

## P3 Technologies Tests CHAMP Turbopump

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P3 Technologies, a propulsion company in Jupiter, Florida, has completed initial testing of the CHAMP turbopump. CHAMP, an acronym for Compact High-performance Affordable Modular Pump, is a 6.5k lb-force thrust class high-speed, single-shaft, LOX/Methane turbopump.

“The turbopump is modular in two ways”, explains Philip Pelfrey, President of P3 Technologies. “First, it can operate as a stand-alone turbopump assembly, or it can be integrated with additional turbopumps in parallel for increased thrust class engines.” The first engine test will use four CHAMP turbopumps for a 25K lb-force thrust class LOX/Methane gas-generator cycle engine. “Second, it is modular in its design. For example, we can swap out the turbine for an expander cycle application.”

In the initial test series, CHAMP accumulated 74 minutes of run time in 44 cycles with 24 minutes at full-speed. It also demonstrated normalized Q/N excursions from 0.7 – 1.3. Modular turbopumps have many advantages including lower cost. However, one of their greatest benefits is increased mission success. Having multiple smaller turbopumps in parallel eliminates the single-point failure associated with traditional systems, which is advantageous in mission critical applications.

