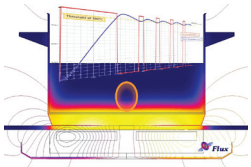
Flux 11.1 New features

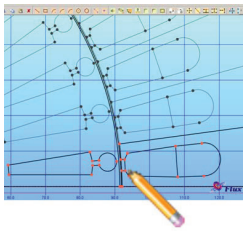
CEDRAT design solutions for electrical engineering

A unified and customizable environment for 2D, 3D and Skew applications



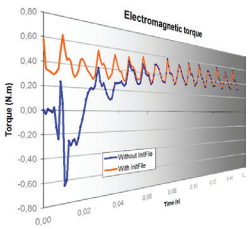
- **A unique environment for 2D, 3D and skew geometries**
- **User preferences**
  - Customize Flux to make everyday tasks easier
- **2D coupled applications integrated into Flux** environment
  - Magneto-thermal, electric conduction-thermal, Steady-state AC electric-Thermal

Geometry and Mesh improvements



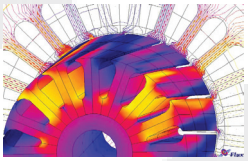
- **Speeding-up 2D pre-processing**
  - **2D sketcher : easy and fast way to enter geometries**
    - Keeping the possibility to parameterize the obtained geometries
- **Easy and powerful mesh generation**
  - A specific **toolkit** for an **easier**, **faster** and **more efficient** meshing process
    - New aid for a **global** and **local** management of the mesh
    - A macro for the **mesh of the skin effect**
- Use the **number of turns** in a non-meshed coil **as a parameter**!

Fast, realistic and reliable simulations



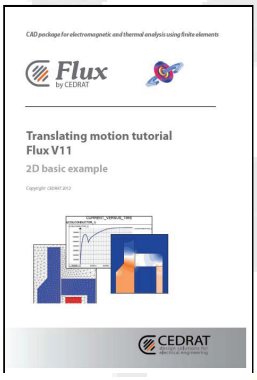
- **Acceleration of 3D solving**
  - **New linear direct parallel solvers** (MUMPS and Pardiso)
  - **Better and faster convergence for demanding cases**
  - **Memory requirement reduction**
- **Advanced simulation techniques**
  - **Evolutive start-up in 2D and 3D**
    - Ability to use a MS, MH or MT solution as the first step of a transient simulation
    - Also available to start TT with initial TS or TT solution
  - **Time-step adaption**: be accurate in transient with less time-steps !
    - Prediction-correction and front management for the mechanical equations
    - Available 2D and 3D

New comfortable post-processing functions



- **Solve in 2D, Post-process in 3D !**
  - When using Flux skew : access to all the functionnalities of post-processing in full 3D
- **"Small" improvements with strong benefits**
  - Easy access for **computation of global values including units**
  - Easy access to quantities to **create 2D & 3D curves**
  - **Paths made of elementary paths or a set of lines**
  - **Export of force densities**
  - Ability to use N and T and easy access to Bn, Bt, …
  - Better organization of the **menus**

Miscellaneous



- **Energy efficiency evaluation:** improving post-processing for losses calculations
  - Power on groups of regions or electric components to build power balance
- **More than 10 new macros to discover!**
  - Including min, max, mean values on regions, inductance evaluation, advanced circuit component creation, and much more!
- **Documentation – New organization for beginners as for experts**
  - More detailed basic examples, with descriptions step by step
  - New useful documents for advanced users of the software