**Lorenzo Baietta CEng MIMechE**

**Cardiff (UK), lorenzo.baietta@elemeca.com, www.elemeca.com**

Chartered Mechanical Engineer with expertise in aerospace propulsion system design, complex system integration, and composite structural engineering. Career spans Principal Engineer roles at Rolls-Royce — including design authority for gas turbine components, propulsion system architecture definition, and technical governance of advanced aerospace programmes — and composites engineering at Renault Formula 1. Co-founder of Elemeca Ltd, a mechanical engineering consultancy providing independent engineering analysis, failure investigation, and expert witness services.

- **Aerospace propulsion system design and integration —** design authority standard of care, whole-engine architecture decisions, system interface failure, requirements compliance assessment, fitness for purpose, gas-turbines lead designer.
- **Aerospace components and tooling —** acceptance and concession decision-making, manufacturing departure assessment, design standard compliance, rework assessment, fitness for purpose, structural analysis, GD&T, design for manufacturing.
- **Composite structural engineering — aerospace and motorsport —** laminate engineering, analysis, damage and structural failure causation, manufacturing process standards, design defect versus manufacturing defect, structural performance assessment.
- **MRO and build quality assessment —** acceptance criteria application, rework and concession decisions, assembly and test authority for engine design, documentation and best-practice definition.
- **Complex system failure —** multi-system root cause analysis, interface and integration failure causation, competing failure hypothesis assessment, system-level consequence of component failure.
- **Aerospace regulatory compliance —** EASA design organisation standards, airworthiness requirements, requirements traceability, departure from approved design data.

## Professional Registration and Qualifications

**Chartered Engineer (CEng)** — Engineering Council

**Member, Institution of Mechanical Engineers** (MIMechE)

**Certified SAFe 5 Product Owner/Product Manager** (Scaled Agile, Inc.)

## Expert Witness Training

**Bond Solon** Expert Witness Excellence in Report Writing.

CPR Part 35, Practice Direction 35, & Guidance for the Instruction of Experts in Civil Claims 2014.

## Professional Experience

### Director and Co-Founder, Elemeca Ltd, Cardiff (UK), from September 2025 to Present

- Directing technical delivery of an engineering consultancy serving aerospace, defence, and advanced engineering clients. Work include composites, gas turbines, transmissions, machinery and prototyping.
- Active development of expert witness practice in mechanical and aerospace engineering, systems integration, and composite structures.

### Principal Engineer – Systems and AI, Rolls-Royce, Bristol (UK), from October 2025 to April 2026

- Expert internal consultant and technical reviewer across advanced aerospace, cryogenic propulsion and space programmes.
- Owned component testing strategy for liquid hydrogen propulsion research.
- Led development of AI-assisted engineering workflow tools for aerospace applications.

### Lead Systems Engineer, Rolls-Royce, Bristol (UK), from July 2023 to September 2025

- Led multidisciplinary teams delivering low-TRL technology across defence and civil aerospace research portfolios. These include simulation and data acquisition technologies and software.
- Embedded systems thinking and technical governance across programme teams; engaged directly with senior stakeholders on capability development and Statements of Work.
- Lead engineer for machinery tests and test design, analysis simulation and correlation.
- Performance analysis and code development for missions and subsystems.

### Lead Engineer, Rolls-Royce, Bristol (UK), from May 2022 to June 2023

- Led two multidisciplinary engineering teams across consecutive phases of advanced small gas turbine development and a novel flight demonstrator programme, covering core engine systems, vehicle integration and flight testing options.

- Held technical approval authority across Fuel, Oil, and Thermal Management systems; full accountability for design and analysis activities relating to hot-end static components and system interfaces. Systems analysis, calculations, concepting.
- Defined programme strategy and technical roadmaps in collaboration with Chief Engineer and industrial partners.

**Lead Systems Design and Integration Engineer, Rolls-Royce, Bristol (UK), from June 2021 to May 2022**

- Design authority during assembly and test of a new engine: managed arisings, concessions, rework, and acceptance decisions for first engine builds.
- Coordinated integration sessions across design, stress, and aerodynamics disciplines to identify priorities and risks for engine hot-end development.
- Responsible for whole-system acceptance and process development through first build of each engine specification.
- Design, stress and thermal analysis, manufacturing methods definition for turbine, compressor, fan, oil system and transmission components.

