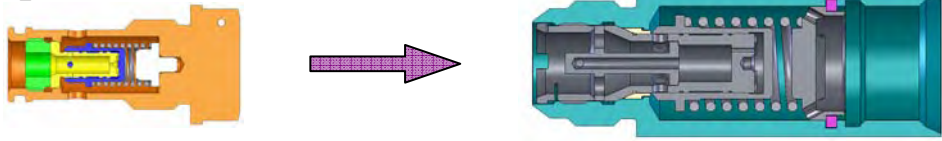


Join the group and participate in the JASC Facility Tour

See first hand how JASC takes leading-edge, aerospace technology and applies it to industrial products to help improve YOUR system's performance.

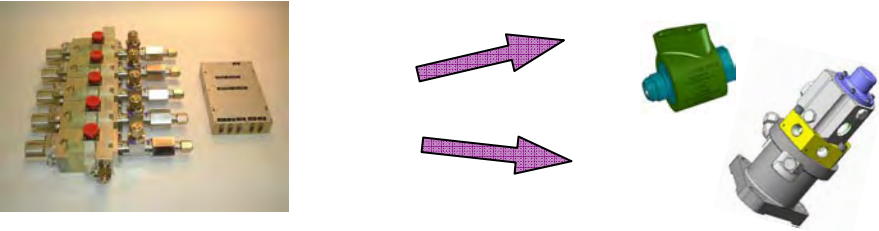
Below is just a small sampling of the examples of innovative technology that you'll see on display during the JASC facility tour.

***THE* Liquid Fuel Check Valve**



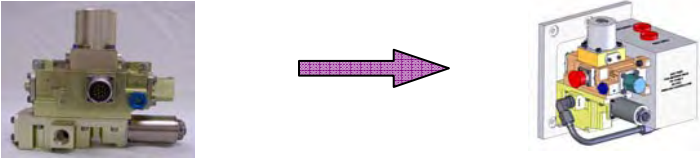
The diagram shows a cross-section of a liquid fuel check valve. On the left is a simplified, colored cutaway view. A purple arrow points to a more detailed, metallic cutaway view on the right, showing internal components like a valve seat and a check valve mechanism.

Active Cooling Technology originally developed to help propel a vehicle to 7000 m.p.h. at over 100,000 ft.




The image shows a printed circuit board with various electronic components on the left. Two purple arrows point from the board to two separate mechanical components on the right: a green valve and a larger, more complex assembly with a yellow and grey body.

Low Cost, Precision Fuel Metering Valve Assemblies



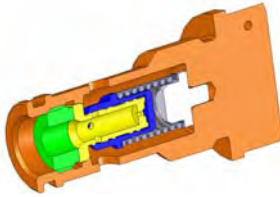
The image shows a close-up of a fuel metering valve assembly on the left. A purple arrow points to a larger, more complex assembly on the right, which includes various sensors, valves, and wiring connected to a white control box.

Active Combustion Control



The image shows three fuel injectors on the left. Two purple arrows point from them to two application areas on the right. The top area is labeled "Industrial Applications" and shows a large industrial turbine engine. The bottom area is labeled "Commercial and Military Aerospace Applications" and shows a commercial passenger jet and a military fighter jet.

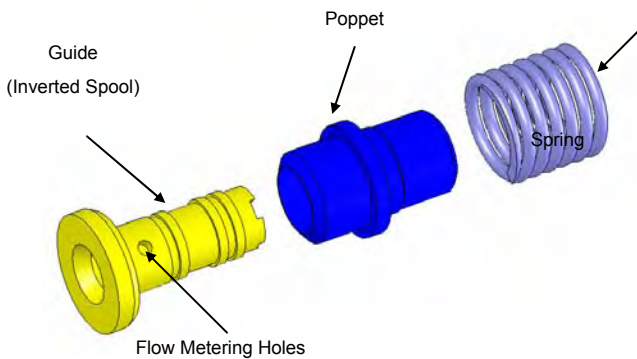
The JASC Liquid Fuel Check Valve is based upon technology developed for use in aerospace applications



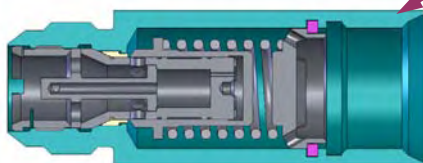
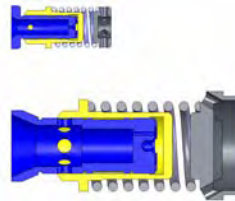
This Fuel Flow Divider was selected to be used in the APU for use on the Boeing 787 Dreamliner



A Boeing artist's rendering of the 787 Dreamliner



The design heritage of the Liquid Fuel Check Valve is based on the JASC pioneered, inverted spool Flow Divider. Notice the shared component design layout between the Flow Divider and the Liquid Fuel Check Valve



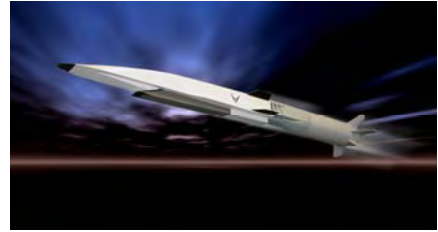
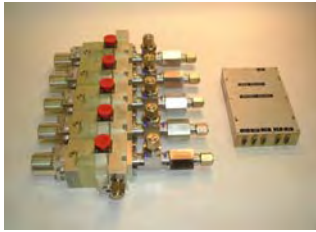
JASC Liquid Fuel Check Valve used on large Frame GE (Dual Fuel) Gas Turbines



GE Frame 7FA Dual Fuel Turbine

JASC Actively Cooled Valve Technology

The Water-Cooled Liquid Fuel Check Valve and the Water-Cooled Combining Valve utilize technology that was developed to help propel a vehicle to over 7000 m.p.h. at over 100,000 ft.

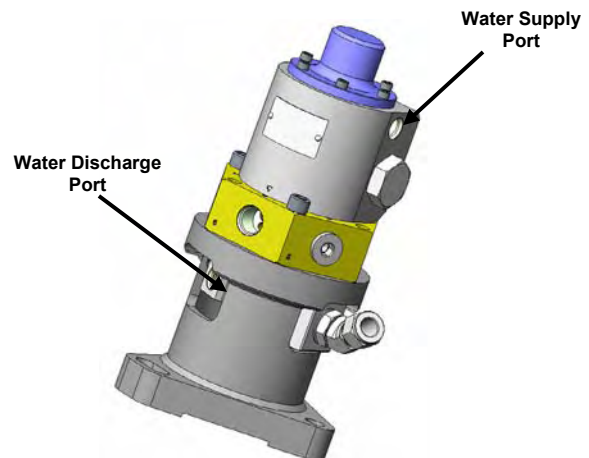
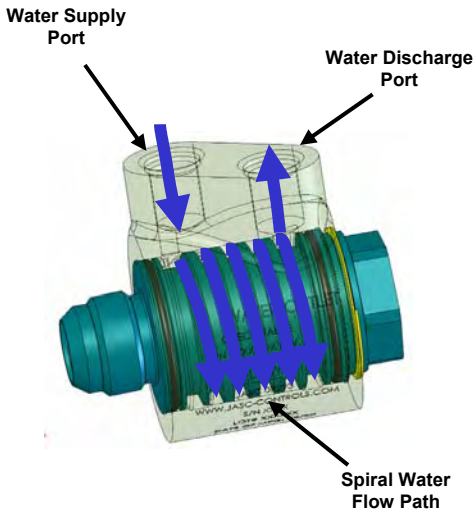


5-Channel, Fuel-draulically-Actuated Hot Fuel Distribution Valve and Electronic Controller used as part of the development program leading to AFRL's X-51A, hydrocarbon-fueled Hypersonic Research Vehicle. Among the design innovations is the use of active cooling to protect temperature sensitive components of the valve.

A Pratt & Whitney rendering of the X-51A Research Vehicle – Designed to fly from Mach 3.5 to 6.5, using JP-7.

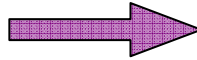
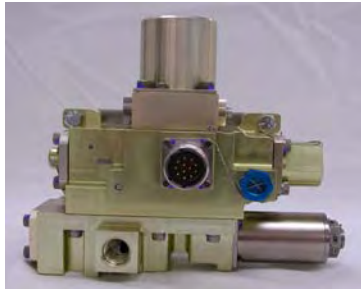


The use of active cooling for the X-51A program led to the development of active cooling for the standard Liquid Fuel Check Valve and was also integral in the development of the Water-Cooled Combining Valve and Water-Cooled 3-Way Purge Valve – shown below.



The JASC Fuel Metering Valve Assembly (FMVA)

The FMVA was originally developed for use on the Airbus A380 APU.



Pratt Whitney Canada
PW980 APU – 1270 kW



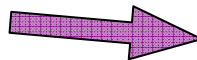
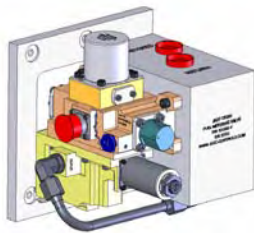
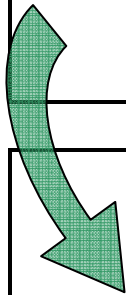
The FMVA is a fuel metering assembly that incorporates:

- A two-stage Fuel Metering Valve
- A Pressure Regulating Valve
- A Solenoid Activated Shut-Off Valve

All of which is packaged into a single unit



Airbus A380



A modified FMVA is currently being evaluated on a Niigata gas turbine that is testing the use of industrial waste byproducts as a low emission, alternative fuel in an effort aimed at reducing the environmental impact of modern industry processes.



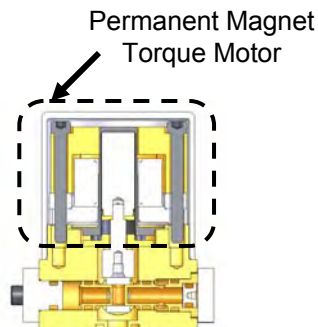
The 300 kW Niigata RGT3R
Recuprated Cycle Gas
Turbine, using a Dry Low
Emission Combustor.
Courtesy of Niigata Power. Co.

JASC Active Combustion Control Technology

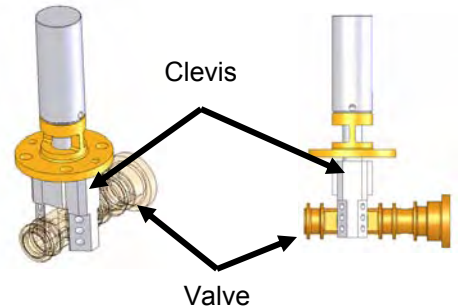
Using a modified 3-Way, Clevis Type Servo Valve (originally developed for use on the Airbus A-320 series APU), JASC has developed an Active Combustion Control Valve (ACCV) aimed at removing combustion instabilities found in turbine engines. There are ...



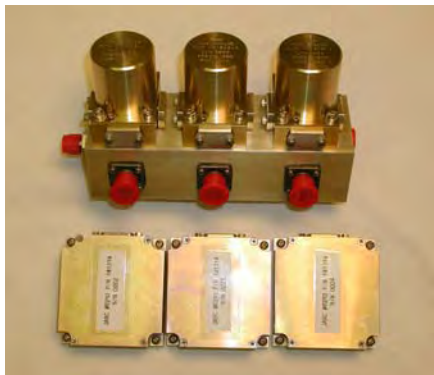
JASC 3-Way, Clevis Type Servo Valve



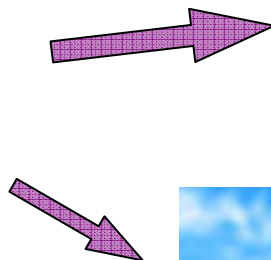
The ACCV uses a standard permanent magnet torque motor.



The key components to the ACCV are the Valve and Clevis, modified for high speed modulation.



Active Combustion Control valve array and Electronic Control Units. Lab tests have demonstrated synchronous valve response to $<5 \text{ dB @ } 400 \text{ Hz}$ and $<20 \text{ dB @ } 600 \text{ Hz}$ across the flow entire flow range (20-300 pph).



There are a large variety of applications that can readily benefit from the use of Active Combustion Control, ranging from the largest industrial power-gen turbines to aerospace propulsion (commercial and military).