Thiago Macedo Hernández



Mechanical Engineer · SolidWorks design · FEA · test rigs · CNC and injection moulding

Alcàsser (Valencia), Spain · Available immediately
thiagomacedo10940@gmail.com · linkedin.com/in/soythiagomacedo
Portfolio with 3D models: **soythiagomacedo.com/portfolio**

SUMMARY

Mechanical engineer (BSc 2026, Universitat Politècnica de València, top 150 worldwide in mechanical engineering). I take hardware from requirements to SolidWorks models, GD&T drawings and BOMs, size it with hand calculations, FEA and CFD, and design it for CNC machining and injection moulding, most recently an injection-moulded drone arm iterated with modal FEA. Looking for a hands-on role building and testing prototypes. Fluent English.

ENGINEERING PROJECTS

Injection-moulded quadcopter arm · design for injection moulding, FEA and modal analysis · personal project

October 2026 · SolidWorks, SolidWorks Simulation

- PA6-GF30 arm for a 1.5 kg quadcopter, designed for injection moulding: uniform 2.4 mm walls, 1°/0.5° draft, ribs at ~60 % of the wall, cored M3 bosses and an open channel for the ESC wires.
- Modal FEA drove two iterations, tapering the depth and widening the section: first mode 89 → 144 Hz (target ≥ 130 Hz, above hover speed); 4.9 MPa at a 4 g landing, so the design is stiffness-driven.

Torsional stiffness test rig and test plan · fixture design · personal project (designed, not built)

September 2026 – October 2026 · SolidWorks, SolidWorks Simulation

- Rig and test plan to validate the sprocket FEA: threaded-rod chain tensioner, 100 kg load cell, two Mitutoyo indicators.
- Checked measurability first: a steel tooth moves only ~0.003 mm at test load, equal to the indicator accuracy, so the test uses a laser-cut PMMA replica (predicted reading ~0.054 mm).
- Custom fixture: 30×30 aluminium-profile stand with two 6082 clamps designed for machining; the CAD model showed the indicator tips would clash with the adjacent tooth, so they are mounted at 35°. 58 components, A3 drawing, 23-item BOM.

Rear sprocket for the Yamaha R6 · FEA and CNC manufacturing · personal project

September 2026 – October 2026 · SolidWorks, SolidWorks Simulation, SolidWorks CAM

- 45-tooth sprocket, street (C45) and racing (7075-T6, 64 % lighter). FEA at first-gear sprocket torque (1,035 N·m): safety factor 1.12 → 2.1 after a window redesign and quenched-and-tempered C45 (racing: 2.4); mesh convergence and hand calculations.
- Drawings (Ø110 H8 datum); CAM for milling (22 operations) and two-setup turning: bore in 0.86 min turned vs 42 min milled.

Hygienic diaphragm valve DN 25 · design, calculation and iteration · personal project

October 2026 – present · SolidWorks, SolidWorks Simulation, Flow Simulation, MATLAB

- From a written requirements specification to a 12-component assembly; assembly drawing with BOM and 1.4435 stainless-steel body drawing with ISO GPS tolerancing (datums, flatness, perpendicularity, projected tolerance zone).
- Hand calculations (wall thickness, closing force, bonnet bolts, lead screw); body FEA at the 15 bar test pressure with mesh convergence; CFD Kv–stroke curve used to set the 12 mm stroke (Kv 11.3 m³/h).
- Checked the v0 against its requirements: it is not fully drainable, and the bonnet bolts need only 2.6 N·m, so a standard M8 torque would over-compress the diaphragm. v1 in progress: metal-to-metal stop and a chamber redesigned to drain.

PROFESSIONAL EXPERIENCE

Technical Office Engineer · Argotek Instalaciones, Aldaia (Valencia)

July 2026 – September 2026

- Designed low-voltage electrical installations to the Spanish Low Voltage Regulations (REBT): cable sizing, voltage-drop and short-circuit calculations, single-line diagrams, AutoCAD/DMElect drawings and permit documentation.

Engineering Intern · Frimorife (industrial refrigeration and HVAC), Guadassuar (Valencia)

March 2026 – May 2026

- Heat load calculations, equipment selection and supplier quotes, checking dimensions and installation space.
- AutoCAD installation drawings and project documentation; on-site support alongside senior technicians.

EDUCATION AND CERTIFICATION

Certified SOLIDWORKS Design Professional (CSWP) and Associate (CSWA) · October 2026 · verify: CSWP, CSWA

BSc in Mechanical Engineering (240 ECTS) · Universitat Politècnica de València (UPV)

2022 – 2026 · **UPV: top 150 worldwide in Mechanical Engineering (QS by Subject 2026), 2nd in Spain (ShanghaiRanking 2025).** Courses incl. Machine Design (FEA labs), Fluid Mechanics, CAM; thesis: HVAC for a 2,100 m² office building.

Erasmus+ exchange · Politechnika Wrocławska, Poland

September 2025 – February 2026 · All coursework in English; project: quick-return mechanism (Inventor).

SKILLS

CAD and drawings: SolidWorks (advanced: parts, assemblies, drawings) · GD&T (ISO GPS), ISO 2768 · BOMs · AutoCAD
Analysis: hand calculations · SolidWorks Simulation (FEA) · Flow Simulation (CFD) · heat load calculations · MATLAB · Excel
Manufacturing: design for CNC machining, injection moulding and assembly · SolidWorks CAM (milling, turning)
Hands-on: built and tested pneumatic and electro-pneumatic circuits with a PLC in university labs · on-site support (Frimorife)
Languages: Spanish, Catalan (native) · **English: fluent** (B2 First; Erasmus+ in English) · **German:** beginner