# CERBERUS

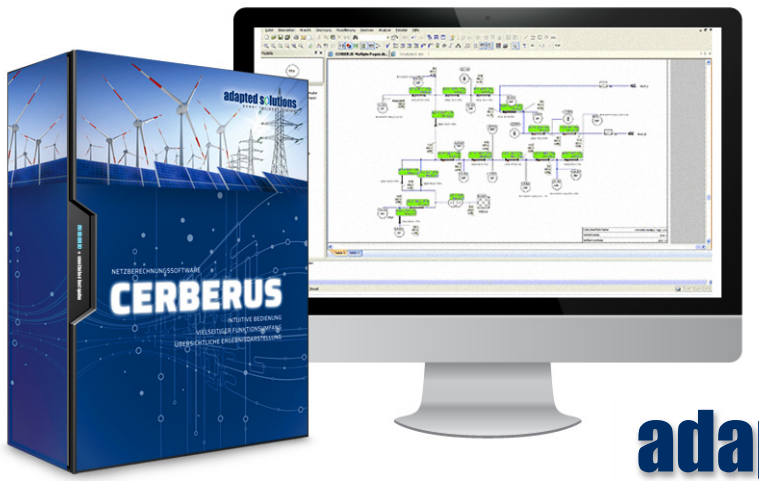
## Calculation of Power Grids with CERBERUS

## – Intuitive, Fast and Flexible


Network calculations are needed when planning or expanding power grids and installations, assessing the connection of loads and generators or analysing bottlenecks in the system. Based on the load and power generation conditions in the network, the expected voltages and currents are to be determined for all switching states, the normal operation and possible fault situation. If necessary, consequences are to be drawn.

Network calculation software should offer many functions and yet quickly deliver the required results. Handling must be intuitive and the presentation of the results has to be clear. Even if the software is used only occasional, one should be able to perform the calculations quickly.

For many years now, CERBERUS fulfils all these requirements for a constantly growing number of users. Installed within a few minutes on a standard Windows machine, CERBERUS is almost as speedy as using a pocket calculator, as a network can be drawn and calculated in a miniscule amount of time.




