INTEGRATED
ENGINEERING SOFTWARE

A trustworthy simulation tool: designing switches and insulation systems in high voltage systems

Paul Stoving, Senior Design Engineer at Cooper Power Systems, explains how and why INTEGRATED's oldest customer is still using ELECTRO, 22 years after they first purchased it.

Paul Stoving is the Senior Design Engineer in the Vacuum and High Voltage Engineering Department at Cooper Power Systems, headquartered in Waukesha, Wisconsin. The company manufactures a variety high voltage and high current products such as switches, insulators and other electrical components.

Cooper Power Systems initially purchased ELECTRO and MAGNETO back in 1987 to design field shaping of switches. Interestingly, the software they purchased 22 years ago is being used for the same thing today as it was back then.

Stoving's department specifically designs high voltage, high current switches. He explains "If you think about the circuit breakers in your house they are probably a few amps and 120 volts. We design circuit breakers for power lines where they interrupt up to 16,000 amps and anywhere from 15 to 38,000 volts. My department is responsible for designing the switches and the insulation".

This department uses ELECTRO extensively, as one of their main software packages. ELECTRO is mainly used for shaping the electric field in and around circuit breakers. They occasionally use Magneto as well. Magneto is used for designing solenoids, magnetic actuators and other parts that open and close the switches. Since they first bought INTEGRATED's software, they use it that extensively that a few years ago they required another pair of licenses.

Why is the company still using ELECTRO after so many years and not other packages available on the market? "Two main drivers for that" answers Stoving, "ease of use when going through a lot of conceptual designs trying different iterations for building up and altering models, and for importing models in from CAD."

Read more —>

INTEGRATED
Engineering Software

Hybrid Simulation Tools for Electromagnetic & Particle Trajectory Design Analysis

> High Voltage & Electric Field
> Magnetics
> RF, Microwave & Antennas
> Particle Trajectory

30 YEARS
OPTIMIZING DESIGNS

220-1821 Wellington Ave
Winnipeg, Manitoba
R3H 0G4 Canada
204.632.5636
www.integratedsoft.com

INTEGRATED ENGINEERING SOFTWARE

A trustworthy simulation tool: designing switches and insulation systems in high voltage systems

Stoving continues: “The Boundary Element method in INTEGRATED’s software, especially ELECTRO, is incredibly easy to use. It’s very easy to build the model and does not require a lot of effort to apply the mesh to get a meaningful model. It’s easy to move components around and change the model. Using a FEA package a lot of times means you’ll have to start building the model again from the bottom up, where in ELECTRO you just create the component and adjust it, that’s pretty much all you have to worry about.”

Stoving is not a “big fan” of automatic meshing in FEA because he finds it tends to give poor results, but talking about ELECTRO he states: “ I have a good degree of confidence in the automatic meshing that ELECTRO uses: it’s very reproducible and very reliable, as the method of refinement is based on a solid error criteria. The really nice feature here is that I can adjust the error criterion for the automatic refinement, so if I need a quick answer, I can solve one way, and if I need a reliable answer, I can set it another, and that, as said, the refinement is based on the error calculation.” And extends “ELECTRO is pretty much the only program I trust self adaptive and automatic meshing with. If I am building a model in other CAE software, I will be pretty much doing everything manually and going through it manually; I am not a big fan of automatic meshing with FEA software because it always seems to produce poor meshing results right into the area you are interested in. But ELECTRO does a very good job of it. I’d rather prefer an aggressive mesher that throws a lot of elements at a problem versus an automatic mesher that oversimplifies the problem and yields questionable results.”

In terms of technical support, Stoving observes he has been using the software enough that he doesn’t have to call for “help” but he certainly is not afraid to call if he encounters a bug. He appreciates that the resolutions may result in adding a new feature to the tool.

“It’s always been a pleasure dealing with INTEGRATED” Stoving finalizes, “my intention is to continue using their software for a long time. Unlike their competitors, who will fix a problem in their next new release, which may come in a year, INTEGRATED has always been very receptive; they have a very fast turnaround with any sort of issue. The fact that they’ll recompile a specific release of the software just as a result of a bug and usually within a week they come back with the new version of the software that has corrected the bug, and that’s just remarkable.”

INTEGRATED
Engineering Software

Hybrid Simulation Tools for Electromagnetic & Particle Trajectory Design Analysis

- > High Voltage & Electric Field
- > Magnetics
- > RF, Microwave & Antennas
- > Particle Trajectory

30 YEARS
OPTIMIZING DESIGNS

220-1821 Wellington Ave
Winnipeg, Manitoba
R3H 0G4 Canada
204.632.5636
www.integratedsoft.com