Simcenter Flomaster Release Highlights

Software Version 2407
July 2024

SIEMENS

About Siemens Digital Industries Software

Siemens Digital Industries Software is a global leader in the growing field of product lifecycle management (PLM), manufacturing operations management (MOM), and electronic design automation (EDA) software, hardware, and services. Siemens works with more than 100,000 customers, leading the digitalization of their planning and manufacturing processes. At Siemens Digital Industries Software, we blur the boundaries between industry domains by integrating the virtual and physical, hardware and software, design and manufacturing worlds. With the rapid pace of innovation, digitalization is no longer tomorrow’s idea. We take what the future promises tomorrow and make it real for our customers today. Where today meets tomorrow. Our culture encourages creativity, welcomes fresh thinking and focuses on growth, so our people, our business, and our customers can achieve their full potential.

Support Center: support.sw.siemens.com
Send Feedback on Documentation: support.sw.siemens.com/doc_feedback_form

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

Scenario Manager

When building systems evaluating design options and initial operating conditions the configuration of input data can often require setting multiple parameters for each different setup. The new Scenario Management app introduced in Simcenter™ Flomaster™ 2407 allows the user to save these values to a named Scenario.

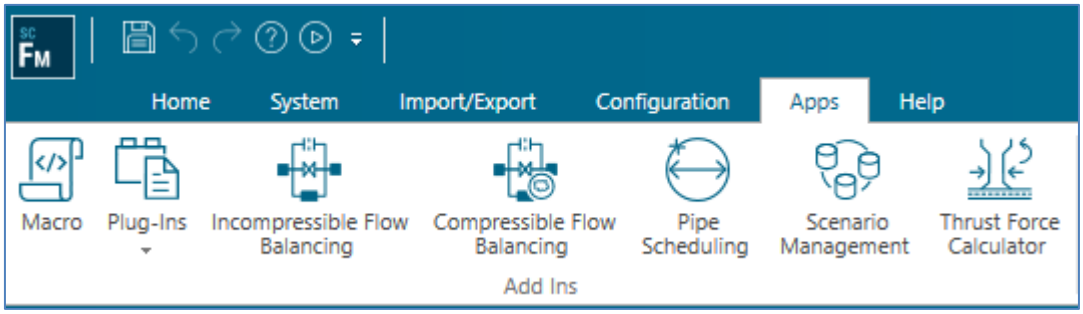

Figure 1 - Scenario Management on Apps Ribbon

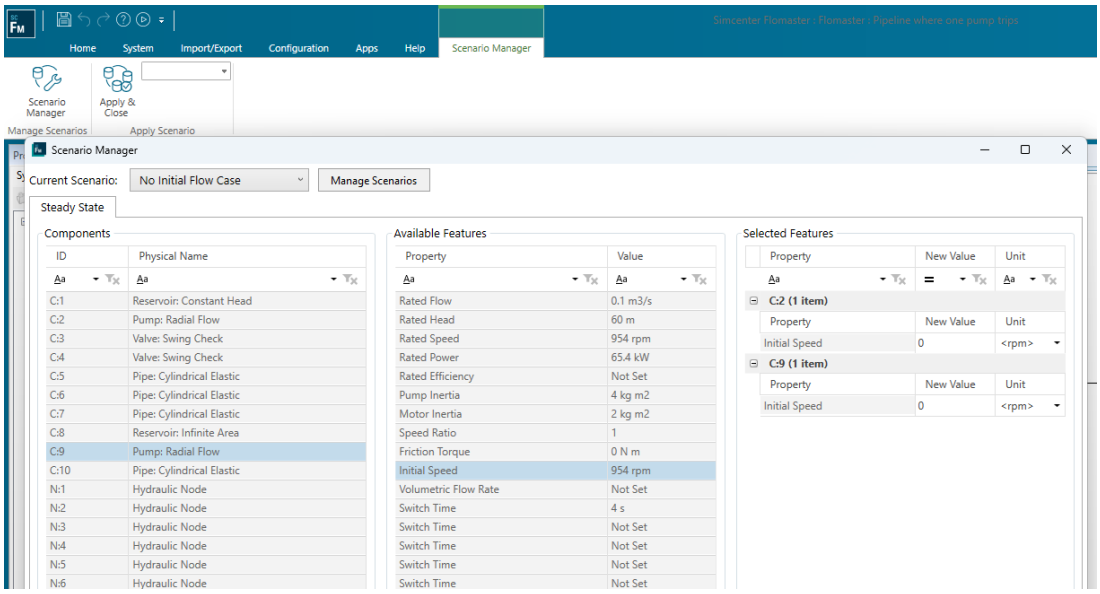

Figure 2 - Scenario Manager defining pump speeds as 0 rpm

In Simcenter Flomaster 2407 the Scenario Manager allows the user to:

- Select the numeric features they want to set
- Set the values of the features
- Save, delete, copy and rename scenarios
- Apply the values of the scenario to the system

By applying the input data with a single apply and close action the time to update the system is reduced while also minimizing data entry mistakes when updating multiple inputs.

Scenario Controller

The Scenario Controller allows for flexibility when controlling system components.

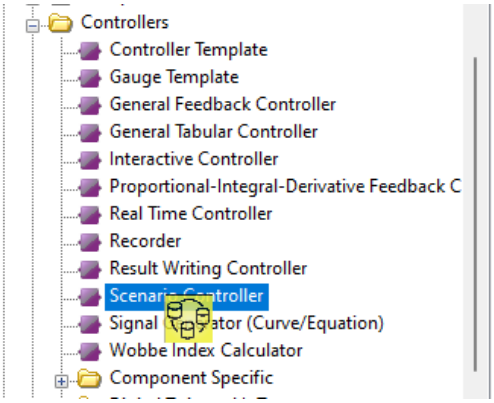

Figure 3 - Scenario Manager Controller in Catalogue

