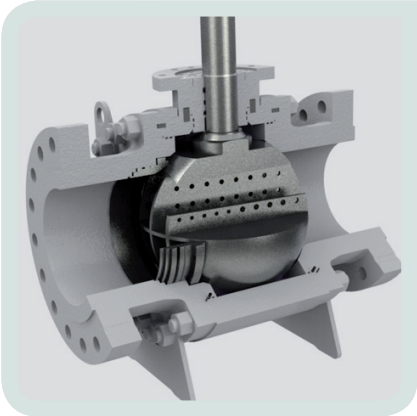
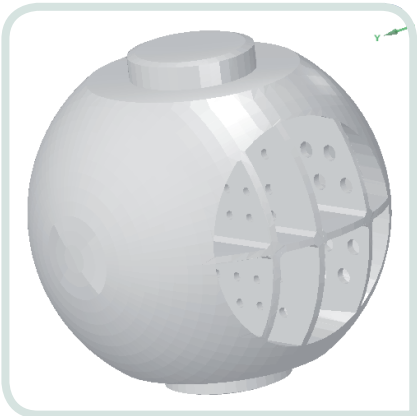
KARALIT
Simplicity without compromise



KARALIT CFD INTERNAL FLOWS IN VALVE APPLICATIONS.

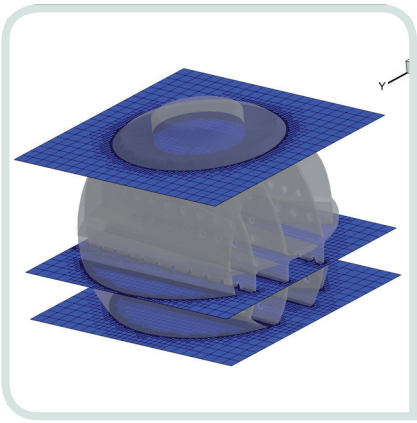


Courtesy of Petrolvalves

THE VALUE OF CFD FLOW ANALYSIS.

Valves are used in a variety of engineering disciplines, including aerospace, automotive, oil and gas transportation, medical and others. In these applications, valve flow characteristics and the induced torque on the disc are key performance parameters. The required operational torque to control and operate a butterfly valve safely is strongly dependent on the resultant force and torque on the disc from the fluid.

Detailed CFD flow analysis provides insights into the performance and operation of parts and assemblies. Often in design and safety/assurance analysis, the time and costs for obtaining detailed calculations and results is at a premium, placing a high value on tools that can provide efficiency and fast turnaround.

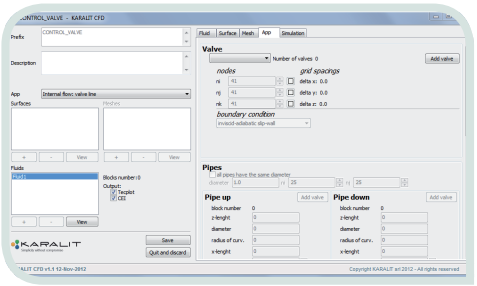


Courtesy of Petrolvalves

FAST SETUP WITH NO PREMESHING.

Using the power of the Immersed Boundary (IB) method in KARALIT, valve model geometry (STL format) is directly immersed into a background Cartesian grid. Preprocessing takes just seconds, as the user does not have to deal with time-consuming mesh generation.

In the adjacent picture, an example of the full automatic local grid refinement (LGR) of KARALIT CFD with a hexahedral mesh is demonstrated. This facility allows the user to ensure that all relevant geometrical details of the valve are taken in to account, thereby preserving good computational accuracy with a manageable overall grid size.



EASY SETUP THROUGH THE USE OF APPS.

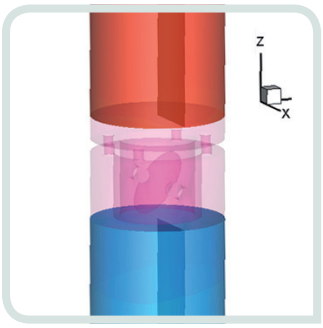
Case setup is further simplified by use of a KARALIT customized app, in this case the Valve app. Enter the key values - such as the position of the valve, diameter and length of the connecting pipes, and the nature of the wall boundary conditions, the fluid properties and flow regime - and you're ready for simulation.

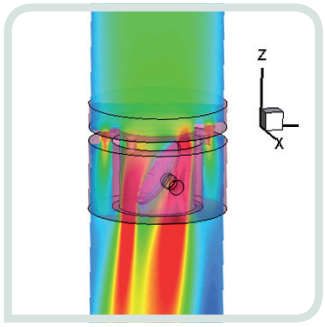
This highly parametric approach enables engineers to set up calculations in a straightforward and easy manner within the natural design workflow.

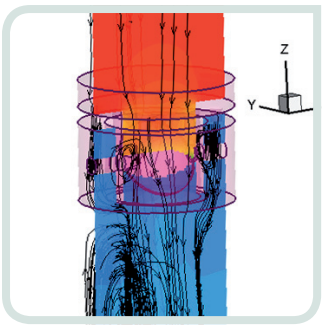
SARDEGNA RICERCHE
La Sardegna cresce con l'Europa
Progetto cofinanziato dall'Unione Europea
FESR Fondo Europeo di Sviluppo Regionale

RESULTS VISUALIZATION.

The results of simulations can be quickly visualized in typical external visualization software tools and the shortly to come KARALIT CFD embedded post processor, activated directly from within the KARALIT CFD application at the touch of a button. Velocity distribution contours and streamlines for a Variable Orifice Remosa valve, as outputs of the analyses are presented here. Typical performance parameters, characterising the valve component are also accessible from the software.







Courtesy of Remosa SPA (an IMI company)

Immersed Boundary (IB) method for:

- Saves up to 99% in user time by eliminating the need for pre-meshing
- Faster turnaround time to reach a solution
- Reduces manual preprocessing work
- Increases accuracy by solving on rectangular grids
- Focuses engineering resources on analysis, not preprocessing

Customized apps:

- Fast case setup
- Minimum effort to set up complex CFD simulations
- Easy setup for parametric analyses
- Ideal simulation tool for moving objects
- Ultimate engineering "what-if" design tool

Value-based pricing:

- Pay nothing extra to add hardware
- Unlimited parallel processing
- All inclusive
- Easy budgeting

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