



**BREAKING NEWS - 5.2 RELEASE**



**AUTOMATE COMPLEX PROCEDURES EASILY**



**SAVE THE DATE  
LILLE, 27 NOV. 2015**



**EUROSTAG INVOLVED IN MAJOR INNOVATION PROJECTS**



## BREAKING NEWS - 5.2 RELEASE



The 5.2 version of *EUROSTAG* is expected by the end of this year. Here are some of the new **major improvements** and outstanding **new features** of the tool:

- » The API is enriched with numerous new functions. A **new framework** has been introduced in order to make it possible to write complex user automats.
- » An **Excel export** function is now available to export the data of all the equipment of a network model into a well-structured Excel file.
- » The **Network Editor** (where single-line diagrams are built) is enhanced with new functionalities such as contour colouring and a specific graphical representation for shunt reactors.

- » New characteristics such as global (re)active generation at a node, short-circuit current angle, short-circuit voltage and current characteristics in kA are added in the **Post-processor** and **Tabular Output**. Infinite nodes are recognized equipment.
- » **Computation time is reduced** in particular thanks to a speeding-up of the initialization process, the use of a highly efficient KLU linear solver and the parallelization of some computation tasks (function and jacobian evaluation of the nonlinear equation system).
- » Convenient functionalities have been introduced to **facilitate the error tracking process** and mastering/monitoring the simulation process.
- » Eigenvalues computation will rely on [ARPACK](#), this will allow computing **the right-most eigenvalues** of very large power systems.
- » **The standard model library** of *EUROSTAG* is updated following the progress made by the CIM user's group. Numerous standard dynamic models, fully compatible with ENTSO-E [CGMES](#), are delivered with the software package.
- » **The PSS/e data conversion module** has also been improved for static data and significantly for dynamic data (numerous models and relays such as generator minimum and maximum voltage protection relay and generator and motor over-and underspeed protection relay).

## API: AUTOMATE COMPLEX PROCEDURES EASILY



A standardized API was released with *EUROSTAG* 5.1. The API is designed to drive *EUROSTAG* simulations and access data during Eurostag runs. It also allows plugging the *EUROSTAG* computation module into an external program.

This makes it possible and **easy to automate some complex procedures** or to develop control strategies which cannot be expressed in the form of control blocks. The *EUROSTAG* API is composed of a set of **query and control functions** in order to pilot the events simulated, export results and verify the simulation process.

- » All these functions are accessible from compiled languages (C, C++, Java), scientific software (Matlab) and scripting languages like Python, Perl, etc.
- » A dedicated python interface is also provided.
- » During the execution of a dynamic simulation, *EUROSTAG* can switch to a «pause» mode during which query functions or events can be performed by the external program/script.

## SAVE THE DATE - LILLE, 27 NOVEMBER 2015



The 11th meeting of the **EUROSTAG User's Club** will be held in **Lille** on **November 27th 2015** and is hosted by [Ecole Centrale de Lille](#).

During the meeting members will be invited to present a **specific experience** related to the use of *EUROSTAG* (a study performed with *EUROSTAG*, a publication based on its use, an original application or model that was developed, a teaching experience, etc.) regarding the typical issues related to dynamic simulation such as HVDC modeling, protection device modeling, PMS modeling or dynamic security assessment. The format of each contribution will be a 15 minutes presentation in front of the audience with 5 minutes for questions following each presentation.

Additionally, the *EUROSTAG* development team will present the **advanced features of the new version 5.2** and associated illustrations, highlighting their benefits and use. A timeslot will be specifically dedicated to exchange between the users present at the meeting and the *EUROSTAG* developers and experts in order to pursue further enhancement of *EUROSTAG* in accordance with user needs.

## EUROSTAG INVOLVED IN MAJOR INNOVATION PROJECTS



*EUROSTAG* has been involved recently in several large-scale highly complex and innovative R&D projects, which have brought major improvements. Among those projects the most recent one is the iTESLA project.

iTESLA's goal is to develop a **toolbox** which will support the future operation of the pan-European electricity transmission network. This toolbox shall bring forward a **major innovation**: carry out operational dynamic simulations in the frame of a full probabilistic approach, thus going further than the current deterministic «N-1» approach that is becoming inadequate in the face of recent transformations in the power system sector (renewables integration in particular). *EUROSTAG* has been used in the iTESLA platform

due to its **efficiency in simulating large systems**, thanks to its advanced variable step-size algorithm. In the course of the project, millions of complex time-domain simulations have been performed with the software. The *EUROSTAG* API has also been extensively used in the project for advanced **power system simulation tasks**, such as automatic out-of-step relay tuning, power system model validation, evaluation of the European system defence plan adequacy and control of HVDC systems for optimal power system operation.

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