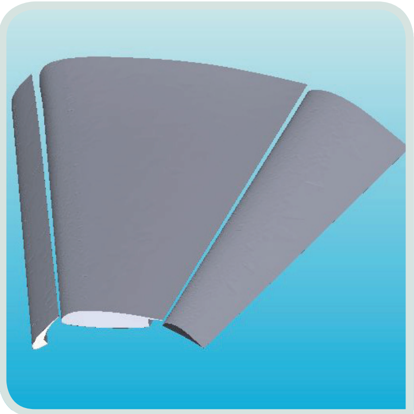
Simplicity without compromise

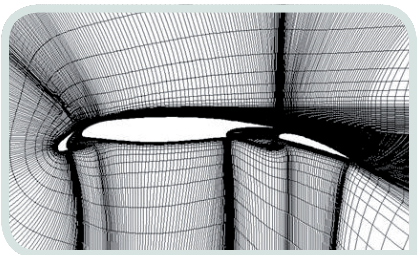
KARALIT CFD FOR AEROSPACE EXTERNAL AERODYNAMIC.

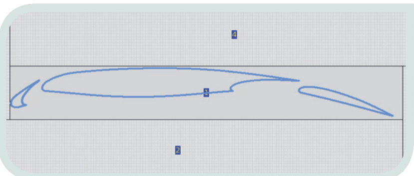


CASE DESCRIPTION: AGARD TEST CASE ON A 3 ELEMENTS WING.

High lift wings, like the NASA Trapped Wing presented here, are typically used by modern jets in military and commercial applications. Slats and flaps provide maneuverability and efficiency at lower speeds, such as during landings.

This AGARD 3-element wing application concentrates on a slat and a single-sloled flap.



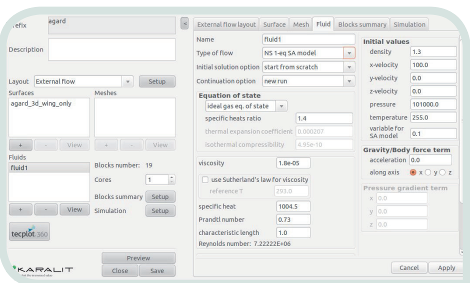


FAST SETUP WITH NO PRE-MESHING.

Using the power of the Immersed Boundary (IB) method in KARALIT, the wing 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.

This application uses a 22-degree angle of alack and a 0.2 flow Mach number.

2D view of the 3-element wing immersion with KARALIT CFD vs. a standard CFD mesh generation approach.



EASY SETUP THROUGH THE USE OF APPS.

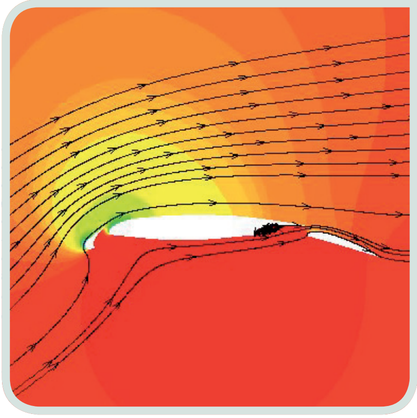
Case setup is further simplified by use of a KARALIT customized app, in this case the External Flow app. Only a few values are needed to set up boundary conditions.

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

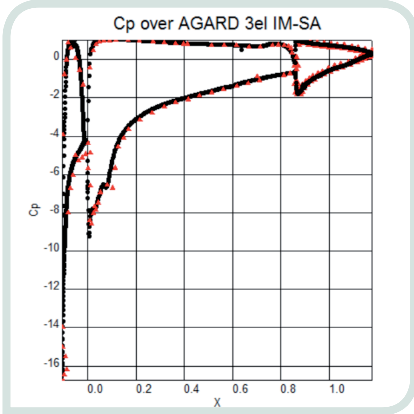
SARDEGNA RICERCHE
La Sardegna cresce con l'Europa
Progetto cofinanziato dall'Unione Europea
FESR Fondo Europeo di Sviluppo Regionale

RESULTS VISUALIZATION.

The results of simulations can be quickly visualized with popular software such as Tecplot and EnSight, activated directly from within KARALIT CFD at the touch of a button.



Flow streamlines and contours of pressure distribution around the AGARD profile, highlighting flow acceleration areas (lel).



Cp plot of experimental vs. calculated data (right).

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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

Contact your sales office or **sales@karalit.com**
Headquarter: Pula (CA), Italy - Tel: +39 070 278202 - info@karalit.com - **www.karalit.com**

Italy Office: Milan	**UK Office: London**	**Germany Office: Frankfurt**	**USA**
Tel: +39 02 87188454	Tel: +44 (0) 8006126912	Tel: +49 (69) 20163578	Tel: +1 855 KARALIT (527 2548)