Simcenter Flomaster Release Highlights

Software Version 2301
January 2023

SIEMENS

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Introduction

This document provides a high-level summary of this release. It includes a summary of the new features in this release, any authorization code changes required, any major installation changes, and any transitioning issues you should be aware of before installing. Additionally, any last-minute issues found in the final stages of testing are included.

New Features

The following new features are available in this release:

Axial Force Calculations in Gas Turbine Cavities

When designing a gas turbine engine it is important to be able to calculate the axial forces (along the shafts) in order to size thrust bearings and other components. In Simcenter Flomaster 2301 the axial force acting upon each solid face in a gas turbine cavity is now calculated and reported.

Results: Simulations 46: Component 28

	Property	Value
▶	Total Heat Flow	0 kW
	Friction Torque	4.57558 N m
	Axial Force	-16841.8 N
	Shaft Number Result	0

Figure 1 - Cell Face Showing Axial Force Result

Open Channel Flow Modelling

Open Channel flow occurs within a conduit with a free surface. Simcenter Flomaster 2301 introduces:

- A new Free Surface Flow node and circuit type
- A new Open Channel component that allows the specification of
    - Channel Shape
    - Channel Dimensions as either a constant or varying with flow depth
    - Channel Slope as either a constant or bed profile

At this release the Open Channel component can be used with the constant and infinite reservoirs in incompressible transient solutions.

Heat Transfer between Liquid and Gas in the Multi-Arm tank

In Simcenter Flomaster 2301 the multi-arm has been enhanced to allow modelling of heat transfer between the liquid and gas in the tank. This can be toggled on\off with the default for upgraded systems being off.

Pump Operating Point Display

When modelling system using rotodynamic pumps it is often useful to understand where the pump is operating vs reference conditions. Simcenter Flomaster 2301 adds a new post-processing function allowing the Pump Operating Point to be displayed. This shows both the reference pump curve and the modified curve with pump speed along with the current operating point. For a transient simulation the change in point vs. time can be reviewed.

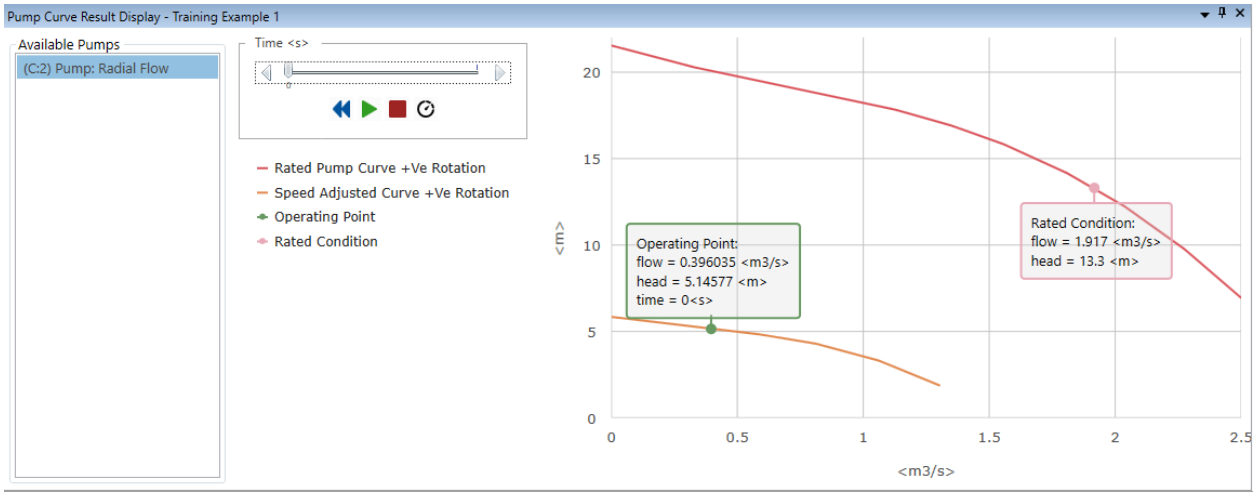

Figure 2 - Pump Operating Point Plot

Addition Drift Flux Models for the Two Phase Pipe

In Simcenter Flomaster 2301 the Two Phase Shell Flow and Two Phase Flow with Two Heat Transfer Sides have had additional correlations added for the drift flux model, these are:

- Bhagwat–Ghajar Circular
- Bhagwat–Ghajar Non-Circular
- Chexel-Lellouche Steam-Water

Customization for Dashboard Plots

Dashboards are made up of predefined plots that can be saved with a system and view for multiple results sets. In Simcenter Flomaster 2301 the following options have been added for customization of plots

- Min\Max Time
- Min\Max Value
- Time and Value intervals
- Line Color

N-Arm Enhancements

Soft configured N-Arms were added in Simcenter Flomaster 2022.1 allowing the user to define their own data form. In this release the following enhancements have been made:

- The index number of features is now listed in the component creation view, this can help when identifying the parameter to be reference

Name	Type	Custom Name	Feature Number
⊞ Identification	Sub Form		
⊞ GPL Tuning	Sub Form		
⊞ Hydraulic Characterisation	Sub Form		
Diameter	Real		
Length	Real		
Number of Segments	Integer		
Real Data 1	Real	Real Data 1	1
Real Data 1	Real	Real Data 2	2
Real Data 1	Real	Real Data 3	3
Integer Data 1	Integer	Integer Data 1	1
Text Data	Text	Text Data 1	1
⊞ Materials	Sub Form		
Results On/Off	Option		

Figure 3 - N-Arm data form showing Feature Number

- The name of signals is now propagated to the UI making it easier to connect to the correct value
- Units are now set correctly in gauges and controllers connected to N-arms

Equal Area Junctions

Simcenter Flomaster 2301 adds new equal area T and Y junction components. These components are appropriate for use when the branch and through diameters are the same and use a curve rather than surface to define the loss coefficients. The use of curve rather than surface will reduce differences in loss coefficient when compared to Internal Flow Systems caused by interpolation of the surface.

Unit Result Drop Down

After a Steady State simulation it's now possible to change the display unit of a parameter in the results view.

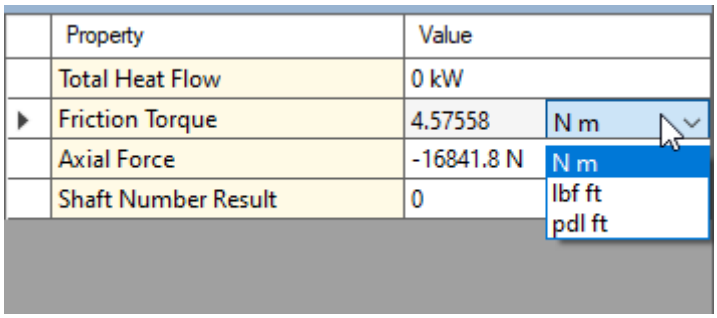

Figure 4 - Steady State Results Unit Drop Down

Project View Enhancements

The tree views in the Project View tab have been enhanced to allow multi select operations including:

- Deleting Multiple Systems
- Copying Multiple Systems
- Opening Multiple Systems

Faster generation of Fluids from NIST Refprop

In Simcenter Flomaster 2301 the generation of fluid surfaces from NIST Refprop fluids has been enhanced to reduce the time taken to build a new fluid.

For a detailed list of new features, refer to your product specific release notes manual or README file, available in the installed software tree or on Support Center.

Preview Features

Simcenter Flomaster 2301 includes the Preview Features listed below.

It should be noted that Preview Features are subject to the Beta Code Terms.

Multi-physics Pipe Enhancements

Simcenter Flomaster 2021.1 introduced a new pipe component called the Multi-Physics pipe. The Multi-Physics pipe uses particle tracking methods to enable modelling of sharp temperature or concentration front without numerical diffusion that can lead to a smearing of results and can be used with both Newtonian and Non-Newtonian incompressible fluids. This pipe is available to all users with a Simcenter Flomaster Fluid System license or higher in Simcenter Flomaster 2022.1.

Simcenter Flomaster 2301 includes additional features that can be optionally activated under a Preview Feature toggle. These enhancements extend the applicability of the component across different scenarios and are activated by the preview toggle.

