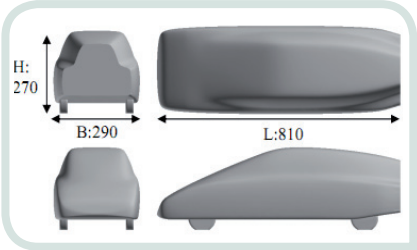
KARALIT
Simplicity without compromise

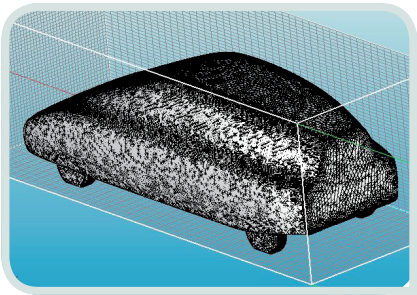
KARALIT CFD FOR AUTOMOTIVE EXTERNAL AERODYNAMIC.



CASE DESCRIPTION: CAR BODY EXTERNAL AERODYNAMICS.

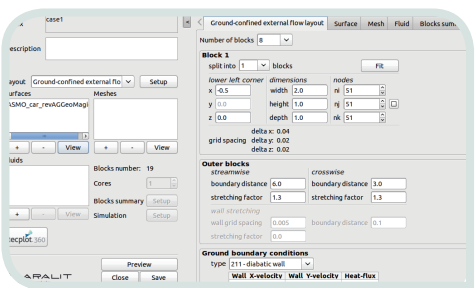
This model was created approximately 10 years ago in the Daimler-Benz research department. It was designed for two purposes: to investigate if a body with very low drag could be created, and to test CFD codes on a neutral car body not related to an actual Mercedes.

The model includes a square rear back, smooth surfaces, boat tailing, and an underbody diffuser. There is no pressure-induced boundary layer separationon.



FAST SETUP WITH NO PRE-MESHING.

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



EASY SETUP THROUGH THE USE OF APPS.

Case setup is further simplified by use of a KARALIT customized app, in this case the Ground-Confined 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
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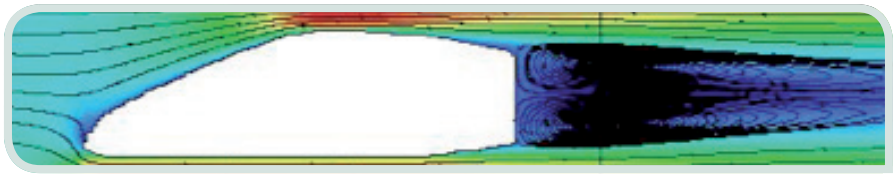
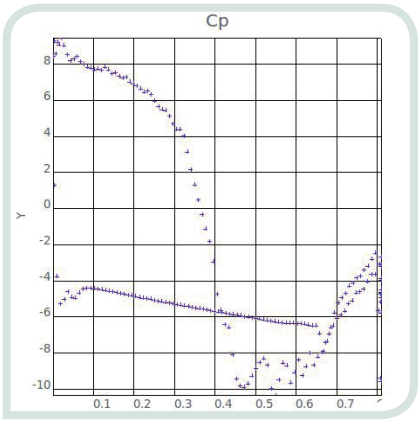
RESULTS VISUALIZATION.

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 U- velocity, depicting flow separation at the rear of the model on a symmetry plane.

Pressure distribution at symmetry plane.



Cp along x direction of model.

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
Tel: +39 02 87188454

UK Office: London
Tel: +44 (0) 8006126912

Germany Office: Frankfurt
Tel: +49 (69) 20163578

USA
Tel: +1 855 KARALIT (527 2548)

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