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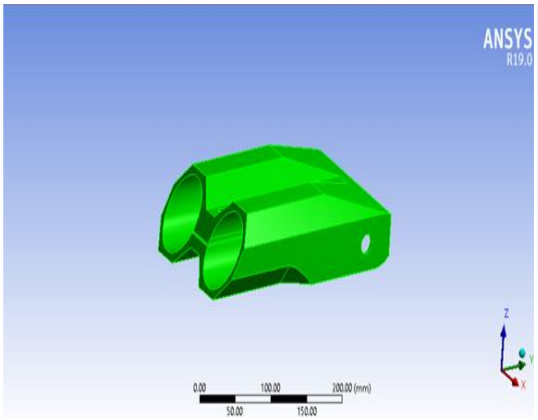
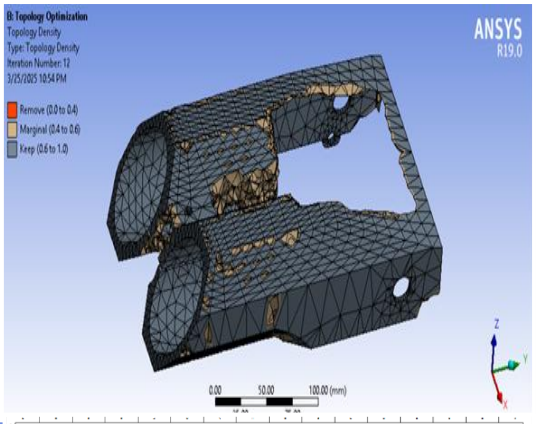
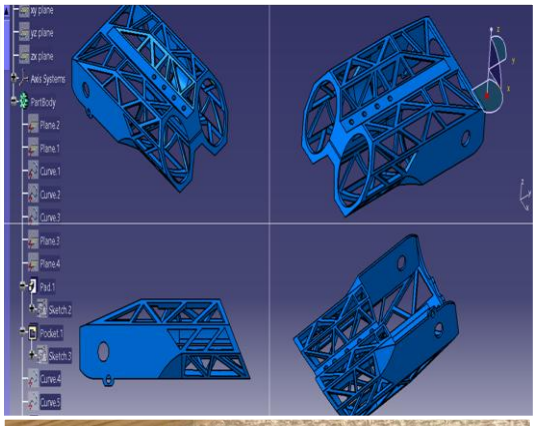
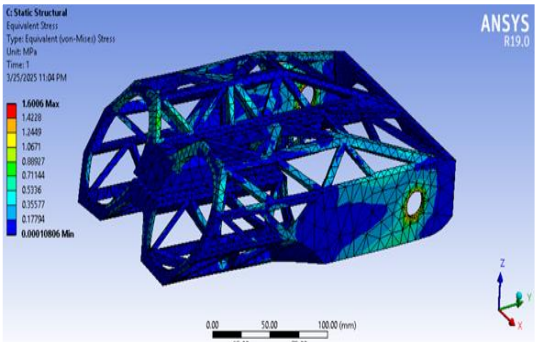
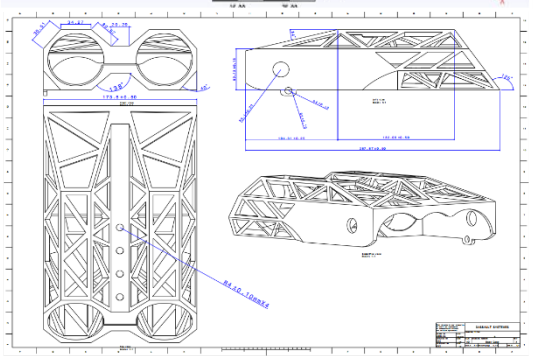
Optimized Marine Handle Pole Base – Freelancer for Jair Beltran, China

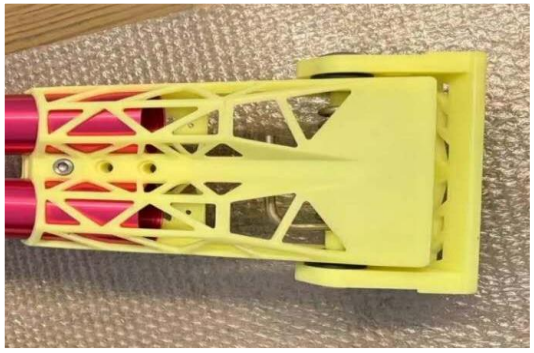












What?

- Conducted a **finite element analysis (FEA)** on the ski handle pole base to identify and reduce excess weight.
- Focused on applying **topology optimization** to maintain strength while minimizing mass.

How?

- Modeled the original part in **SolidWorks / CATIA V5** and imported it into **ANSYS** for static load analysis.
- Applied topology optimization constraints to **reduce materials** in **low-stress regions**.

Results?

- Achieved a **32% weight reduction** without compromising performance or durability.
- Delivered a **manufacturable GD&T** and cost-efficient design optimized for strength-to-weight ratio and **prototyping**.

