

Capability: Design & Modelling

Thermo-fluid system design and analysis

Features

- Steady state and transient system simulation analysis
- Incompressible, Compressible and AC fluid modelling
- Intuitive graphical user interface
- Fast and intelligent modelling tools
- In-built library of components and materials
- Custom & composite component creation

Benefits

- Improve thermo-fluid system design from day one, before any CAD or 3D data is available
- Reduce prototyping costs by overcoming problems at the concept stage
- Improve productivity by developing bespoke component catalogues

Overview

The ability to design and simulate fluid systems early in the development process, from the feasibility and concept stages, is key to saving time and cost later in the development cycle. With the ability to quickly simulate complex thermo-fluid systems and evaluate 'what if' scenarios to understand system sensitivity, optimisation can be brought forward to accelerate the design process.

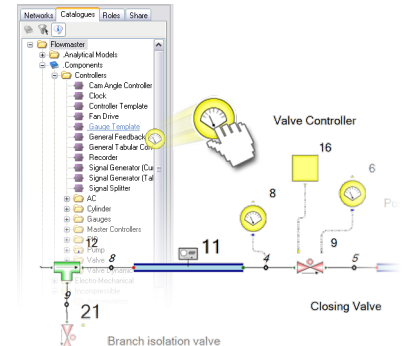
Flowmaster V7 users can create models of **incompressible** and **compressible** systems using components that are underpinned by empirical flow data. Users can investigate the temperatures, pressures and flow rates for a comprehensive range of operating conditions including: **steady state, transient, heat transfer and balanced flow**.

The functionality in Flowmaster V7 has been developed to provide benefits to the user throughout the development process.

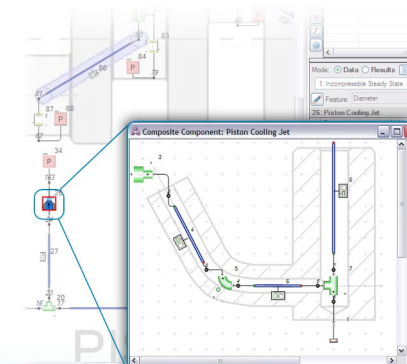
Concept Phase

At the concept phase Flowmaster V7 ensures that users never have to start with a 'blank piece of paper'. **Over 300 supplied components** for model pumps, valves, pipes etc. mean that a simple system model to investigate different scenarios can be created in minutes. The supplied components are underpinned by empirical flow data including loss data from **'Internal Flow Systems'** by **DS Miller** and geometric heat exchanger data from **KLAN**.

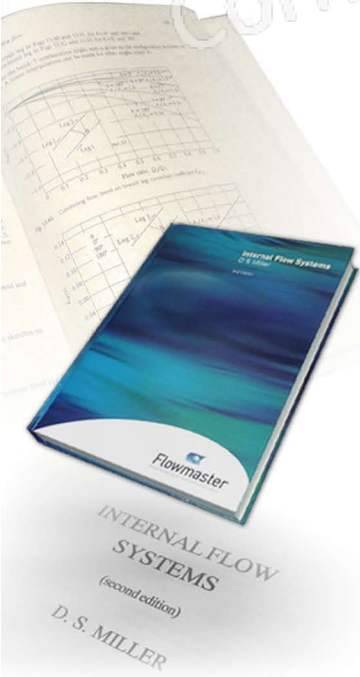
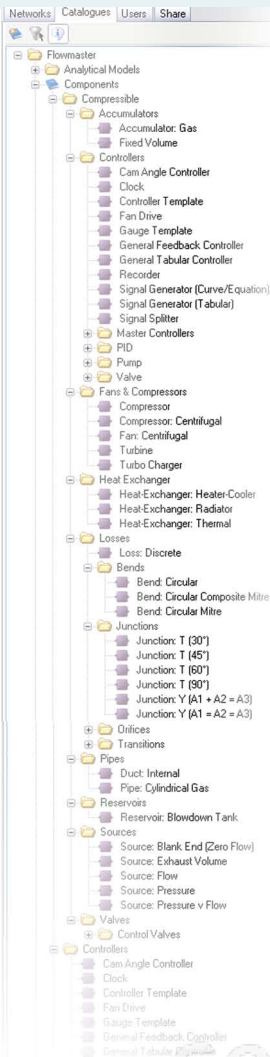
Flowmaster V7 is a **scalable** application which enables users to save commonly used sub-systems in order to standardise modelling methods within an organisation or simply accelerate the design process.



Fast 'Drag and Drop' Modelling from built-in component libraries



Save regularly used sub-systems as composite components



Library of component models underpinned by empirical data from research carried out by DS Miller

Unlike 3D CFD tools, Flowmaster V7 requires minimal geometric data allowing users to conceptualise design alternatives before 3D data is available. The design process is further accelerated as new users become productive quickly using the **intuitive graphical user interface** and **smart modelling** tools which prompts users on component connections and indicates data required to run each simulation type.

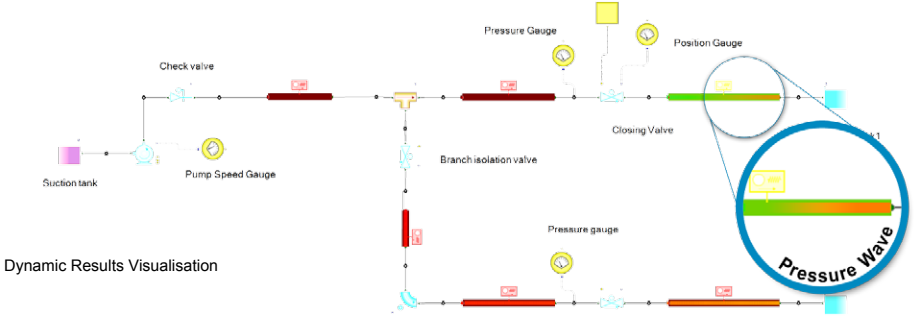
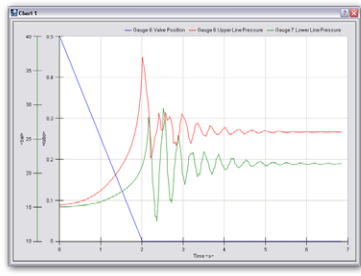
Design Phase

Once the feasibility of a system has been proven, the detailed design phase commences. Component sizing and selection begins to find the most appropriate solution.

Within Flowmaster V7 users can create **custom components** to model bespoke components or those of suppliers. They can be saved in specific **component catalogues** to make them available to those who have access. The **component template** capability makes it easy for users to quickly exchange the same type of components from different suppliers to see which ones give the best overall system performance.

Using a central Flowmaster V7 Database, multiple users can **collaborate** on the same project, in defined project roles. For each simulation the input data and systems configuration is recorded with the simulation results allowing users to review and 'roll back' to any previous design iteration.

Both simulation and input results can be compared in Flowmaster V7. **Dynamic result visualisation** tools include charts and component colouration. Advanced post-processing tools include a **pipe profiling tool**, that gives a visual illustration of the pressure changes through pipes, and **Frequency Domain post-processing** creating Frequency and Power Spectrums.



Component Colouration