



Back to the Future!



Jansen's Aircraft Systems Controls (JASC) proudly participated in a major milestone for the aerospace community as the Hyper-X Research Vehicle (X-43A) streaked out over the Pacific Ocean at a record breaking speed of Mach 7 (over 4700 mph). NASA Dryden Flight Research Center reported that on the afternoon of March 27th, 2004, after getting a ride from a B-52 to 40,000 ft and then a Pegasus booster rocket to Mach 7 at 95,000 ft, the Hyper-X engine fired and history was made.

It is the first time that an airframe-integrated scramjet (supersonic combustion ramjet) engine was demonstrated in free flight. In addition, preliminary data suggest that a net positive thrust was achieved. This accomplishment is truly a milestone for the aeronautics community - and the world.

JASC designed and developed the electromechanically-actuated, electronically-controlled ignitor and fuel control valves for the scramjet engine. After the vehicle was jettisoned from the booster and achieved stable flight at Mach 7, the vehicle's engine cowl door opened, allowing air into the engine. The JASC silane ignitor valve was then actuated, followed by the JASC hydrogen fuel valve to sustain and regulate combustion in a process analogous to lighting and keeping a match lit in a hurricane!

Larry Huebner, the NASA Langley Research Center Hyper-X propulsion lead stated, "We achieved positive acceleration of the vehicle while we were climbing, and maintained outstanding vehicle control. This was a world-record speed for air-breathing flight."

The flight was the culmination of over 40 years of effort to demonstrate successful positive thrust hypersonic flight, proclaimed to be "the Holy Grail of Flight" by veterans in the aerospace engine community.

The record breaking X-43A flight supercedes the previous record holding air-breathing engine flight of Mach 3+ by the SR-71 Blackbird, and eclipses the X-15 record of Mach 6.7 which used a rocket powered engine.

In addition to the X-43A fuel control effort, JASC is pioneering the development of high temperature, fuel-draulically actuated control valves that will allow hydrocarbon fuels to be used in scramjet combustors. The ultimate benefit lies in allowing for low cost, repetitive, high speed flights for both military and commercial purposes.

Need for Speed / Speed for Freedom: Airbreathing hypersonic engines will someday allow for reusable vehicles for access to space; rapid global flight for commerce; and high-speed deployment of munitions to defend our country.

JASC is committed to assisting our Customers in making affordable hypersonic flight a reality.

JASC founder and president, Harv Jansen, is a true aerospace industry pioneer. He was involved as an engineer on the development of the SR-71's J-58 engine and the world's first liquid hydrogen/liquid oxygen rocket engine designated the RL-10. The J-58 engine was as innovative as the SR-71 airframe. To this day, the J-58 remains a state of the art engine in aircraft propulsion. It was the first and only dual-cycle aircraft engine, transitioning from a conventional turbine engine to a ramjet engine at ~Mach 2. It was the first engine to use fuel-draulic controls, and the first to use metal seals on tubing joints. Many materials and fluid advancements in use today were spawned from the J-58 engine development program.

Observing the first true hypersonic flight by the X-43A was especially gratifying for the JASC Team. We truly hope that there are many more to come.

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