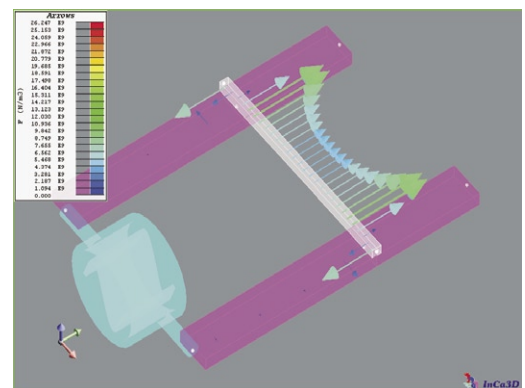
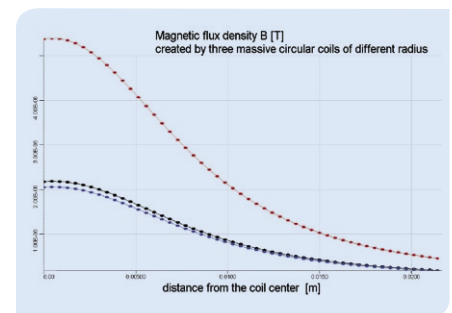
CEDRAT teams are intensively working on a large variety of new functionalities, going from enhanced efficient physical models to robust and automatic meshing techniques, from a strong bidirectional coupling with Portunus to a more user-friendly geometric definition of the system to be analysed.

All these advances will enable you to virtually investigate your systems at higher and higher frequencies, to take into account new materials, to rapidly open new doors and explore novel application domains!

Last January, with the latest release of InCa3D (2.1.2) a third application (besides the two historical ones, namely Supplied Conductors and Conductors Impedances) is available to users: it deals with the computation of the electrodynamic Laplace forces on electric systems. It is a specific DC implementation of the Supplied Conductors application in a simplified context especially tailored for non-expert users, like laboratory technicians and students*.

It is a powerful tool to simply explain basic electromagnetic laws and phenomena, with graphical view of the system and of the obtained results. For example, as shown in the figures, the so-called Laplace experience can be easily reproduced or the computation of the magnetic flux density B

created by a massive circular coil can be carried out in a very short time.



* With Schneider Electric collaboration.