GASPAR GARCIA SANCHIS

CFD Engineer · OpenFOAM and Ansys Fluent · Heat Transfer, Multiphase and External Flow · Checked Against Measurement

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PERSONAL STATEMENT

Aerospace engineer with an MSc in Advanced Motorsport Engineering who runs CFD from geometry to report in OpenFOAM and Ansys Fluent, on Linux and in parallel, and compares the results with measured data wherever it exists. My MSc thesis was a thermal CFD problem in Fluent, a radiator modelled as a porous medium with the energy equation solved; in my own OpenFOAM work I have run conjugate heat transfer on a micro-channel heat sink, and convective heat transfer on an impinging jet and a natural convection cavity, compared with published experiments, as well as free surface and cavitating multiphase flow. At Pall Aerospace I correlated intake CFD with wind tunnel and pressure tap measurements and presented the findings to customers. I quantify numerical uncertainty with grid studies and state what a result can and cannot support.

EXPERIENCE

Fixender and TecnifAI, Founder and Developer Mar 2026 – Present

- Built Fixender, a web marketplace on Next.js and Supabase, and TecnifAI, an AI agent system for tradespeople, including a Spanish voice and WhatsApp agent prototype with a second model as a guard, tested on 60 offline scenarios.
- Selected for Lanzadera, a privately funded accelerator in Valencia.
- Applied the automation and checking to engineering: Claude Code agents that review an OpenFOAM case before a run and refuse verification claims the data cannot support, and fail closed convergence and quality gates on my CFD cases, from mesh checks to force coefficient drift.

Cadillac F1 Team, Graduate Surface Engineer Sep 2025 – Mar 2026

Formula 1 Team (2026 car programme)

- Contributed to the CFD engineers' sensitivity studies with candidate geometries, and to the team's meshing with geometry simplification, taking part in the studies of how those simplifications changed the CFD results.
- Produced surface definitions in 3DX with a clean feature tree for aerodynamic components on the 2026 car within the front wing team, converting the aerodynamicists' sketches into surfaces inside the packaging and legality constraints, built to be modified easily for constant iteration; discussed each part with its aerodynamicist to meet the aero intent.
- Checked every geometry before release: curvature comb checks for non tangencies, a robust build check on parametric models, and legality with the team's internal tools against the 2026 FIA Technical Regulations, inside the team's manufacturing tolerance.
- Built a reusable Gurney flap as a 3DX power copy, exposing position, height, thickness, span and tip shape, so aerodynamicists made each configuration themselves in about 15 minutes instead of around an hour of designer time, under the Aerodynamic Testing Restrictions.

ASR Team, Race Car Engineer (Hillclimb) Jun 2024 – Jun 2025

- Designed and simulated the diffuser in Ansys Fluent, with a MATLAB scripted aero map over angle of attack, pitch and yaw; the design gave a 40 % gain in diffuser L/D in CFD against the previous designs, and the team won the Valencian Championship.
- Observed the high angle diffuser separating without the rear wing and reattaching with it; checked the flow on the car with paraffin flow vis, then wool tufts filmed by an underbody camera on runs at constant radius and speed.

Pall Aerospace, Undergraduate Design Engineer (Placement) Aug 2022 – Jul 2023

Aerospace filtration, tilt rotor engine intake

- Ran Ansys Fluent CFD to optimise the airflow of an engine intake filtration system and correlated it with a flow rig bench test, wind tunnel tests and an intake duct I instrumented with pressure taps, comparing measured pressure drop with the CFD in MATLAB.
- Wrote technical reports and presented the findings to customers; produced CATIA V5 drawings with GD&T to BS 8888.
- Worked between the Portsmouth design office and the Redruth factory, talking to the technicians about how they work and the machines they use, to understand manufacturing constraints when designing parts.

