



Neometrix Defence Engineering Portfolio

Single Source for All Your Needs (OEM & Supplier)

Ground Support & Handling Equipment (GSE & GHE)



UGSS-O₂



HST-300 U



Nitrogen Plant



TestPAC



PressurePAC N₂



PressurePAC O₂

Test Rigs, Test Benches, Test Equipments



General Purpose Pneumatic Rig



130 LPM Pump Test Rig



Servo Hydraulic Actuator Test Rig



MRA-TRA Test Rig



Oxygen Systems

Turn Key Projects



HALON Recovery, Reclamation, Recycling & Refilling Facility



Helium Charging System



High Pressure Air Stations



Indian



HAL



DRDO



INDIAN ARMY



INDIAN NAVY



DGAOA Approved



ISO Certified

Neometrix Engineering (P) Limited

A BRIEF Company Profile

Neometrix Engineering Pvt. Ltd. is a complete DEFENCE engineering solutions company based in New Delhi/ NOIDA.

We specialize in CUSTOM BUILT High Technology Defence Engineering Solutions.

We have expertise in various engineering domains like High Pressure Gas Systems, Hydraulics, Servo Hydraulics, ATF, Mechanical, Oxygen/ Helium (High Purity Gases), Electronics/ Electrical Test Benches, and Complete PC Based Automation Solutions.

We have experts in Mechanical Engineering, Electrical/ Instrumentation Engineering, Software, Civil Engineering, Aeronautical engineering and other engineering fields.

The company has a team of ~50 highly qualified graduate engineers and has an experience of more than 300 successfully delivered engineering systems/ projects. We are very closely working with Indian Air Force, Indian Navy, HAL, Indian Army, Defence Establishments (DRDO labs), Nuclear establishments etc.

The founders of the company are graduates from IIT Kanpur and the company remains very closely linked with IITs. We utilize the expertise available there as and when required. Neometrix is working with IIT professors on several consultancy projects. We take extensive consultancy support from IIT.

Neometrix has an extensive VENDOR Base in NOIDA/New Delhi (NCR Region) and complete system integration is implemented at its NOIDA facilities.

With such alliances and our own detail engineering capabilities, we are in a position to deliver state of the art world class Engineering Systems and services to our valued customers.

Neometrix owns office facility of 10,000 sq. feet state of the art office infrastructure and 4500 Sq. feet factory shed.





Universal Hydraulic Servicing Trolley (HST-300U)

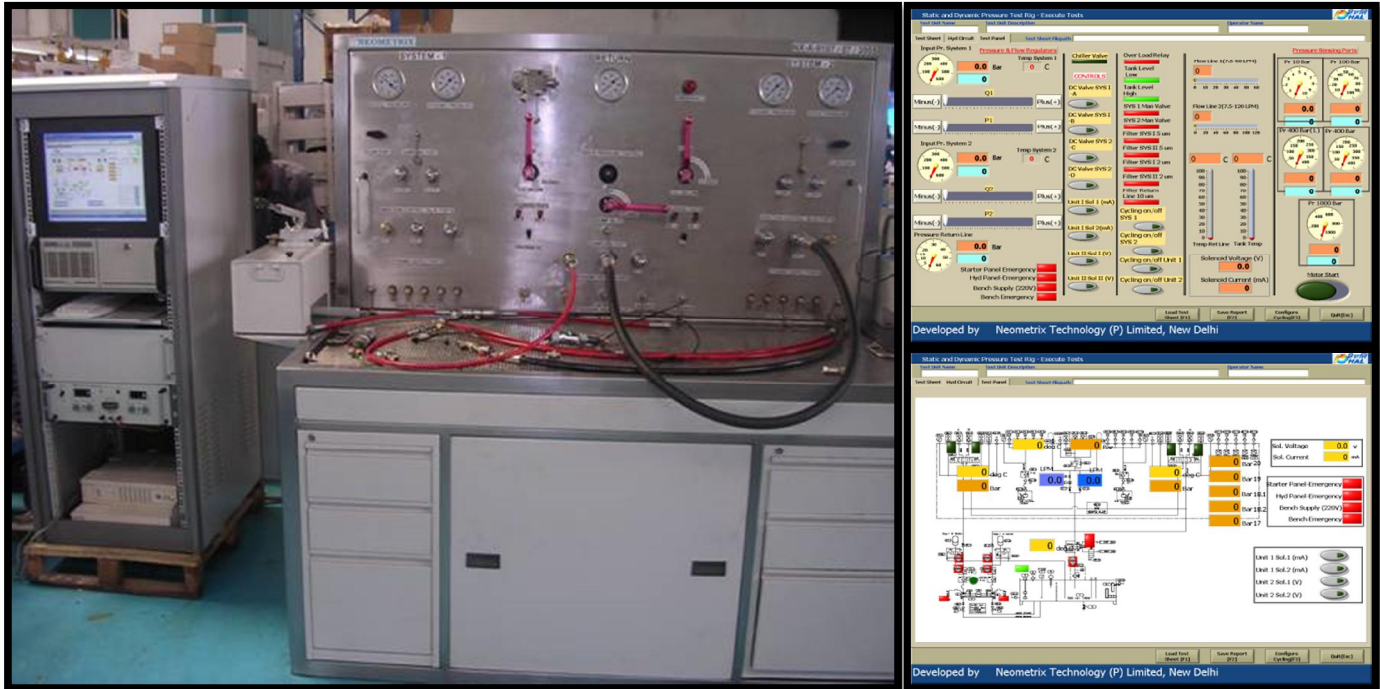


The Universal Hydraulic Servicing Trolley (HST-300U) is specially developed for simultaneous ground servicing of two independent aircraft systems. It is used to supply hydraulic oil to aircraft hydraulic systems, comprising a pressurized or non-pressurized reservoir, with filtered and de-aerated fluid at the flow and pressure characteristics required for testing. The trolley (HST-300U) is suitable for complete range of fighter air crafts, military transport air crafts, and helicopters used in Indian Air Force

Major Specification Parameters

S. No.	Specification	Parameter
1	Operating Pressure	15 to 300 Bar sleeplessly adjustable, Electronically controlled 80 cc + 80 cc Axial Piston Pump installed
2	Flow Rate	Up to 100LPM in each system sleeplessly adjustable
3	No. of Supply & return Lines	Two sets of pressure & return lines (two independent Systems each of 300 Bar/ 100 LPM)
4	Drive Power & Option	Diesel Engine Driven (236 HP). Electric Drive option available.
5	Working Media	Mineral oil OM-15, DTD-585, MIL-H-5606
6	Oil Filtration	Absolute 10+5+2 Microns Filters, Better than Class 6 of NAS 1638

General Purpose (Universal) Hydraulic Test Benches



The Neometrix Engineering Series NE-A0107 Universal Hydraulic Test Stands are designed for testing all kind of hydraulic components in various **aircrafts & helicopters** of Western/ Russian origin like SU-30, Jaguar, Mirage etc.

This is a WORK HORSE required in every ground support & testing establishment. Virtually any hydraulic component can be tested on this Test Stand by making right hydraulic & electrical connections. It is also very popular with aviation R&D and Product development establishments.

NE-A0107 is heavily used for testing & validating the actuators, valves, accumulators, pumps, motor and the hydraulic power packs. **Integral drive and integral dynamometer are** provided for testing pumps and motors. The NE-A0107 Series Test Stands are available configured for use with MIL-H-5606, MIL-H-83282, MIL-H-87257 and MIL-H-46170 Hydraulic fluids. **Customized OPTIONS are also available.**

Key Features:

- **Cost-effective** (International quality, **INDIAN PRICE**), accurate, automated, software driven, highly capable test system.
- Fully Computerized Test Stand. Manual & Semi-Automatic also available.
- Operating Pressure: up to 3,000 PSI. Flow: up to 20 GPM. Static Pressure: up to 10,000 PSI.
- Pumps drive: 5000 RPM, 20 HP. Dynamometer: 5000 RPM, 15 HP. Electrical DC supplies for power packs: 0-32 VDC, 1000 AMP.
- Temperature control of hydraulic test circuits. Chilled Water & Air cooled options available.

Hydraulic Pump / Hydraulic Motor Test Bench



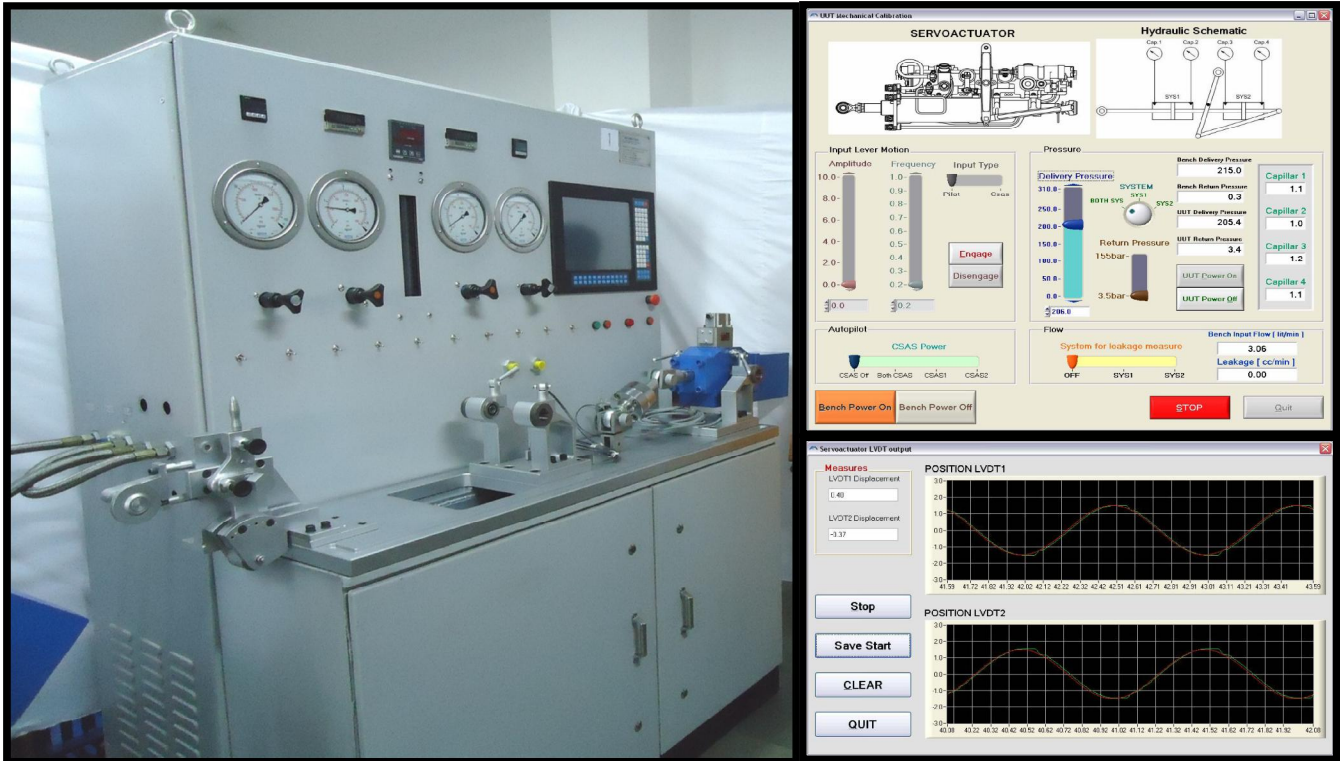
The photographs shown are of a fully automated test rig for a **variable delivery positive displacement axial piston pump with built in pressure compensator** for an AIRCRAFT (LCA). The Test Pump parameters are as follows:

- **Test Pump** Rated Pressure: 270 bars, Rated Flow : 130 LPM at 270 Bar
- Rated Speed: 6000 RPM

Following Tests on the Test Pump are performed on the Test Rig:

- i. Proof Pressure Tests (STATIC)
- ii. Brake In Run Test (Control RPM, Flow, Pressure, Temperature)
- iii. Load Cycles
- iv. Calibration & Compensator Setting
- v. Pressure Control & Stability Tests
- vi. Pump is tested for Open/Close cycling at Pump Outlet & Pump Case Drain

Hydraulic Servo Actuator Test Stand



These Test Stands are designed for testing all kind of state of the art servo hydraulic actuators in various aircrafts like SU-30, Jaguar, and Mirage etc. of Western / Russian origin. Some of the components tested on these STANDS are Rudder Actuators, Tail Plane Actuators, and Booster Actuators in aircrafts and Main Rotor & Tail Rotor actuators in Helicopters.

These Test Stands are used for Performance testing as well as Endurance Testing of these Actuators.

This is a TEST STAND required in every ground support & testing establishment. The Test STAND comes with Servo Hydraulic Pilot Actuators, Servo Hydraulic Loading Actuators. High frequency FRA: Frequency Response Analysis related tests are done on these Test Stands.

Key Features:

- Fully Computerized. Manual & Semi-Automatic also available.
- PXI BASED Data Acquisition & Control System.
- Independent hydraulic Power Packs for UUT, Loading Actuator & Pilot Actuator.
- Pilot Actuator can vary the load from 50N to 800N
- Operating Pressure: up to 3,000 PSI. Flow: up to 20 LPM. Static Pressure: up to 10,000 PSI.
- Temperature control of hydraulic test circuits. (Chilled Water required)



Main Rotor Actuator (MRA) & Tail Rotor Actuator (TRA) Test Bench



The Neometrix Engineering series No. 0800 Test rig is meant for testing, adjustment and checking of various performance parameters of **MRA-Main Rotor Actuators (Pitch, Role & Collective) AND TRA-Tail Rotor Actuator of LCH**. This rig performs following functions and tests on the actuators.

1. Mechanical Test

- Proof pressure Tests
- Ram Stroke/ Load Test
- Pilot Input Load
- Stall Load & Synchronization
- Drift Speed Test

2. Mechanical Test

- LVDT Center Setting
- Auto Stabilizer Operation
- By-Pass Anti Jamming

3. External Leakage Test

4. Internal Leakage Test

5. No- load Speed Test

6. Load vs. Speed characteristics Test / Loop gain

7. Frequency Response

8. Transient Response Test

9. Dynamic Stiffness and chatter Test

10. Cycling Test for Main and CSAS Actuator By-pass Valve

Neometrix has delivered more than 100 Hydraulics & Servo hydraulics Test Benches. We are very eager to serve all your needs. We also take up AMC/ Support/ Service of IMPORTED equipments from Russia, UK, Israel, France etc.

Hydraulics/ Servo Hydraulics Systems (ARMY/NAVY/Indian Airforce/HAL/DRDO/Nuclear)



Hydraulic Power Pack of Component Test Rig for Flow/Cycling/ Pressure Test/ Flushing Application



Control (USER) Panel of Component Test Rig for Flow/Cycling/ Pressure Test/ Flushing Application

(The SS Drip Tray is provided to keep the Test Component/ Electrical Power Points are provided for actuating Test Component Solenoids. Both Digital Measurements as well as Manual measurements are provided. Three ROTAMETERS can be seen on the PANEL. The Hydraulic Power Pack is kept behind the USER PANEL; it may be kept behind a wall to reduce the Noise Level)

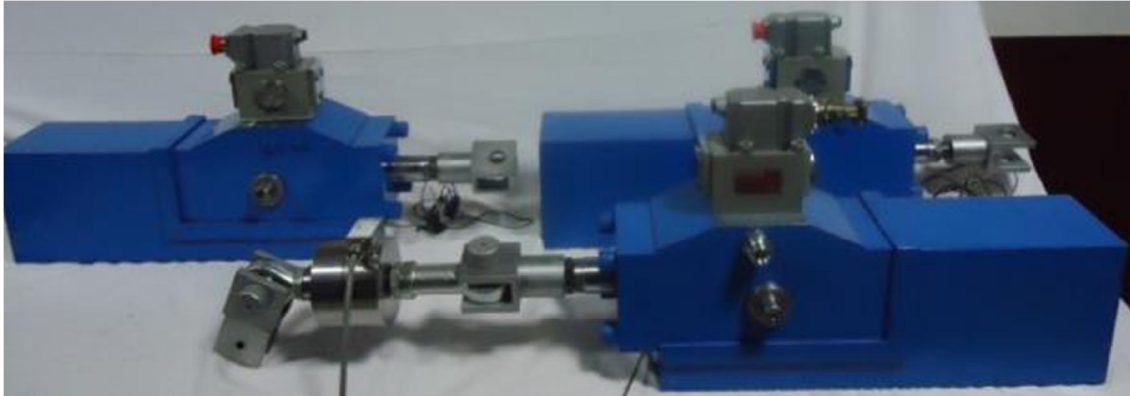
Hydraulic Power Packs



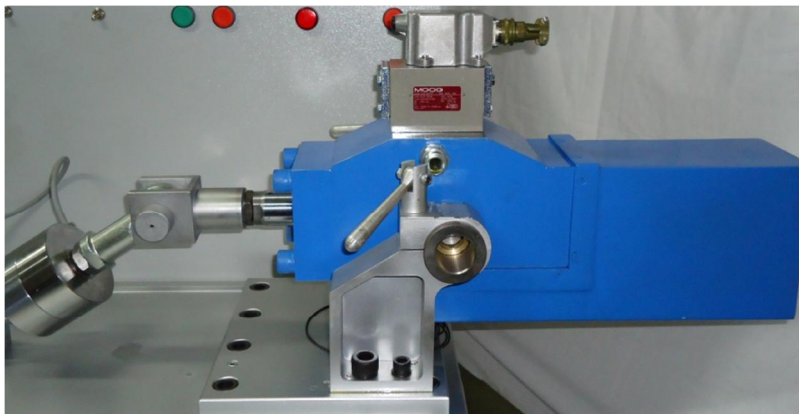
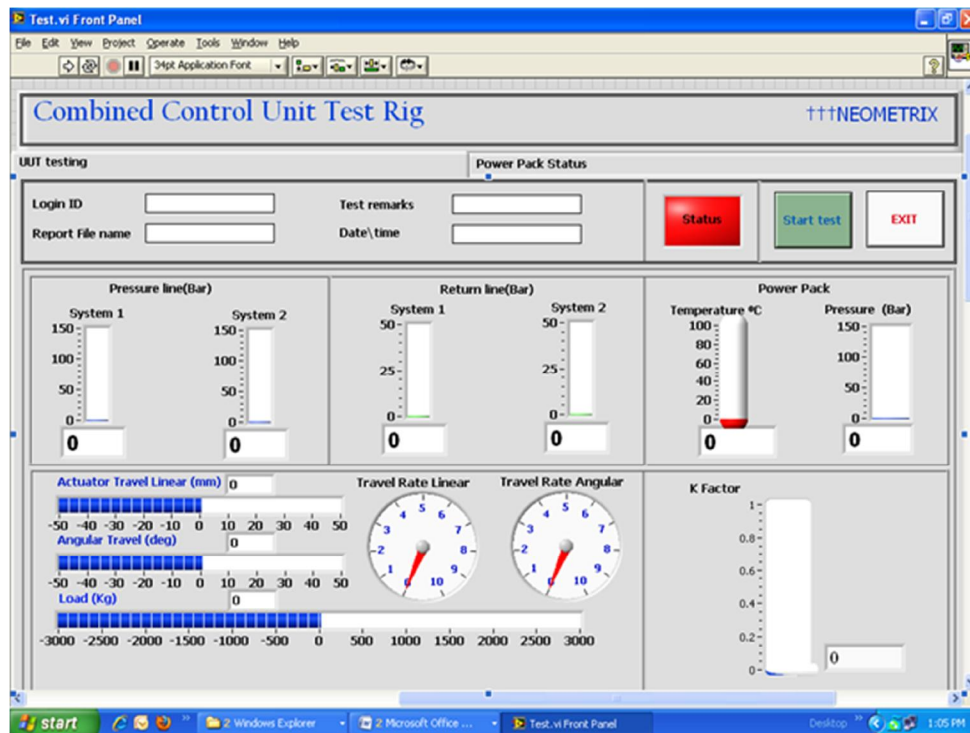
Hydraulic Power Packs designed for AVIATION applications. All pipelines/fittings are SS 304



Servo Hydraulic Cylinders/ Application Software



Servo Hydraulic Actuators are supplied complete with LVDT (inside the Hydraulic Cylinder), Servo Valve (on top of the Hydraulic Cylinder) & Load Cell & Customer specific END Adaptors. **Customized Application Software** is also applicable for PID/PI/PD Loop applications.



Bootstrap Hydraulic Actuators (for ONBOARD applications)



Test Pac (Portable/ Static High Pressure Hydro Station)



Purpose: Designed for Hydro Testing of various components & hoses etc.

Medium: Hydraulic Oil or WATER

S. No.	Specification	Parameter
1	Operating Pressure	up to 700 Bar
2	Drive Power	Plant Air (Drive Pressure 5 Bar)
3	Working Media	Water or any Mineral oil OM-15, MIL-H-5606
4	Weight	Less than 10 Kg

27 Volts DC Hydraulic Power Pack

Purpose: Designed for driving Actuators during Repairs.

S. No.	Specification	Parameter
1	Operating Pressure	up to 200 Bar
2	Flow Rate	Up to 5 LPM
3	Drive Power	DC Power 27 Volts
4	Working Media	Mineral oil OM-15, DTD-585, MIL-H-5606



Fuel (ATF) Pump Test Stand

Series NE-A0405



The Neometrix Engineering Series NE-A0405 Fuel (ATF) Pump Test Stands are designed for testing main fuel supply PUMP of various aircrafts like SU-30, Jaguar, Mirage etc. and that of helicopters of Western/ Russian origin.

This is a WORK HORSE required in every ground support & testing establishment. The Test Rig comes with a Fuel (ATF) supply Tank with heating facility to take the temperatures up to 120 Degree C. The Fuel Tank is pressurized using Dry Nitrogen (to simulate varying suction pressure) and electronic pressure regulators. Vacuum pump is provided & connected with Fuel Tank to simulate negative suction pressures.

Detailed safety interlocks are implemented in the system. The Test Rig is specially designed & popular with main fuel supply PUMP of SU-30, namely DTSN-82.

Drive (variable speed) with Gear Box is provided to vary the Test Pump Drive speed. Various electronic flow meters are provided to measure different range of flows and controlled pump outlet pressures. Special flow measurement circuitry is implemented.

Key Features:

- