Development of Automated Workflows for Hydraulic and Thermal Circuit Models Construction and Calibration

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

- Start date: February/March 2026
- Project duration: 6÷8 months
- Site:
  - GTE's offices in Turin
- Compensations: Meals, travel expenses
- Motivations and Project Scope
  - Modern **hybrid hypercars** require multiple cooling circuits (low-, medium-, and high-temperature loops) to manage **complex powertrains**. These circuits frequently change during development due to performance, packaging, and manufacturing constraints. **Each iteration needs quick thermal and hydraulic performance checks**, but manual workflows are slow and error-prone.
  - The scope is to **develop automated workflows using GT-Automation** to streamline circuit calibration and modular thermal model construction, reducing engineering effort and accelerating validation.
- Thesis proposal:
  - **Review current calibration and modeling workflows** and identify limitations and opportunities for automation using GT-Automation.
  - **Create automated processes for calibrating thermal and hydraulic circuits** starting from raw experimental data and 3D CFD characterization, **easily adaptable to different vehicle programs and applications.**
  - **Compare automated workflows against current manual methodologies** in terms of accuracy, time efficiency, and error reduction. Correlate results with experimental and CFD data to ensure reliability.

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