EDUCATION

MSc Advanced Motorsport Engineering, Cranfield University Oct 2024 – Sep 2025

- **Thesis:** *Passive thermal control system for a radiator duct*, in Ansys Fluent with k-omega and the energy equation solved, the radiator a porous medium carrying its thermal exchange characteristics; the Gurney flap length swept with a Fluent journal until several falls in exit mass flow rate marked the optimum.
- **Modules:** Aerodynamics, CFD for Motorsport, Vehicle Dynamics, Powertrains; wind tunnel runs with my team, including an aero map of Cranfield's 35 % scale DrivAer model.

BEng (Hons) Aerospace Engineering, Brunel University London Sep 2020 – May 2024

- **Modules:** Thermodynamics and Heat Transfer, Aerodynamics and CFD, Applied Aerodynamics, Aircraft Propulsion.
- **Dissertation:** CFD design in Ansys of the Formula Student multi element diffuser, a 20 % gain in diffuser L/D in CFD against the previous designs.

PROJECTS

OpenFOAM CFD Projects, gaspar-cfd-portfolio.pages.dev Self directed, 2026

- **Conjugate heat transfer:** the Qu and Mudawar micro-channel heat sink in chtMultiRegionSimpleFoam, run on four grids to a temperature drift stop rule, then a least squares grid study (Eca and Hoekstra): numerical uncertainty of 0.5 K at the first thermocouple, with the thermocouple whose grids did not converge reported rather than quoted.
- **Impinging jet heat transfer:** inflow checked against hot-wire data before any heat transfer number; k omega SST against a transition model: wall jet Nusselt number within −4.3 to +0.4 % of the experiment, stagnation over-predicted by 13 %, and the transition model did not recover the secondary peak, so I kept the simpler model.
- **Natural convection:** a tall heated cavity in buoyantSimpleFoam, resolved to the wall on four grids; mean Nusselt number 20 % below the experiment, reported as an open gap, and an anomaly found in one of the experimental profiles.
- **Multiphase:** free surface resistance of the DTC container ship hull with interFoam, within about 6 % of the towing tank value; a NACA 66 hydrofoil study in progress, where I diagnosed and fixed reversed flow at the outlet in the wetted runs and made a first cavitating run with interPhaseChangeFoam.
- **Turbulence modelling:** Ahmed body, five turbulence models against wind tunnel drag: realizable k epsilon captured the separation on the 35 degree slant, k omega SST was the most accurate where the geometry fixes it.
- **Workflow:** one scripted process from STL to report in Python and bash, built with an AI coding agent: snappyHexMesh and blockMesh, MPI runs up to 180 processes on rented Linux machines, y+ and checkMesh gates and 13 automated convergence gates, each proven able to fail, and a four grid least squares GCI tool.

Formula Student Diffuser, Brunel BEng dissertation

- Used the rear wing upwash to run the multi element diffuser at a larger angle of attack, with the gain measured as diffuser L/D in CFD over straight line, curved flow and pitch conditions.
- Built the diffuser in prepreg carbon, vacuum bagged and oven cured, and studied it with the rear wing and bodywork students.

SKILLS

OpenFOAM: chtMultiRegionSimpleFoam, buoyantSimpleFoam, interFoam, interPhaseChangeFoam, simpleFoam; snappyHexMesh, blockMesh, checkMesh; k omega SST, SST-LM transition, realizable k epsilon; MPI runs on Linux; ParaView

Ansys: Fluent (energy equation, porous media, journals), Fluent Meshing

Verification and validation: Richardson extrapolation and GCI, least squares grid studies, a blind prediction, correlation with wind tunnel, pressure tap and thermocouple data

Programming and data: Python, bash, git, MATLAB (aero maps, pressure data), Claude Code

CAD: CATIA 3DEXPERIENCE and V5, SolidWorks, Fusion 360

Languages: Spanish (native), English (fluent), Italian (intermediate)

ACHIEVEMENTS

Best Group Design Project and Motorsport UK Award (Cranfield) · Winner, Valencian Hillclimb Championship (ASR Team) · Several podiums, Valencian Karting Championship · West London Varsity MVP, 2024 · Brunel Tennis Club, Club of the Year award, 2024 · Italian Cambridge House Award