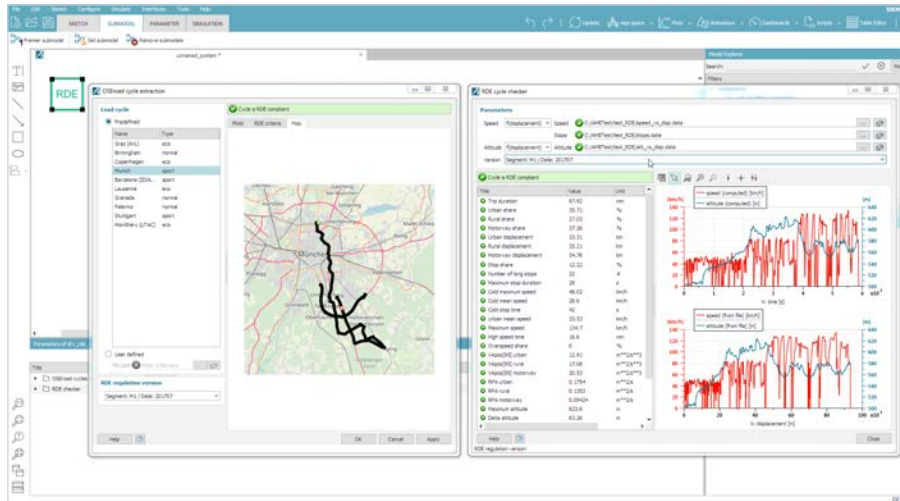


Simcenter Amesim 2019.1



Moreover, you can now integrate any species you need for modeling exhaust after treatment reactions on top of 12 default species. Therefore, advanced use cases that require intermediate species and/or nonregulated pollutants such as sulfur oxide (SO_x) or nitrous oxide (N₂O) can be handled.

Aircraft systems performance engineering

- Upgraded computer-aided design (CAD) import capabilities for fuel systems
- Enhanced postprocessing apps and scaling tool for aircraft engine and gas turbine
- New rotorcraft engine demonstrators with the recuperated cycle and series hybrid variant

To support the aerospace industry, the latest release of Simcenter Amesim comes with upgraded CAD import capabilities that enable users to easily create rib submodels and generate all the required tank and rib data files.

Simcenter Amesim 2019.1 to obtain a shared battery model. You can visualize parameters of the imported model before using them in Simcenter Amesim.

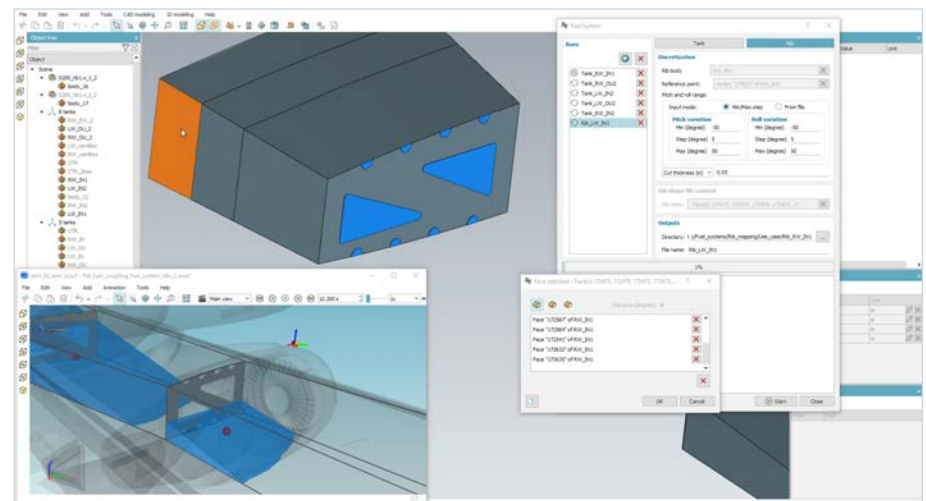
New demonstrators allow you to easily re-use the complete battery pack model based on geometry, identify critical temperatures for controls design, apply a documented methodology for model reduction as well as integrate the reduced battery model into your vehicle energy management (VEM) analysis.