- The capabilities of the Multi-Physics pipe have been extended to allow compressible flows using multi-fluid simulation
- The Multi-physics pipe has been enhanced to allow the modelling of air slugs between liquids passing along its length

If the preview feature is not enabled the enhanced modes will not be enabled.

Parametric Analysis Timeout

This preview feature enables a timeout to be set that will stop the running of a simulation in an experiment if the simulation hasn't completed within the specified time. The value is in seconds and set to zero if not required.

Simcenter Fluid Sharing

This preview feature allows fluids to be obtained from a shared Simcenter fluids database, once enabled this can be accessed from the Materials section of the Launchpad. The library used for fluid created is included with Simcenter Flomaster 2301 and no additional packages need to be installed.

Licensing

This release uses Mentor Standard Licensing (MSL) for the Siemens Advanced Licensing Technology (SALT) 1.5.0, mgcld vendor daemon and licenses.

SALT is a new Siemens licensing solution based on FLEXnet licensing technology. SALT 1.5.0 requires FLEXnet license server running at version 11.16.4.0 or higher. If you use server-based licenses, you will need to update the license server accordingly. Download the latest Siemens License Server Installer from Support Center:

`https://support.sw.siemens.com/en-US/product/1586485382`

If you are currently using the environment variable MGLS_LICENSE_FILE then you need to set a new environment variable SALT_LICENSE_SERVER with the same value. MGLS_LICENSE_FILE can remain set to support older versions.

For more information on SALT and Siemens License Server refer to Knowledge Base article MG612613 “Getting Started with Siemens Advanced Licensing Technology (SALT) and the Siemens License Server (SLS)”, Knowledge Base article MG612618 “Siemens Advanced Licensing Technology (SALT) Migration Guide for Mentor Products” on Support Center and new licensing documentation: Siemens Digital Industries Software License Server Installation Instructions and Siemens Digital Industries Software Licensing Manual for Mentor Products.

This is the first Simcenter Flomaster release not to include the License Server Installer package as part of the installation.

Authorization Codes

No changes to authorization codes are required for this release.

You can download your existing authorization codes from Support Center -> Account Center -> Licenses:

`account.sw.siemens.com/licenses`

For additional information on licensing, refer to the *Siemens Digital Industries Software Licensing Manual for Mentor Products*.

Product Transition

As previously mentioned Simcenter Flomaster 2301 succeeds Simcenter Flomaster 2210**.** FloMASTER V8.0 and onwards represented a substantial repackaging of the product compared with earlier, V7.x releases. If you are currently a Flowmaster V7 user, please contact your account team for further information (see support information below) on what is available Simcenter Flomaster 2210 and how you can migrate to it.

Supported Platforms

Simcenter Flomaster 2301 requirements:

Operating system support:

- Windows 10 build 1909, 20H2, 21H1, 21H2 - x64
- Windows 11 – X64

Simcenter Flomaster's Windows support policy can be view here – https://support.sw.siemens.com/knowledge-base/MG595757

Operating systems should include the latest Microsoft published updates.

- Microsoft .NET 7.0 or higher is required
- 5 GB available hard drive space for full installation
- Minimum screen resolution of 1280 x 1024 with normal font size selected and scaling set to 100% (this is the same as setting DPI to 96 pixels per inch).

Database server support:

- Microsoft SQL Server 2019
- Microsoft SQL Server 2017
- Microsoft SQL Server 2016 SP1
- Microsoft SQL Server 2014 SP2

Compatible releases

The following releases are compatible with Simcenter Flomaster 2301

- Simcenter FLOEFD 2020.2
- Simcenter Motorsolve 2020.1, 2020.2, 2021.1.
- Simcenter Amesim 2020.1, 2020.2, 2021.1, 2021.2, 2022.1, 2210
- COMOS – 10.3.3
- Active Workspace 5.3 with Team Center 13.3
- Simcenter 3D – The Simcenter 3D Flomaster Co-Simulation link will work with Simcenter 3D 2021.2 using the latest available Thermal-Flow service pack for Simcenter 3D 2021.2 - Simcenter3D_ThermalFlow_Jan-11-2022_2022.1.2_svn168686 or later.

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https://community.sw.siemens.com/s/topic/0TO4O000000IN0eWAG/simcenter-flomaster

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