

Simcenter Flomaster

Introducing Simcenter Flomaster 2022.1

Simcenter Flomaster has been the tool of choice for 1D thermo-fluid simulation of pipework networks and systems for more than 20 years. Based on Don Miller's "Internal Flow Systems," Flomaster is unrivalled in terms of accuracy, flexibility and cross-industry appeal due to its superior transient solver. Flomaster delivers results you can trust from the earliest stages of the design process.

Major Product Benefits

- Reduce the development time and costs of thermo-fluid systems.
- Advanced thermo-fluid system modelling and simulation enables users to analyse real-life conditions.
- Versatile transient solver.
- 1D-3D Simulation can Characterize 3D components for use in 1D components where previously no data existed or there is a tightly coupled co-simulation workflow (OneSim) that enables a 3D CFD model to be considered as part of a Flomaster network.
- Dedicated CAD import tool allowing you to move CAD data to Flomaster seamlessly.
- Secure traceable data & design collaboration enables analysis of complex designs when needed, where needed.

Backed by extensive research and empirical data, Flomaster delivers critical thermodynamic information for liquid, gas or two-phase steam systems in any industry.

Open architecture allows users to customize supplied libraries, write control scripts, link to other tools such as Excel and Functional Mock-up Interface (FMI) support for model export and co-simulation.

Simcenter Flomaster Support

When you buy products like Simcenter Flomaster that improve your design productivity and integrate tightly into your business, a comprehensive support program should be seen as an integral part of your product investment.

Support is the insurance that allows your employees to concentrate on their work, while our support staff helps keep your downtime to a minimum and moves your project forward faster.

Key Support Benefits

- Software enhancements to bring you the latest improvements in product functionality, usability, and performance
- [Support Center](#) for rapid, secure access to online support 24/7
- Technical support backed by an award-winning support team

What's New In Simcenter Flomaster 2022.1

Component updates

New Components for Green Energy Applications

- Two-phase pipe with post processed drift flux. Simcenter Flomaster 2022.1 can model the energy transfer between the fluid inside the pipe and different external surfaces, thanks to the conjugate heat transfer capability.
- Plate-Fin heat exchanger: different design options can be evaluated with the customisable multi-path plate-fin heat exchanger.

New Components For 1D Heat Transfer

- Generic Solid 2-Arm component: this can be connected into a solid circuit, with heat conduction modelled along the length and when linked to 1D HT pipe runs, heat transfer to surroundings.

User-Defined Components and Scripts

- When modelling components with length it is often useful to break them into shorter sections (segments) to account for changes in energy across smaller sections to improve accuracy as opposed to over the whole length. N-Arm components can now be segmented, previously this would be achieved by using multiple components.
- Data form for new components such as N-arms and controllers can be fully customised and sub-forms for data organisation can be used, giving users greater control over the data form presented.
- Debug messages: along with error, warning and information message types, a debug type has been added, to enable users to add their own messages to the simulation log. This can be toggled on/off in the Output Control sub form.

Composite Components

- Extract from network functionality now has the option to automatically add boundaries.
- The option to replace the components on the network with the new composite on extraction has been added.
- Input and Output Parameters can be used to define the data form of a composite.

Cavitation in Priming

- The filling of a system can be modelled using the Priming Simulation type. In Simcenter Flomaster 2022.1 the priming simulation has been enhanced to enable cavitation modelling at nodes. This is enabled by setting the node 'Auto-vaporisation' property to Yes. If set to this and the pressure at node level drops below the local vapor pressure a cavity will be modelled.

CAD2FM Enhancements

- The layout of networks imported using CAD2FM has been improved when using the 'Maintain3D projection' option, this is now the default.

About Siemens Software Customer Support

Our global team of Support Engineers have exceptional skills in analyzing problems and providing solutions; and this capability is the result of years of product experience and industry practice coupled with continuous investment in training.

Combined with our online Support Center, they help deliver the fastest path to the successful adoption of product enhancements and new releases.

On Support Center You Can

- Download latest releases
- Access documentation
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- Solve technical issues
- Manage support cases

What's New In Simcenter Flomaster 2022.1

User Experience

- Simcenter Flomaster 2022.1 introduces an updated user experience to enhance user productivity by making it easier to find commands.
- Launchpad has been updated with access to Help and Support Center accessible on the bottom left and all wizards embedded into the pages rather than launching separate dialogues.
- The user interface has also been updated to prevent layout issues on screens where the scaling isn't set to 100%.
- Saved Collections: The collection in Simcenter Flomaster is used when editing component input data and working with results, for report generation including the Hydraulic Grade Line Report. The current selection can now be saved for reuse, it can then be recalled when needed. The collections associated with a network will be retained when a network is packed/unpacked and copied.
- Concurrent Modelling of Component Models: Computer Processing Units (CPUs) typically feature multiple cores which allow processes to be distributed across different threads. In Simcenter Flomaster 2022.1 components are now solved concurrently across multiple threads, this can provide a decreased in simulation time.

Integration

- MQTT Connectivity Input and Output Components, when used together the two components update the network based on an input and pass the results back allowing the model to be integrated into an Executable Digital Twin:
 - The MQTTSubscribe component listens for the specified server to output signals and these are passed into the Flomaster network as signals.
 - The MQTTPublishcomponent takes a measurement from the network and publishes it for clients that wish to take the result.
- Run Time Statistics Controller, in the Diagnostics catalogue provides the number of iterations taken per timestep, maximum number of iterations allowed per timestep and run time per timestep for a network. By reviewing these outputs potential areas of interest for system optimization can be identified.
- Result Writing Controller: When running long simulations connected to a digital twin there are some scenarios where it is not desirable to write the simulation results to the connected Simcenter Flomaster database. This new controller provides an option to toggle on/off result writing for the network.
- Enhancements have been made to the existing OPC UA connectivity to support a wider set of use cases in PLC's. This enables additional data types inside instanced data blocks to be visible and selected in the Simcenter Flomaster OPC UA connectors. Several filtering options have also been added to the OPC UA connector wizard to support a faster workflow when making the required connections.

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