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Ingenuity for life

Consistent analysis and immediate correlation of system simulation and test

Solution brief

Siemens Digital Industries Software

Closing the loop between test and simulation with Simcenter Testlab Neo and Simcenter Amesim

The use of simulation in product development is increasing, driven by the need for more product variants. This is due on the one hand to the global trend for mass customization, and on the other hand to the improved ease-of-use and accuracy of simulation solutions.

Systems are more multiphysical than ever, encompassing hydraulic, electric, mechanical, controls and other engineering domains. Simcenter Amesim™ software was designed to model multiphysical and mechatronic systems.

The increased use of simulation doesn't lessen the need for testing. For example, innovative designs and the use of new materials require extensive validation. The combination of Simcenter

Testlab™ software and Simcenter SCADAS™ hardware provides a flexible solution for synchronously capturing data from different physical domains, enabling the efficient validation of the growing number of product variants.

To successfully develop these multiphysical systems, it is crucial that simulation and test engineers collaborate to improve product development efficiency. Only development teams that are capable of creating synergies by merging simulation and test processes will be effective in finding the balance between product functional requirements. This requires testing tools that can bridge the gap between both worlds. For example, these include interfaces for simulation data, for validation, correlation, processing and reporting. The present solutions belong to the field of model-based system testing, which encompasses a broad and varied set of testing tools combining simulation and test.

Challenges
- Reduce product development time
- Reduce time needed for validating multiphysical models
- Ensure processing consistency for test and simulation results
- Productive comparison of design variants

Solutions
- Simcenter Testlab Desktop Neo
- Simcenter Amesim Sketch Viewer in Simcenter Testlab Neo"
- Simcenter Testlab Process Designer

Results
- Productive validation of multiphysical models
- Efficient evaluation of multiple design variants
- Comparison in confidence of test and simulation results
- Increased efficiency of the product development process

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Solution focus

Get more productive in validating multiphysical models

The Amesim Sketch Viewer in Simcenter Testlab Neo provides direct model-driven access to Simcenter Amesim simulation variables. The model interaction is highly intuitive and will be familiar to Simcenter Amesim users.

The user experience compares to regular browsing with no need for data import/export and/or data duplication. Data is immediately displayed in the Simcenter Testlab Neo interface. Simcenter Testlab users are familiar with the data handling capabilities of Amesim Sketch Viewer, which comes with full data traceability for models and components.

Conveniently compare test and simulation data

The Amesim Sketch Viewer functionality is fully integrated in Simcenter Testlab Neo. Simcenter Testlab Neo offers multiple features that make it easy for users to visualize and compare data sets, including:

- A powerful pivot table function that allows users to quickly organize large amounts of data and receive an instant data preview

- Transparent access to many data formats

- Viewing graphical displays with interactive cursors and embedded processing

- The ability to insert active pictures to create compelling, interactive reports of the analysis.

Postprocess test and simulation data using the same metrics

Throughout the development cycle of a product, the simulation and test data have to be processed. With Amesim Sketch Viewer, the simulation data is available in Simcenter Testlab, next to the test data. Now the same test-based metrics can be used to postprocess simulation and test data.

Using these same metrics to process test and simulation results helps minimize uncertainty and miscommunication between engineers. It allows for easier data comparison and enables the verification of the accuracy of simulation models from the early concept design to the most refined models. Simcenter Testlab Process Designer provides an intuitive tool for data processing. It allows the immediate processing of any test or simulation data. Since all data sets are calculated using the same tool, results can be overlaid with confidence.

Simcenter Testlab Process Designer offers multiple advantages to users. It is designed to be used by occasional users as well as experts, automates the simplest to the most complex processes, allows users to mix time domain and frequency domain processing and uses an extensive range of processing methods.
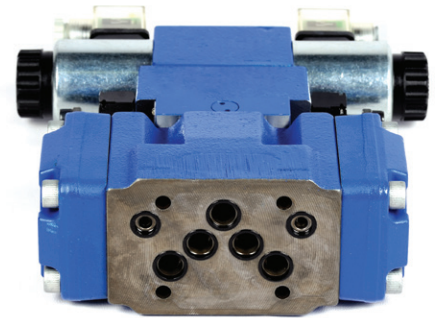
Servovalve tested with Simcenter Testlab and modeled with Simcenter Amesim.
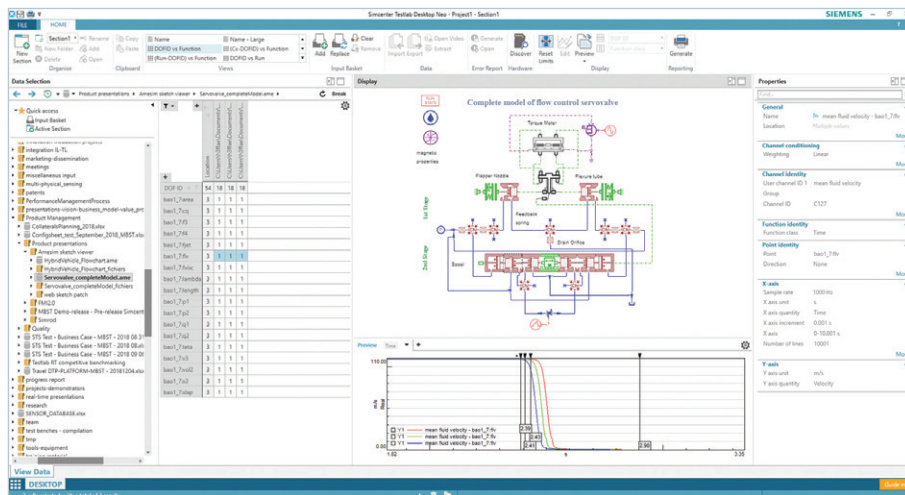
Model-driven comparison of multiple design variants of a servovalve using the Simcenter Amesim Sketch Viewer in Simcenter Testlab Neo.