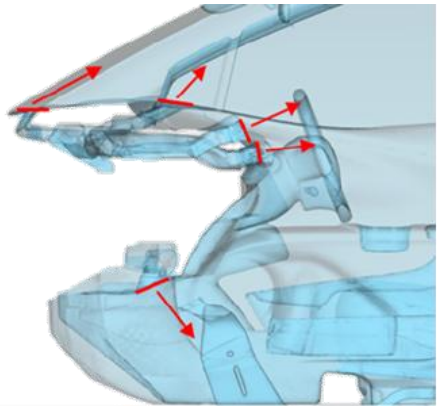
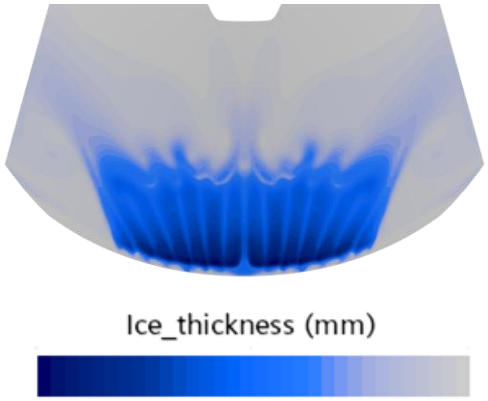
1D-CFD hypercar windshield defrosting performance

- Supporting companies: **GammaTech Engineering** (GTE) and **BUGATTI-RIMAC** (BR)

- Start date: February/March 2025
- Project duration: 6÷8 months
- Site:
  - GTE's offices in Turin
- Compensations: Meals
- Motivations and Project Scope
  - Development of a 1D methodology to model the defrosting performance of a hypercar's HVAC system in GT-SUITE.
  - Sufficient defrosting performances in cold-start conditions are mandatory to meet homologation requirements. A predictive 1D simulation tool can help in driving the HVAC system development, reducing time-to-market and ensuring good cabin comfort levels.





- Thesis proposal:

  The student will develop a methodology for windshield defrosting modeling in the 1D-CFD simulation software GT-SUITE, including:
  - Cabin model building (including HVAC ducts and outlet vents)
  - Thermal mass network building, representing the windshield-ice system
  - Implementation of HTC maps from 3D-CFD simulations to correctly represent the air/glass heat exchange
  - Correlation of defrosting performance against 3D-CFD or experimental test data (if available) and validation of the methodology on different windshield/vents configurations