adapted solutions
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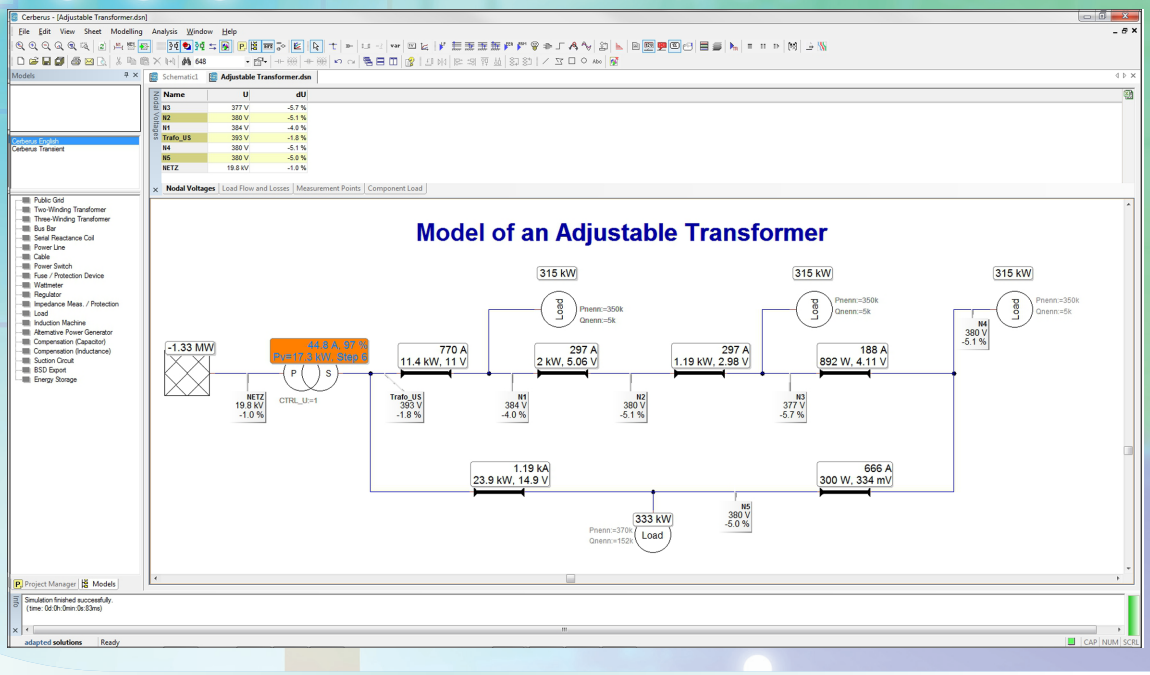
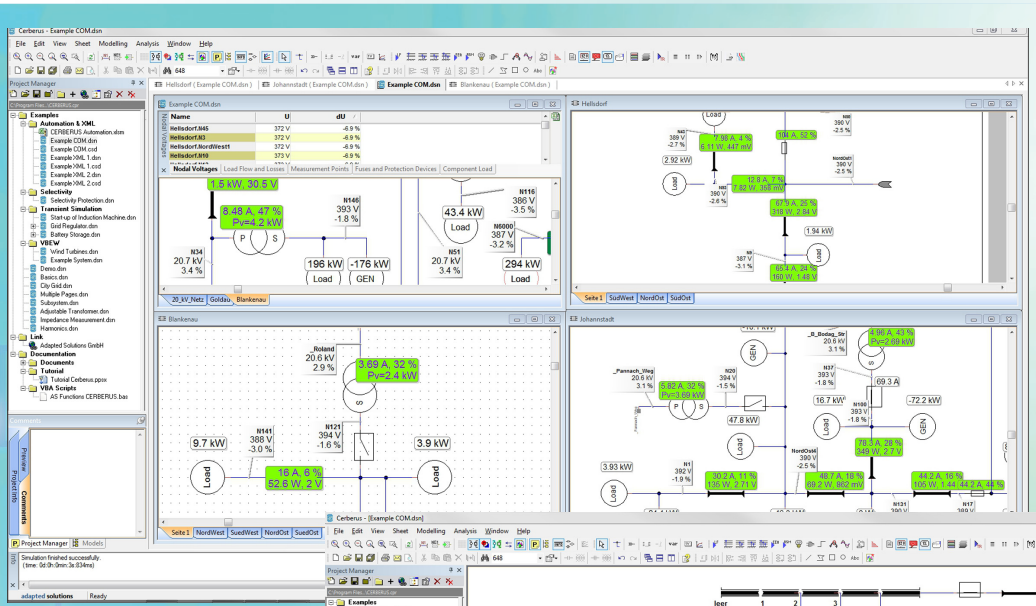
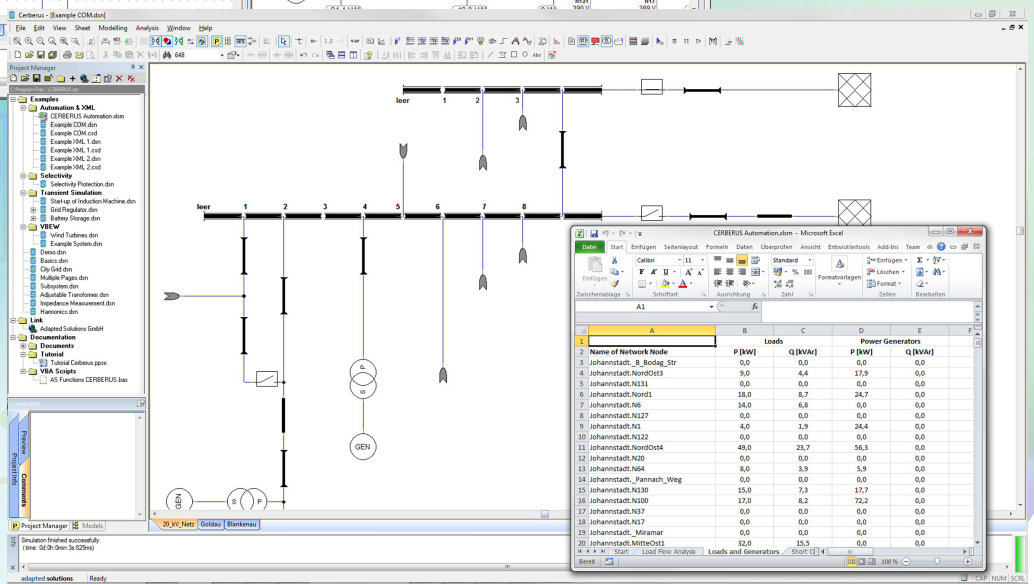
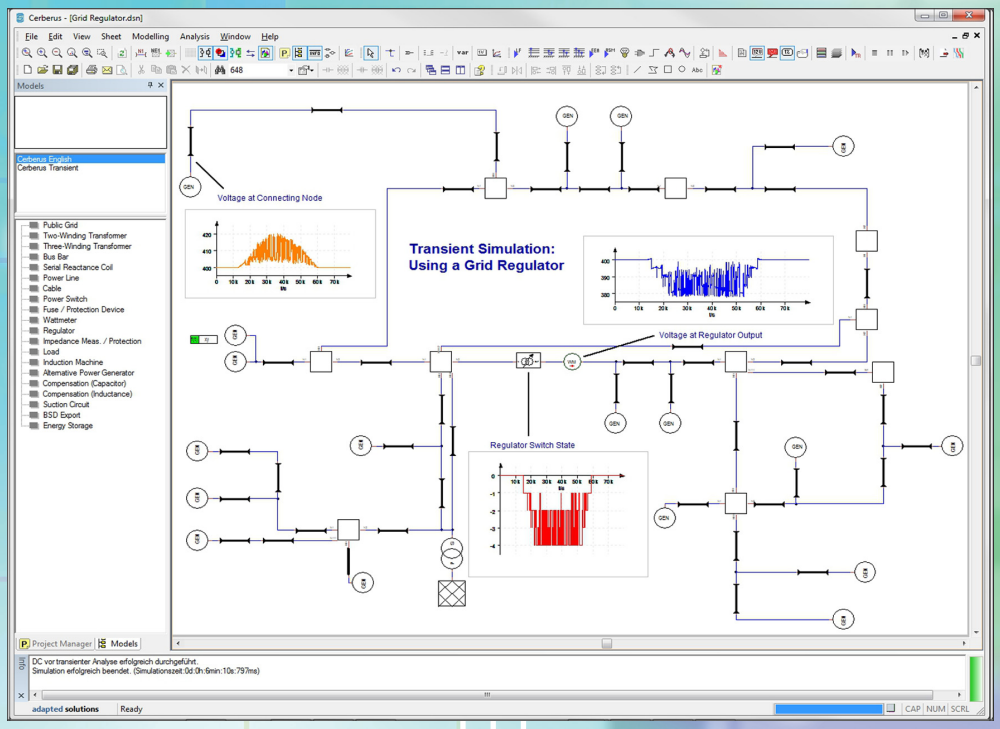



