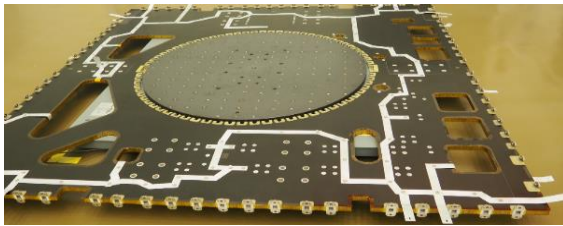




SPACE SYSTEMS STRUCTURES

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Turkish Aerospace designs, develops and manufactures structures for satellites including mainly sandwich panels, inserts and equipment brackets. Sandwich panels can be composed of either aluminum or CFRP skins with honeycombs, and embedded heat pipes, if required. Inserts are covering a broad range of types containing; edge inserts, border inserts, block inserts, bobbin inserts and hoisting inserts manufactured from aluminum. Structural brackets are designed by favoring weight and performance requirements, and are compatible with traditional or non-traditional manufacturing techniques like additive manufacturing. Designing and developing structures based on customer needs are supported with structural and thermal engineering skills by our highly qualified design and analysis experts.

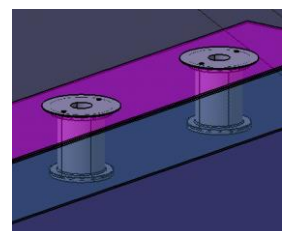
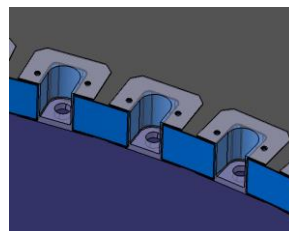


• STRUCTURAL PANELS

Turkish Aerospace is able to design complex panels, which requires different technical specifications based on the mission. Embedded inserts as well as heat pipes are integrated to the structural panels in order to satisfy structural and thermal needs. All processes and parts were qualified with qualification tests. Panel manufacturing quality is guaranteed by several process control testing accompanied on production.

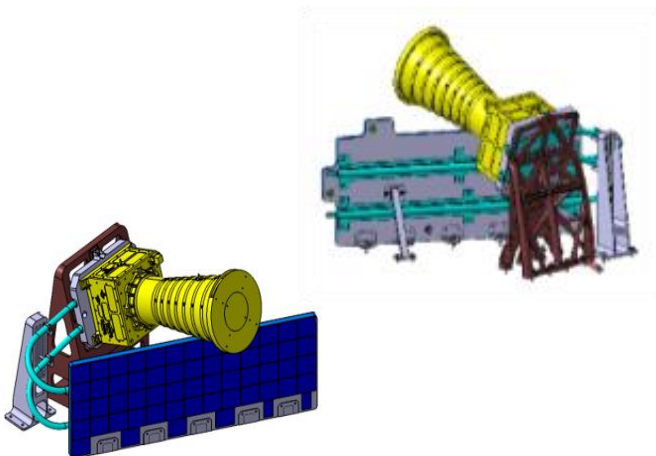
• INSERTS

A large database for different types of qualified inserts has already been built up including all the load capacity information. Developing of new inserts are supported with engineering calculations.



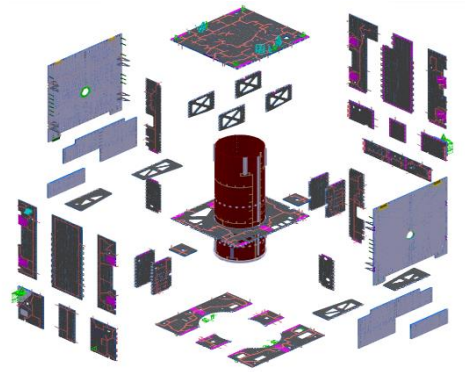
• BRACKETS

Lightweight and performance brackets are designed with the help of high degree engineering in the very early phases of the projects. A significant weight reduction is offered by implementing additive manufacturing solutions. Radiators can be designed and integrated for equipment thermal control purposes.

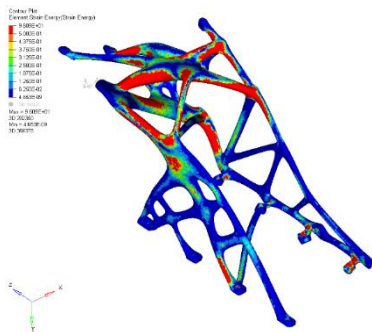


• STRUCTURAL & THERMAL ENGINEERING SERVICES

Turkish Aerospace supports customers also with engineering services for the design of structural and thermal control subsystems of satellites. Acquired knowledge from previous experiences is now guiding in designing modular and flexible satellite infrastructures with different sizes to handle customer's payload mass and power needs.



Structural design capabilities cover a broad area including material, coating and standard part selection, 3D design of metallic and CFRP parts, composite design, 3D tolerance analysis, structural budgets, system layout and equipment accommodation. Innovative design and manufacturing solutions like the design for additive manufacturing are also in the scope of the team.



Robust design development and verification with the help of finite element analysis is performed for the wide range of analysis types like topology optimization, static, dynamic, thermo-elastic, and vibro-acoustics. Structural and thermal tests predictions, test planning and mathematical model correlations are also part of the hands-on experience.

Thermal engineering team is experienced in thermal control system conceptual, preliminary and detailed design through geometrical mathematical modelling, thermal mathematical modelling and thermal analysis phases. Thermal knowledge domain covers thermal interface management, MLI design and modeling, and thermal hardware design and modeling.

