Courtesy of Pratt & Whitney

JASC WINS AWARD TO SUPPLY PRATT & WHITNEY WITH FUEL SYSTEM CONTROL VALVES FOR THE SED-WR VEHICLE ENGINE

In June 2005, JASC was awarded a contract to continue development of a multi-channel hot gas valve (HGV) array to distribute high-temperature gaseous JP-7 fuel to various zones of the SED-WR vehicle's scramjet engine combustor. The design of these flight-ready valves are based on technology developed under prior ground test versions of the valve (GDE-1, GDE-2, and SED-X1).

The vehicle's propulsion system will be a scramjet (supersonic combustion ramjet) engine, which utilizes storable liquid JP-7 fuel. This fuel is pumped through the engine's sidewalls - thus cooling the engine and vaporizing the fuel – before reaching the valves. The valves then manage delivery of the fuel to the engine injectors at temperatures up to 1330 °F - while keeping the close-coupled actuator cool via an ingenious combination of fuel cooling and radiation shielding. These valves will be flight qualified in 2006, and are slated to be tested on a ground-based engine in 2007 (SED-X2). Flight tests of the SED-WR vehicle are scheduled to begin in 2008.

In conjunction with the HGV award, JASC was simultaneously awarded a contract to develop the start control valve for the SED-WR vehicle. Like the HGV, this valve will be fueldraulically actuated, and is designed to accurately meter high-pressure, gaseous ignitor fluid to the scramjet engine. This single-channel valve forms the heart of the engine's start system, and will be qualified and tested in parallel with the HGV.

The SED-WR program is being funded through the Air Force's Hydrocarbon Scramjet Engine Technology (HySET) Program, under the broader Hypersonic Technology (HyTECH) Program. The single engine demonstrator vehicle will be operate in the Mach 4.5-6.5 range, and has both military and commercial applications.