



Marshall Space Flight Center Component Design and Development

Engineering Solutions for Space Science and Exploration



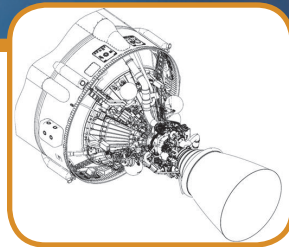
Turbomachinery Design
and Development



Combustion Devices
Design



Valves, Actuators
and Ducts Design



Propulsion Detailed
Design



Thrust Vector Control
Systems Design

The Component Design and Development Division (ER30)

performs engineering development and oversight of space transportation subsystems and components. Engineering efforts conducted assure the safe operation and development of existing and future space transportation systems.

ER30 responds directly to customers requiring component-level technology maturation, development, and anomaly resolution.

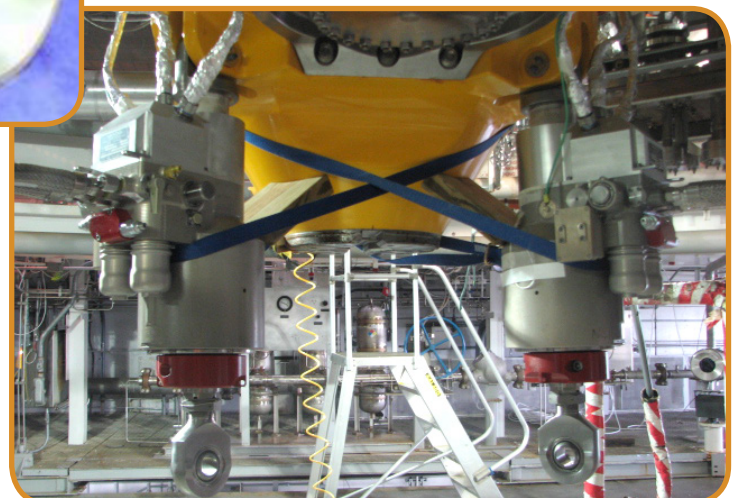
The Component Design and Development Division is also responsible for providing engineering expertise for the analysis, design, test, evaluation, and assessment of propulsion system components, including turbomachinery, flow control devices (valves, regulators, lines & ducts), and combustion devices. ER30 also provides engineering expertise for the definition and derivation of component and subsystem requirements, and also provides engineering detailed mechanical design capabilities for propulsion systems, test articles, and associated equipment.



Combustion Devices
Technology Development



Shuttle Flowliner Air-Flow Rig Design



J-2X Thrust Vector Actuator Testing

Capabilities:

ER31 – Turbomachinery Design and Development Branch

The Turbomachinery Design and Development Branch provides engineering expertise for the analysis, design, test, evaluation, and assessment of turbomachinery components including inducers, impellers, diffusers, turbines, bearings, seals, and housings. The branch also integrates the work of various disciplines including stress, thermal, structural dynamics, fluid dynamics, rotordynamics, mechanical design, tribology, and material sciences for the development of turbomachinery components.

ER32 – Combustion Devices Design and Development Branch

The Combustion Devices Design and Development Branch provides engineering expertise for the analysis, design, test, evaluation, and assessment of combustion devices components including injectors, cooled and uncooled thrust chambers and nozzles, pre-burners, gas generators, and ignition systems.

ER33 – Valves, Actuators, & Ducts Design & Development Branch

The Valves, Actuators, & Ducts Design & Development Branch provides engineering expertise for the analysis, design, test, evaluation, and assessment of valves, regulators, actuators, lines, and ducts. The Branch also provides leadership for all levels of valves, actuators, ducts, miscellaneous fluid components, and fluid systems development tasks.

ER34 – Propulsion Detailed Design Branch

The Propulsion Detailed Design Branch specializes in the detailed mechanical design of propulsion components and subsystems. ER34 areas of expertise include: computer aided design and modeling tools, geometric dimensioning and tolerancing, manufacturing and fabrication processes, specialty hardware and fasteners, bolted joint design, fits and interfaces, technical specifications, assembly procedures, and design for optimization.

ER35 – Thrust Vector Control Systems and Integration

The Thrust Vector Control Systems Integration and Components Branch provides engineering expertise for the analysis, design, test, evaluation and assessment of TVC systems and components such as actuators, controllers, valves, reservoirs and power units.

For more information, please visit www.nasa.gov/centers/marshall/about/business.html



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