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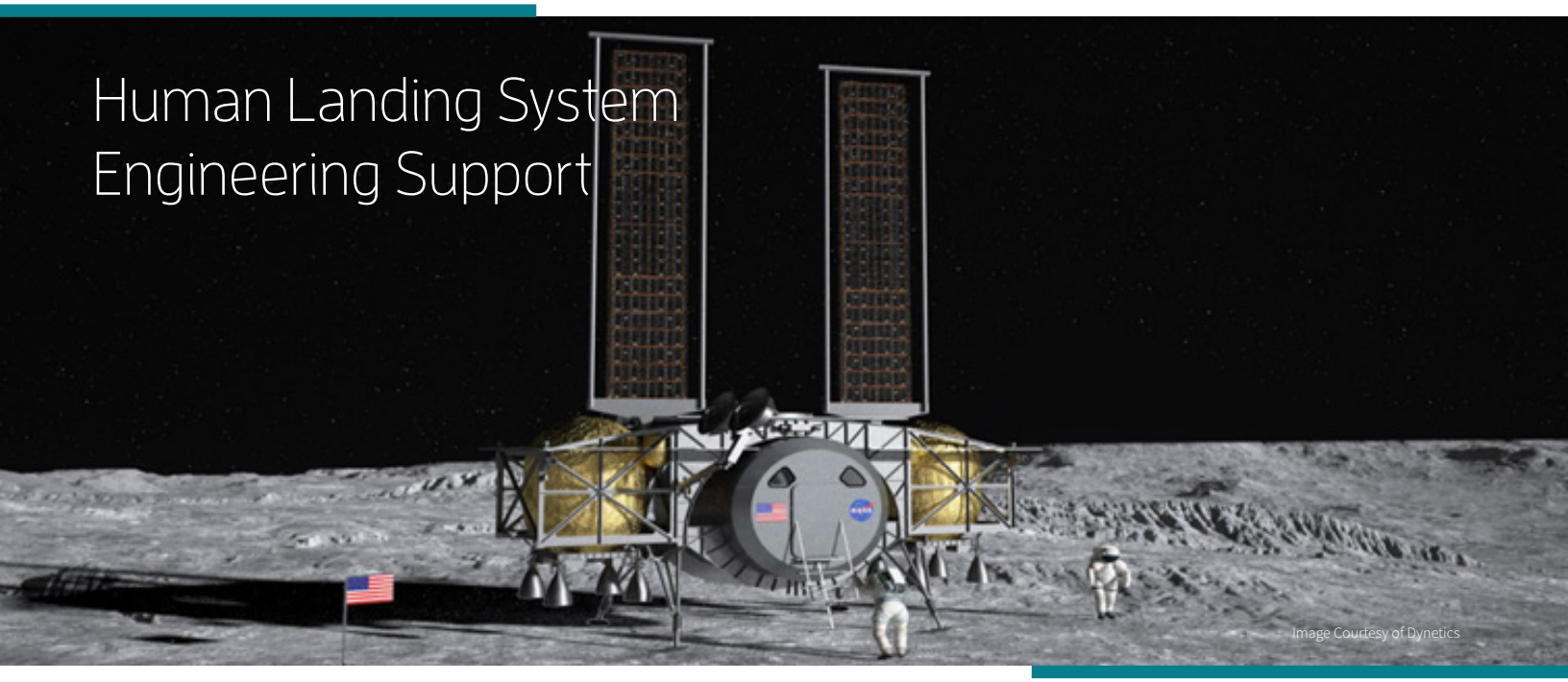
Human Landing System Engineering Support



Case Study

OVERVIEW

Dynetics, a wholly owned subsidiary of Leidos, was selected by NASA to design the Human Landing System (HLS), which will allow the first woman and the next man to land on the Moon under the Artemis Program. ATA is part of the team assembled to develop the Dynetics HLS (DHLS) and is performing a variety of engineering tasks to support the various Integrated Product Teams (IPTs).

TASKS PERFORMED & KEY OUTCOMES

Propulsion IPT

- Feedline Systems: Load prediction and strength analysis of feedlines and transfer lines. Slosh loads estimation for launch to support tank structural sizing.
- Main Engines: Component selection and analysis to support design of pump, bearings, nozzles, thrust vector control system components, gimbal, etc. Structural analysis of ground-based test engines to determine critical combustion chamber and injector parameters. Fatigue and fracture control analysis of critical engine components subject to cyclic loads. Development of engine system-level finite element model for component load predictions.
- Propulsion Reaction Control System: Thermal mapping and finite element analysis for a variety of components.

System Engineering & Integration IPT

- Thermal systems expertise for landing gear, active thermal control systems, and passive thermal control systems.
- Thermal model development and thermal analysis of landing gear.
- Evaluation of thermal control system reliability.

Thermal Control Systems IPT

- Finite element model building for strength and modal analysis of thermal radiator designs and their capacity to support secondary structure.
- Mass optimization of thermal radiator to support selection of material, mounting configurations, and geometric shape.

Avionics, Software, and Power IPT

- Analysis for mounting avionics equipment layouts.
- Design and analysis of camera positioning and support brackets.
- Strength and modal analysis of high-gain antenna structural support design.
- Interface load predictions for solar array support structure configurations.