**Systems Design and Integration Engineer, Rolls-Royce, Bristol (UK), from January 2020 to June 2021**

- Led rear systems architecture definition including (oil, air system, hot structures, transmission) for a new gas turbine and led the whole-engine structural architecture.
- Owned over 30% of whole system level propulsion system requirements and architecture for a major next-generation combat aircraft programme. Part of the Platform integration team with major industrial partners.
- Coordinated cross-discipline specialists to deliver integrated propulsion system concepts under demanding timescales.
- Design, stress and thermal analysis of aerospace components including hot structures, compressors, turbines and transmission as well as composites, tooling and test-bed interfaces.

**Graduate Composites Engineer, Renault Formula 1, Enstone (UK), from October 2018 to December 2019**

- This section covers my role in the Laminate Engineering Group first (up to June 2019) followed by my move to the Chassis Group. The next bullet point will start with LE and CH to explain what I was doing as part of each group.
- LE: Involved in major projects including current and future chassis designs. I reschemed complex break ducts to reduce manufacturing time and cost by around 50%. I proactively proposed several new structural designs.

- CH: Responsible for the composite design of a chassis prototype. Delivered on time and on budget exceeding KPIs. Lead the Bodywork design for the 2020 car reporting to the Head of Chassis.
- CH: Delivered outstanding quality and performance improvements working with Aero, Manufacturing, R&D, Stress and Laminate engineering. My new structural schemes were also adopted by Ferrari F1.
- CH: Even as a graduate engineer, I was trusted to delegate tasks to other engineers, as well as approving the designs and drawings before the sign off from the Senior Engineer of Chassis and Head of Composites. Operated with responsibilities including approval of releases & designs before senior sign-off.

**Technical Director, Brunel Racing FormulaSAE, London (UK), from September 2017 to September 2018**

- Director of the engineering teams designing and building a Formula Student race car.
- Principal designer of the composite Monocoque. Specific stiffness target exceeded by 25%.
- Winner of The Bosch Award 2018 for the Best Mechanical Engineering Project at Brunel University London.
- Responsible for Wind Tunnel testing of aerodynamic components to calibrate CFD analysis.

**Head of Aero and Composites, E-Team Squadra Corse, Pisa (Italy), from August 2015 to February 2017**

- Managing over 10 people in a team 60 to 80. Managed suppliers and technical partnerships.
- Led the vehicle aerodynamic development resulting in improved aerodynamic down-force by 15% avg. with unvaried drag, improved aero and full vehicle performance.
- Improved our CFD and FEA processes and introduced new methods for composites. Managed composites production, including the design of our in-house large composite curing oven.
- FSAE Italy Class3 2015 Winners: 1st Place Design, Cost Report & Business Plan. FSAE Italy Class1 2016 Winners: 1st Place Business Plan, 2nd Place Cost report. FSAE Hungary Class1 2016 Winners, 1st Place Business Plan.

**Aero and Composites Designer, E-Team Squadra Corse, Pisa (Italy), from October 2014 to July 2015**

- Responsible for the design and analysis of front wing and nosecone composite crash structures.

- Front wing and floor CFD development, with focus on end-plates. Down-force improved by 8% avg. over the key race simulation cases within efficiency target.

**Technician (part-time), Smallbay s.r.l., Rimini (Italy), From January 2011 to September 2015**

- Part Time Technician mainly working on Carbon Fiber Composites production and Electronics Prototypes.

## Core Education

**MPhil** Engineering (Part-time), University of Cambridge, in progress..

**MSc** Automotive Engineering, Brunel University London, 2018, graduated top of the class with Distinction.

**BSc** Aerospace Engineering, Università di Pisa, 2017, with a final grade of 103 out of 110.

Scientific Lyceum **Diploma**, Liceo Scientifico Lemaitre Rimini, 2012, with a final grade of 100 out of 100.

## Prizes, Awards, Relevant Facts

- I have won or worked in Teams that won or were nominated to several prizes and awards, including ● APM Transformation Project of the Year (2022) ● Rolls-Royce President's Award for Excellence (2021) ● Published on MDPI JAS in 2020 ● I gave a guest lecture at Brunel University in 2019 ● Nominated for the Craig Dawson Award for the Most Valuable Team Member at FSUK 2018 ● Bosch Award for the Best Mechanical Engineering Project at Brunel University London 2018 ● Finalist at the International CAE Conference Poster Award Competition in 2018 ● Won several FSAE events (2015, 2016).
- Several additional certifications and completed courses alongside my core education, mainly focused on management, digital disciplines, and economics.