HONEYWELL FORGE

UNISIM® GREEN H_2 MODELING

PRODUCT INFORMATION NOTE

UniSim R491 is now equipped with green hydrogen process models to enable the design and validation of green hydrogen processes through electrolyzer model unit ops and standard templates and prebuilt green hydrogen process flowsheets.

WHAT IS GREEN HYDROGEN?

Green hydrogen is the production of hydrogen gas from water using an electrolyzer. This differs from other thermochemical processes to produce hydrogen.

GREEN H_2 CHALLENGES

- Reliable CAPEX estimates needed to assist with green hydrogen technology adoption
- Rapidly evolving technology needs accurate and flexible process simulation
- Design flexibility to consider multiple operating conditions

SOLUTION

Standard green hydrogen template flowsheet for a generic alkaline electrolyzer with pre-defined parameters like polarization curve, current density, conversion, and efficiency to assist in the design and simulation of green hydrogen processes. Proton Exchange Membrane (PEM) Unit Operation with pre-built performance correlations usable in design or rating mode. Electrolyzer models contain modifiable parameters to match technology licensor's information and to evaluate design specifications.

Key Capabilities

- Prebuilt, self-contained green hydrogen template
- User customizable alkaline electrolyzer model
- Proton Exchange Membrane Unit Operation
- REFPROP thermodynamic engine
- Balance-of-plant simulations
- Auxiliary equipment sizing calculations

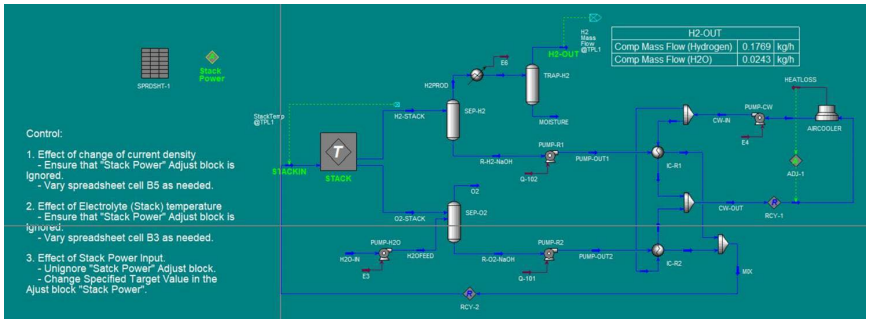
Benefits

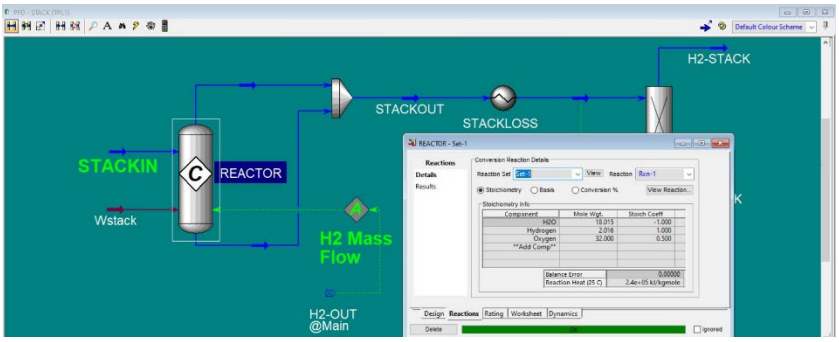
- Evaluate licensor-specific information on electrolyzer
- Conduct feasibility studies for facility design
- Build the balance-of-plant simulations for CAPEX estimating

Pre-built design templates

Pre-built green hydrogen design templates come complete with all auxiliary equipment and connections needed to simulate green hydrogen processes.

Flowsheets can connect to plant process flowsheets and water purification plants.



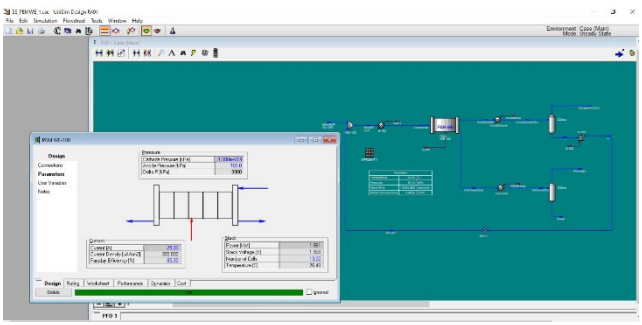


Electrolyzer Models

Electrolyzer models come standard with pre-defined parameters. Users can customize electrolyzer parameters and efficiencies to match technology licensors information.

Proton Exchange Membrane Unit Operation

The Proton Exchange Membrane Unit Operation contains pre-built performance correlations and can be used in design or rating mode. Variables, which can be either specified or calculated, include current density, cell voltage, stack power, membrane properties, electrode information, and water transport properties.



REFPROP Thermodynamic Engine

UniSim Design has integrated REFPROP, which is a combination of a reference fluid thermodynamic and transport properties database and property package. It adds to UniSim's expanding range of capabilities to model complex fluids in various pressure and temperature regimes, such as those required for modeling of high pressure Hydrogen from Green Hydrogen plants.

UniSim Support

Honeywell is committed to rapidly enhancing UniSim Design's capabilities based on customer feedback.

For More Information

Learn more about UniSim Design Suite or contact your Honeywell Account Manager.

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