There are no limits when facing more complex tasks: Even with the basic version of CERBERUS, there are no restrictions regarding the structure, size and features of the systems to be calculated. Networks of all sizes can be displayed clearly, thanks to multiple pages technology and the option of defining subsystems. The models implemented in CERBERUS simulate the operation of modern equipment such as grid regulators, voltage regulated transformers and local generators that use characteristics to control real and imaginary power.

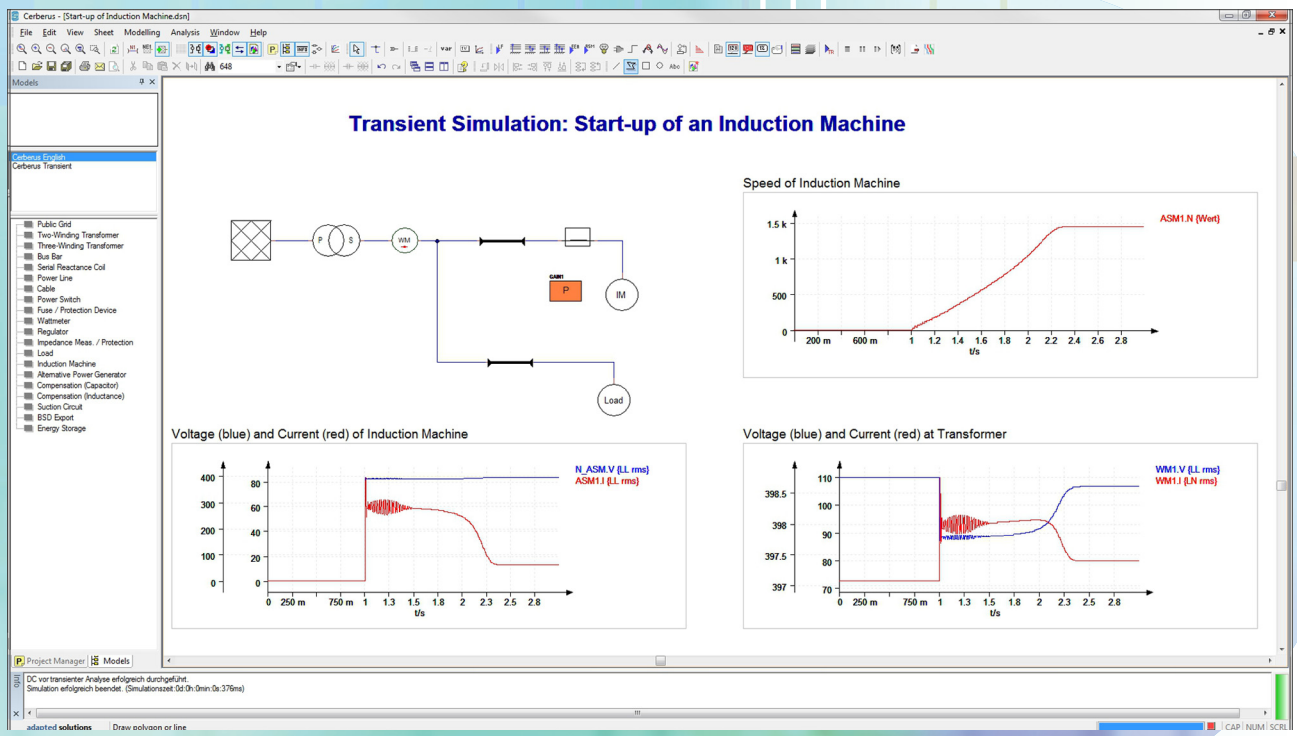
The calculation results are displayed clearly in the schematic and by means of tables. Coloured markers indicate problems and the exceedance of limits. The standard analyses for load flow and short circuit calculation (symmetrical and unbalanced) are supplemented by many useful functions, e.g. for calculating the voltage increase caused by renewable power generation and to determine the maximum permissible load or generator power.

