ClaRa+ - System Simulation for new Energy Markets

Electricity production from renewable energies such as wind and sun is continuously increasing. The combination of their fluctuating generation and priority feed-in is resulting in new operating modes for conventional power plants. Dynamic system simulation can be used in all project phases, from early design up to optimization during operation, to solve problems arising from this changing energy market in a cost-efficient manner.

Create a Digital Twin of Your Power Plant

- Build up your own models according to your requirements
- Create a virtual twin of the controller system quickly and efficiently
- Increase the efficiency of your power plant site

Support All Project Phases

- Efficiently evaluate concept variants
- Save time and money during commissioning
- Optimization of the controller system and operation modes

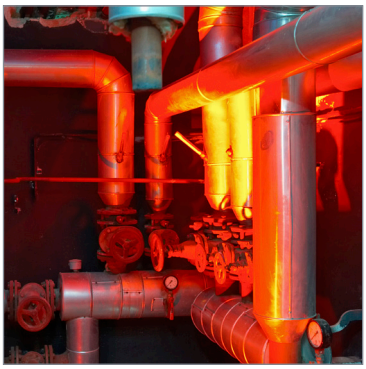
Increase the Safety and Reliability of Your Processes

- Design components taking into account extreme dynamic operating conditions
- Safe analysis of potentially dangerous or component-damaging operating conditions

Get further information on the Modelica-Library ClaRa+: Homepage www.powerplantsimulation.com | Email info@powerplantsimulation.com

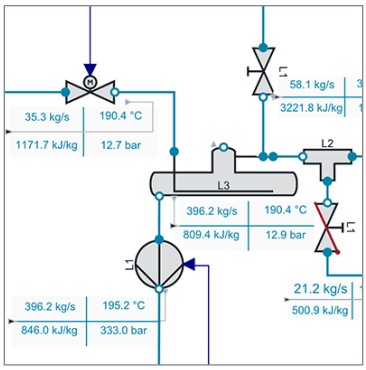
ClaRa was used during the optimization of the control and process technology of the LEAG Schwarze Pumpe lignite-fired power plant.

Project manager Sebastian Meinke says, "*ClaRa is ideal for creating a digital twin of the power plant and quickly identifying optimization potential. The possible savings exceed the costs many times over.*" (translated)



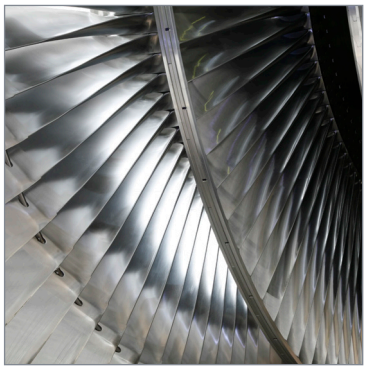
Use ClaRa⁺ to Analyse Your

- Hard coal power plants - from the coal grinding to the grid
- Combined cycles - catch transients of drum swelling
- Industry power plants - always on demand of your process
- District heating systems - track critical pressure oscillations
- Controller system - optimize your plant efficiency



Powerful for Dynamic Power Plant Simulation

- Models for the complete equipment: pumps, fans, turbines, heat exchangers, furnace, electric motors, mills, valves, piping and fittings, storage tanks, flue gas cleaning and consumer grid
- Transparent set of equations, well documented
- Robust, fast and user-friendly
- Validated against literature data and measurement data



Design and Optimization

- ClaRa⁺ helps you design e.g. tanks and quick-closing valves considering both static and extremely dynamic operating conditions
- ClaRa⁺ supports you with prequalification for primary and secondary control services and helps you safely control failures of aggregates such as pumps, fans, turbines and mills
- ClaRa⁺ makes it possible to consider all relevant process limits as well as the operating limits of components in interaction

ClaRa⁺ is an enhancement from the ClaRa library which was developed in the research projects DYNCAP and DYNSTART.

XRG Simulation GmbH

TLK-Thermo GmbH

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Get further information on our Services and ClaRa⁺: Homepage www.powerplantsimulation.com | Email info@powerplantsimulation.com

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