Property	Value
Scenario Controller	Sub Form...
Output Quantity	34. Rotational Speed
Output v Time (Curve)	Not Set
Output v Time (Tabular)	Sub Form...
Results On/Off	1. On

Figure 4 - Scenario Manager Data Form

It allows the use of either a curve vs time or using a Tabular Sub-form. The Tabular Sub-form allows the setting of as many data points as the simulation required with linear interpolation between the data points.

Modelling of Choking in Two-Phase Sharp-Edged Orifice

When modelling two-phase fluid systems choking within components can be an important factor when evaluating system performance. The 'Orifice: Sharp-edged – Conical' and 'Orifice: Sharp-edged – Flat' have been enhanced to including the modelling of choking when used in two-phase flow paths in addition to the existing choking modelling in single phase gas systems.

Orifice and Piccolo Tube Enhancements

The Orifice and Piccolo tube models have been enhanced to improve modelling of compressible flows where pressure ratio (Pt2/Pt1) is less than the critical pressure ratio. This follows the approach previously used in the Chamfered orifice model.

P&ID Import Enhancements

The ability to create systems based on XML files created by P&ID diagramming tools such as NX™ Diagramming was added to Simcenter Flomaster 2021.1. Responding to customer feedback the following enhancements have been made.

Wild Carding in Schema Mappings

To map a diagramming component to a Simcenter Flomaster component a mapping schema is used. In Simcenter Flomaster 2407 wildcards can now be used in specifying mappings and are indicated using the '*' character. Wildcards can be used either at the start, end or both ends of the search text.

Where a Wildcard would conflict with a non-wildcarded mapping the non-wildcard mapping will be used. In the event of conflicting Wildcard mappings, the mapping with the longer string will be used.

Import of identifying fields on import from NX Diagraming

When working with the system model it can often be useful to be able to identify the relationship between the components in the Simcenter Flomaster model and the items on the diagram in NX. On import the following mappings will be used to set the values of the features on the 'Identification' sub-form of the components.