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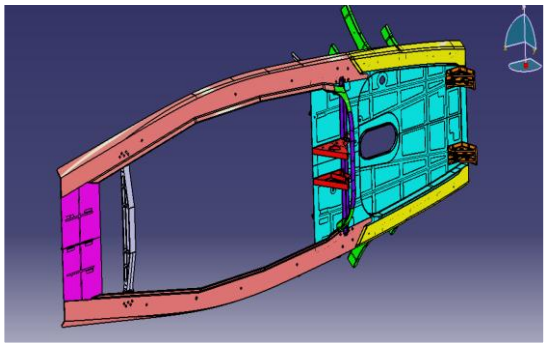
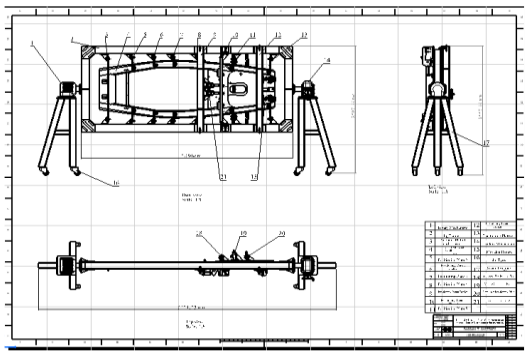
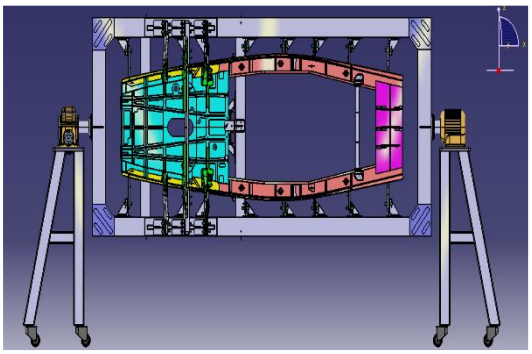
Jig and Fixture for Aircraft Lower Seat Cabin Reinforcement – SAU, China







What?

- Designed a **precision jig and fixture** system to aid in reinforcing the lower seat cabin frame of an aircraft.
- Targeted structural alignment and repeatable positioning during the sub-assembly of **fuselage seating zones**.

How?

- Modeled in **3D CAD using CATIA V5** with aircraft-grade tolerance considerations and ergonomic access for aerospace technicians.
- Integrated **adjustable locators**, **locking pins, and support arms** to ensure precise fit-up and ease of welding or riveting.

Results?

- Enhanced structural accuracy by reducing **misalignment errors by 35%** during seat reinforcement installation.
- Streamlined **aircraft cabin sub-assembly** with improved operator efficiency and process repeatability.

Hydraulic Motorcycle Hitch for a Caravan – Xuzhou Mega Industry, China

What: Designed a hydraulic motorcycle hitch system to securely mount a bike on a caravan rear.

Results: Delivered high-resolution renders and drawings ready for prototyping and stakeholder review.

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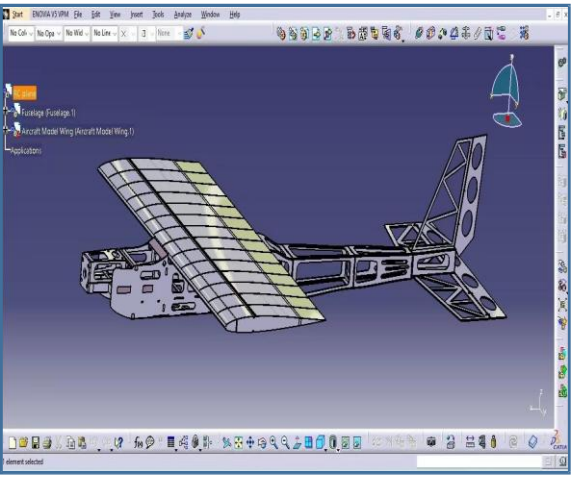
Radio Controlled Plane - Shenyang Aerospace Teaching and Training Center, China



What?

- Designed and built a fully functional **radio-controlled airplane** for aerodynamic performance testing.
- Focused on **lightweight construction** and stable flight behavior for educational and demo use.

How?

- Used **CATIA V5** for **3D & 2D design** and performed wind tunnel analysis for aerodynamic validation.
- Manufactured parts using **Laser cutter** and assembled the structure with composite and wood materials.

Results?

- Successfully completed multiple **stable flight tests** with 90% precise control and minimal vibration.
- The project improved understanding of **aerostructure behavior** and lightweight design techniques.

UAV Drone for Package Delivery – Genxtra Science and Innovation Club, China

What: Designed and built a **UAV drone** for package delivery using **Raspberry Pi, Python, and 3D-printed** components with Genxtra Science and Innovation Club in China.

Results: Successfully delivered payloads up to 500g with stable autonomous flight, achieving over 12 minutes of airtime and precise GPS-based drop-off.