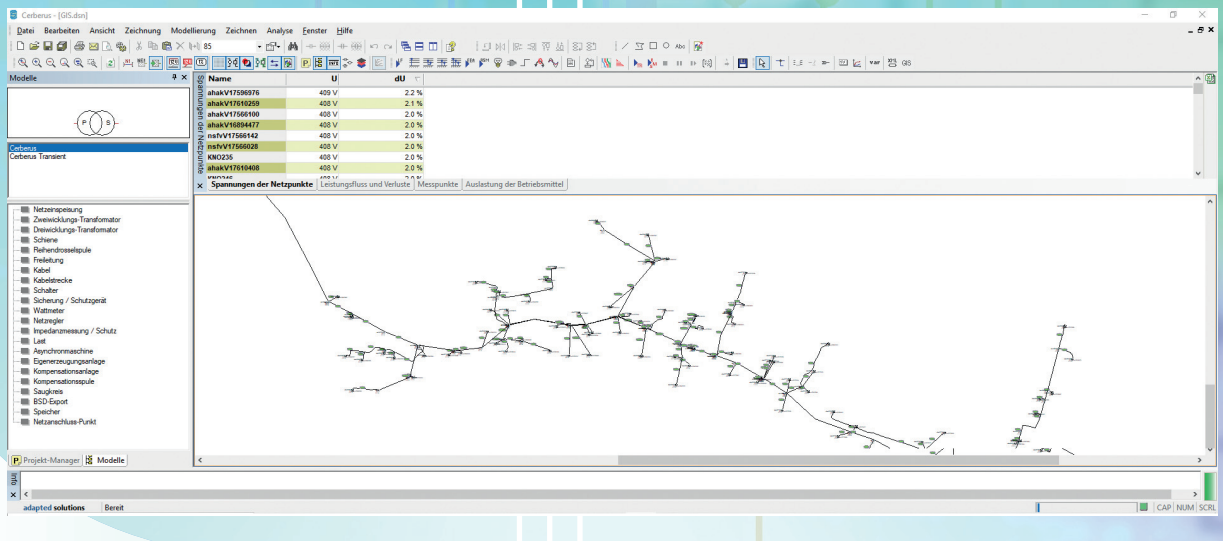







Powerful tools are available for particularly demanding tasks: The import and export of netlists and data, the call of the analyses and the evaluation of the results can be automated by using the interfaces provided by CERBERUS. If a steady-state analysis is not sufficient, dynamic simulation in the time domain may be used instead. Based on a powerful mathematical approach, CERBERUS is able to calculate the transient curves of the network values very quickly, even for periods in the hourly or daily range. Dynamic simulations allow for the definition of power generation and load profiles and the integration of models for energy storages as well as control components. Additional modules provide functions to evaluate the selectivity of the protective devices and to estimate system perturbations.





The manual effort for entering the network data can be significantly reduced if the required data is available in a geographic information system (GIS). CERBERUS has a powerful import interface that supports the common GIS exchange formats. The circuit diagram is thus set up at the push of a button.

## CERBERUS in a nutshell:

- Can be used on all Windows PCs (minimum Windows7) with no special hardware requirements.
- Schematic editor using multiple pages and subsystem technology. Alternatively, import from netlists and GIS (on request) possible.
- Comprehensive equipment database (cables, power lines).
- Predefined load profiles.
- Calculation of steady-state load flow (symmetrical and unbalanced).
- Short-circuit analyses (symmetrical and unbalanced faults).
- Calculation of network perturbations.
- Connection assessment (local power generators).
- Determination of maximum permissible power (generators and loads).
- Dynamic simulation (transient and RMS analysis).
- Selectivity analysis.
- Result display in the schematic, visualization of power flow, limit violations and over-loads of equipment.
- Export functions for word processing (rtf) and Excel.
- Automation possible via OLE and HTTP interface.
- Project management.

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