3S SIMULIA

3DEXPERIENCE®

FLUID DYNAMICS ENGINEER
3DEXPERIENCE ROLE

HVAC: Front Mode

PERFORM ROUTINE FLUID FLOW AND CONJUGATE HEAT TRANSFER CALCULATIONS TO GUIDE DESIGN IMPROVEMENTS, WHILE EXPLORING INNOVATIVE DESIGN CONCEPTS

With Fluid Dynamics Engineer, any designers and design engineers can assess product behavior for each design iteration to improve product performance and reduce time and cost of product development process.

Fluid Dynamics Engineer provides designers and design engineers the ability to validate fluid and thermal performance for internal/ external flows and conjugate heat transfer problems. With a CAD-enabled CFD approach, Fluid Dynamics Engineer enables users to quickly explore 100s of design variations while concurrently improving product performance based on optimal flow distribution, efficient thermal management, minimal pressure losses etc. Fluid Dynamics Engineer leverages industry standard RANS (Reynolds Averaged Navier-Stokes) based finite volume Computational Fluid Dynamics (CFD) technology with an integrated (CAD+CFD) and fully guided user experience tailored for designers to perform end-to-end product design efficiently on a single collaborative environment of **3D**EXPERIENCE® platform.

3S DASSAULT SYSTEMES

Key Capabilities

There are two key components to Fluid Dynamics Engineer which capture the CFD work flow processes: Fluid Model Creation and Fluid Scenario Creation.

- Fluid Model Creation allows the user to easily build high-fidelity meshes for fluid flow calculations, which accurately capture boundary layers and automatically extract the fluid domain, thus reducing the need for most manual preparation.

- Fluid Scenario Creation allows the user to define the fluid properties and the physics/boundary conditions that define the simulation scenario.
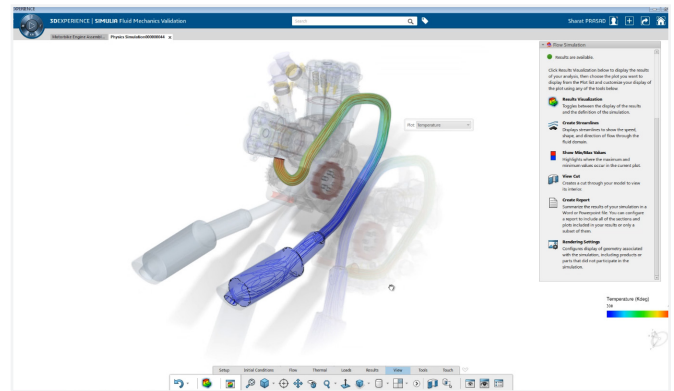
Role Capabilities

- Steady state and transient flows

- Laminar and turbulent flows.

- Internal and external steady state fluid flow with automatically selected turbulence model Advanced body-fitted meshing capability made easy-to-use with automatic Hex-Dominant Mesh (HDM) enabling users to accurately capture flow over complex geometric surfaces.

- All speed solvers

- Incompressible and compressible flows

- Subsonic, transonic and supersonic

- Newtonian and non- Newtonian flows

- Multispecies modeling

- Free surface flows (VOF)

- Native conjugate heat transfer

- Surface-to-surface and Solar Radiation

- Human thermal comfort model

- Joule heating, thin film modeling (de-mist, de-fog)

- Fans and baffles

- Porous Media, Multiple rotating frames (MRF

Capabilities of the 3DEXPERIENCE Platform

With its growing solution portfolio and secure cloud technology, the **3D**EXPERIENCE platform enables enterprises to manage all facets of the product development process while reducing infrastructure costs, IT overhead, software maintenance and complexity. All platform solutions work together seamlessly to facilitate data management, sharing, and collaboration across your entire business ecosystem. Social Business Analyst takes advantage of the following platform capabilities:

- Securely access and share all content and analytics from a centralized, secure location in the cloud from any device. Quickly find and filter information with semantic and smart search.

- Set up tailored dashboards to aggregate essential product data and key performance indicators.

- Easily create social-media-style public or private communities to share and collaborate on ideas and projects, and publish articles and customer feedback analyses.

- Organize your knowledge base, terminology and glossary database in wiki page structure.

- Use market insight and unstructured collaboration to fuel the product definition process and define groundbreaking product roadmaps.

- Engage with your colleagues in real time using conversations, audio and video calls.

Our **3D**EXPERIENCE® platform powers our brand applications, serving 11 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3D**EXPERIENCE Company, is a catalyst for human progress. We provide business and people with collaborative virtual environments to imagine sustainable innovations. By creating 'virtual experience twins' of the real world with our **3D**EXPERIENCE platform and applications, our customers push the boundaries of innovation, learning and production.

Dassault Systèmes' 20,000 employees are bringing value to more than 270,000 customers of all sizes, in all industries, in more than 140 countries. For more information, visit **www.3ds.com**.

3DEXPERIENCE®

DASSAULT SYSTEMES | The **3D**EXPERIENCE® Company