- Piperun TAG_ID - Group
- Branch TAG_ID - Type
- Part Piduid - Title

Import and Export of P&ID, PCF & IDF Mapping Schema

CAD schemas are used in Simcenter Flomaster to define which Simcenter Flomaster component is used for a CAD type in the import of P&ID, PCF and IDF files. These schemas can now be exported and imported between databases.

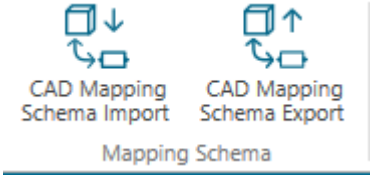

Figure 5 - Mapping Schema Import and Export

This will allow for reuse, sharing and archive of schemas between users and databases reducing the potential for mis mapping vs an agreed schema. The import and export if accessed from the 'Configuration' ribbon.

Controller 1D Heat Transfer Boundary Enhancements

Simcenter Flomaster 2404 introduced the '1D Heat Transfer Rate Profile – Controlled' and '1D Temperature Profile – Controlled' components allowing the specifying of a heat flux and temperature as a fixed value along the length of a 1D HT profile. In Simcenter Flomaster 2407 the signal connection has been enhanced to allow the value to vary along the length of the profile using an array signal.

This would allow a control system or external FMI source to vary the value along the length in response to changing boundary conditions.

Custom FMI Terminals

Version 3 of the Functional Mock-up Interface (FMI) specification defines a Terminal as a semantic group of variables and as such allows for the grouping of related inputs and outputs.

Terminals have been previously used by Siemens supplied components such as the 'FMI Thermal Convective Terminal'. In Simcenter Flomaster 2407 users can now create their own terminals. To do this the user would create a new composite component using Flomaster components and FMI boundaries, assign the 'Terminal Description Input' and then create a file describing the terminal.

When a Version 3 FMU exported from Simcenter Flomaster 2407 is imported into a FMI Version 3 compliant tool capable of handling FMI Terminals, the terminal should appear as a single connection rather than as a set of individual inputs and outputs. This can help to connect FMUs together and reduce potential connection errors.

Figure 6 - Sample Terminal Definition

This will allow the user to define terminals that match their input and output requirements. More information can be found in the help.

Warning of Versions of Old Performance Data

A warning will now be written if an old version of performance data is used in a simulation, this will identify the component and the data feature.

Teamcenter for Simulation Enhancements

Teamcenter™ for Simulation allows for the storage of Simcenter Flomaster systems within the Teamcenter environment with links between Flomaster Input\Output parameters and Teamcenter parameters. In Simcenter Flomaster 2407 the following enhancements have been made

Support for shared databases and concurrent user operation.

When opening a system using Teamcenter for Simulation it will now be unpacked into a unique folder based on the time\date that the user instantiated Simcenter Flomaster. This will ensure that if the user is using a shared database on a central server that when the system is closed, and the tidy up operation is performed it will only affect that users data and leave other users data in place until they close their system

Creation of new parameters base on system unpack

If the Teamcenter output has additional parameters not in the existing system they will now be created as additional input parameters in Simcenter Flomaster for assignment to components in the system.

Preview Features

Simcenter Flomaster 2407 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 2404 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.

Cavity Face Geometry Reader

This preview feature activates a new wizard on the Simcenter 3D boundary that reads the geometry of the faces in a cavity mapped to the connected 1D HT boundary.

Licensing

This release uses Mentor Standard Licensing (MSL) for the Siemens Advanced Licensing Technology (SALT) 2.2.2.0, mgcld vendor daemon and licenses. This is the standard licensing option on the License tab in Launchpad.

SALT is a new Siemens licensing solution based on FLEXnet licensing technology. SALT 2.2.2.0 requires FLEXnet license server running at version 11.19.0.1 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, Siemens Digital Industries Software Licensing Manual for Siemens EDA Products and Siemens Digital Industries Software Licensing Manual for PLM Products.

Authorization Codes

No changes to authorization codes are required for this release.

You can download your existing authorization codes. 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*.

Important Notes

Simcenter 3D Export

In this release the export to Simcenter 3D has been removed. It has been replaced by new functionality using the FMI Thermal Convective Terminal component and the equivalent links now uses FMU export.

Restart Simulation: Planned removal (2410)

The ‘Restart’ simulation type and associated functionality is deprecated in Simcenter Flomaster 2310, to be retired in Simcenter 2410.

Pack Files – Removal of Support for unpacking of pack files created using Simcenter Flomaster 2020.1 and Earlier (2410)

It will not be possible to unpack Pack files created using Simcenter Flomaster 2020.1 or earlier that have not been opened and repacked in a later version up to, but not including, the Simcenter Flomaster 2410 release.

It will still be possible to unpack pack files created using Simcenter Flomaster 2020.2 and later.

This is due to the need to retire the remaining .NET Framework components from our software in the 2410 release.

FLOEFD One Simulation N-Arm Component (2410)

The ability to create a Simcenter FLOEFD™ One Simulation N-Arm Component will be removed in Simcenter Flomaster 2410. To achieve a similar functionality a FMU created by Simcenter FLOEFD can be imported.

Product Transition

As previously mentioned Simcenter Flomaster 2407 succeeds Simcenter Flomaster 2404**.** 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 in Simcenter Flomaster 2404 and how you can migrate to it.

Supported Platforms

Simcenter Flomaster 2407 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 8.0 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 2022
- Microsoft SQL Server 2019
- Microsoft SQL Server 2017

Compatible releases

The following releases are compatible with Simcenter Flomaster 2407

- Simcenter FLOEFD
    - CAD to Flomaster – 2312
    - FLOEFD N-Arm Component – 2312
    - FLOEFD One Simulation - 2020.2
- Simcenter Motorsolve™ 2020.1, 2020.2, 2021.1.
- Simcenter E-Machine Design™ 2312
- Simcenter Amesim™ 2021.1, 2021.2, 2022.1, 2210, 2304, 2310, 2404
- 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.

Support Information

A support contract with Siemens is a valuable investment in your organization's success. With a support contract, you have 24/7 access to the comprehensive and personalized Support Center portal.

Support Center features an extensive knowledge base to quickly troubleshoot issues by product and version. You can also download the latest releases, access the most up-to-date documentation, and submit a support case through a streamlined process.

support.sw.siemens.com/

If your site is under a current support contract but you do not have a Support Center login, register here:

support.sw.siemens.com/register

Simcenter Community

Join Simcenter community of experts to ask questions, solve issues, help others, and submit product ideas.

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

Beta Code

Beta Code.

License: This Software includes code of preview features for experimental testing and evaluation (“Beta Code”). If Customer activates this Beta Code features by accepting these terms, Siemens Industry Software Inc. (“SISW”) grants to Customer a temporary, nontransferable, nonexclusive license for experimental use to test and evaluate the Beta Code. SISW may, at its sole discretion, terminate this license at any time and/or not release the Beta Code commercially in any form. Beta Code may not be used for production purposes.

Feedback: Customer agrees to evaluate and test the Beta Code without compensation and may provide SISW with feedback. If Customer provides any ideas regarding the Beta Code, including suggestions for changes or enhancements, (collectively “Feedback”) in the course of using or evaluating the Beta Code, Customer agrees that such Feedback may be used by SISW without condition or restriction.

DISCLAIMER: Beta Code is provided “AS IS”, with all faults and with:

(A) NO WARRANTY of any kind, express, implied or statutory, including any implied warranties of merchantability or fitness for a particular purpose, which SISW disclaims to the maximum extent permitted by applicable law.

(B) NO INDEMNIFICATION for infringement of intellectual property rights; and

(C) NO MAINTENANCE services.