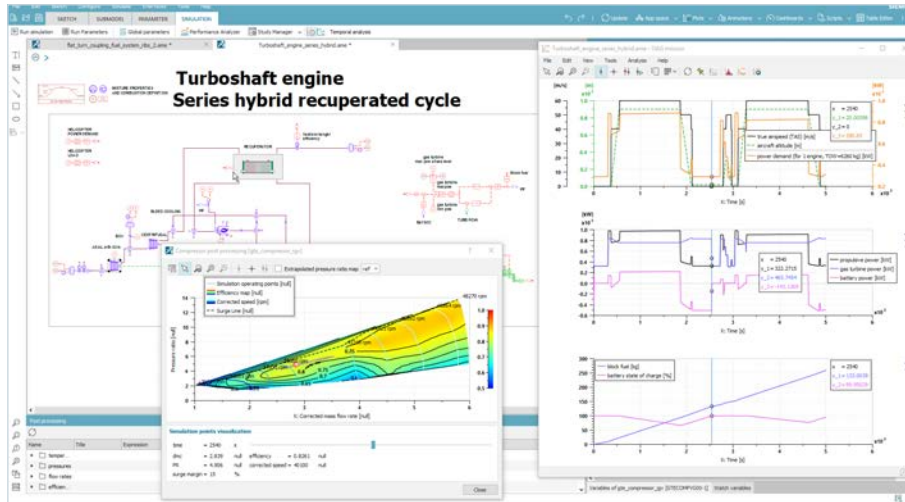
Vehicle performance evaluation, such as maximum vehicle speed, 0 to 100 kilometers per hour (km/h) or 80 to 120 km/h acceleration, is now automatically included with the main HOT result processing in addition to the fuel consumption data. Performance criteria are given with and without electric assistance to enable you to easily compare architectures and component sizing.

Vehicle systems and components performance engineering

- Real-driving emissions (RDE) cycles loading and import
- Vehicle performance evaluation in the hybrid optimization tool (HOT)
- Exhaust calibration tool with additional species

Using Simcenter Amesim 2019.1 to meet the RDE standard, automotive manufacturers can easily load predefined RDE cycles from the database or import additional OSERoad cycles, access the main cycle characteristics and generate formatted data files to run the cycle in a vehicle model.





Therefore, you can drastically reduce the time required for creating data files and organizing your output files. Moreover, the new rib submodel allows users to account for flowing areas, speeding up parameterization while improving accuracy.

By using the enhanced postprocessing apps and scaling tool when exploring new gas turbine configurations, users can easily derive scaled performance maps starting from reference maps and rapidly identify operability issues by looking at the surge margin.

Users can benefit from two rotorcraft engine demonstrators that are derived from a validated engine model. The first derivative is a recuperated engine cycle and the second is a series hybrid variant assessed during an oil and gas mission

Controls engineering

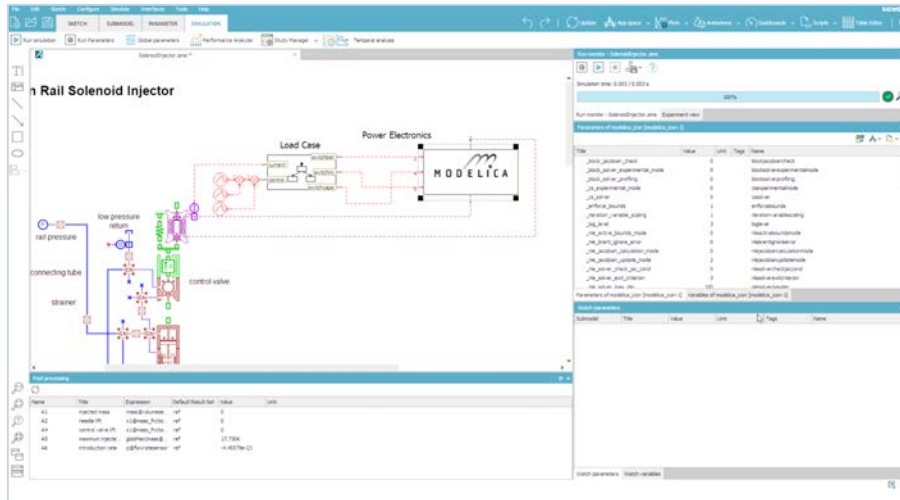
- Extracting a nested signal bus
- New tool for proportional–integral–derivative (PID) controller calibration
- New real-time components for thermal and valvetrain systems

With the industry shift towards connected, software-intensive, complex products, controls engineering is a time-consuming, expensive and crucial part of the product development process. Simcenter Amesim 2019.1 offers a large set of new or enhanced capabilities for controls design and validation to enable you to simultaneously optimize the mechanics, electronics and software as an integrated system.

You can now use signal buses to manage data transfers between physical subsystems. This redesigned capability facilitates visualization of all data flowing through any given bus component and simplifies information propagation across nested buses.

In addition, the latest release comes with a new tool for PID controller calibration, which is associated with two demos for speed and position control. Hence, you can visualize closed-loop step response and check the robustness with stability margins. Whether you are a system designer who just wants to quickly make the PID controller work, or a control expert interested in stability margins, the PID tuner facilitates increased efficiency in simulating mechatronic systems.

Additionally, new real-time components of thermal and valvetrain systems will allow you to greatly reduce central processing unit (CPU) time and run hardware-in-the-loop (HiL) simulations.



System simulation efficiency and ease of use

- New Modelica compiler and full Modelica Standard Library (MSL) v3.2.2 support
- Model conversion from hydraulic to thermal-hydraulic domain
- Two-phase flow thermodynamic cycle analysis app
- Valve builder

To boost the efficiency of your system simulation activities, Simcenter Amesim now offers you full MSL 3.2.2 support and greater openness thanks to Modelon's compiler, which is integrated into this Simcenter Amesim version. You can easily couple Modelica and native Simcenter Amesim library components: Using Modelica Editor enables you to automatically import Modelica models into Simcenter Amesim and get the best of both.

Moreover, existing hydraulic models can be converted into thermal-hydraulic models with one click while maintaining model structure and parameters.

With a new app for two-phase flow thermodynamic cycle predesign, within just a few seconds you can assess steady-state cycle performance by adapting your design points from predefined cycles.

Finally, the latest improvements in valve builder functionality allow users to create pilot-operated directional valves and connect them to the hydraulic or pneumatic pilot stage, as well as integrate nonreturn valves into the design of your directional valve to avoid unnecessary volumes and dynamics.

Siemens PLM Software
www.siemens.com/plm

Americas +1 314 264 8499
 Europe +44 (0) 1276 413200
 Asia-Pacific +852 2230 3333

© 2019 Siemens Product Lifecycle Management Software Inc. Siemens and the Siemens logo are registered trademarks of Siemens AG. Femap, HEEDS, Simcenter, Simcenter 3D, Simcenter Amesim, Simcenter FLOEFD, Simcenter Flomaster, Simcenter Flotherm, Simcenter MAGNET, Simcenter Motorsolve, Simcenter Samcef, Simcenter SCADAS, Simcenter STAR-CCM+, Simcenter Soundbrush, Simcenter Sound Camera, Simcenter Testlab, Simcenter Testpress and STAR-CD are trademarks or registered trademarks of Siemens Product Lifecycle Management Software Inc. or its subsidiaries or affiliates in the United States and in other countries. Modelica is a registered trademark of the Modelica Association. All other trademarks, registered trademarks or service marks belong to their respective holders.

77799-A3 4/19 A