

Hydraulic Servo Valve Test Rig

Mecelec Design work with a leading aerospace manufacturer to produce test rigs for testing hydraulic servo valves.

The rigs are build to print, therefore the customer provides all the drawings and a bill of materials. Mecelec are responsible for the project management, build and testing of the rigs. Mecelec have built 12 rigs for the same customer in this manner.

The UUT is a hydraulic servo valve for commercial aircraft. They are used to actuate the slats and flaps and use a hydraulic fluid called Hyjet. Hyjet is used because it has a high flash point but it is also a very aggressive fluid. Hyjet dissolves most plastics it comes in contact with and is a skin irritant. Therefore special seals are required in the hydraulic system and extra PPE is needed during commissioning.

Military aircraft used red oil instead of Hyjet. Mecelec have both Hyjet and Red Oil hydraulic power packs which are used for commissioning these rigs.

Technical Data	
UUT	Aircraft Hydraulic Servo Valve
UUT supply pressure	350 Bar
UUT Flushing Flow Rate	18 lpm
Electrical Power Supply	Single Phase 240VAC @ 13A
Control System	LabView PC Software
Operator Interface	Touchscreen Monitor
Cycle Time	15 minutes



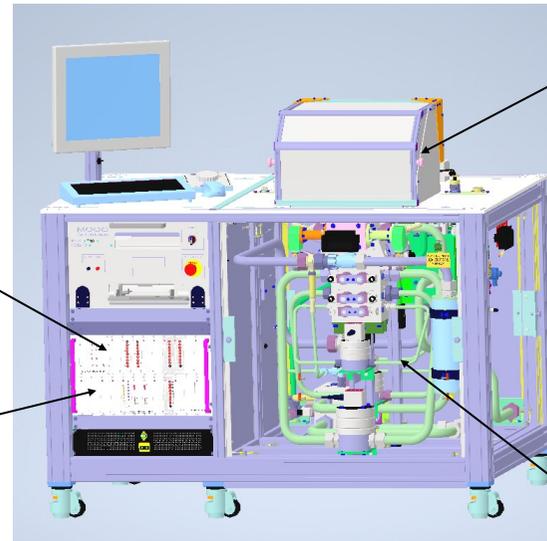


At the front of the rig is an electronics rack. It contains a 24V and 5V power supply. It also contains analogue and digital cards. The cards are assembled and tested at Mecelec.

The UUT is loaded onto a manifold and then protected by a guard. The guard is made from Item extrusion and is assembled at Mecelec along with the main rig frame.



A complex electronic rack is assembled by Mecelec. The customer provides a thorough test procedure which is carried out by Mecelec engineers.



The hydraulic system contains 3 large manifolds which are populated with solenoid valves, servo valves, flow meters and filters. The manifolds are connected to each other with 30mm diameter by 5mm wall thickness pipes. The hydraulic circuit is flushed using the Mecelec power pack. A proof pressure test is performed with a pass criteria of no drips at 7500psi.

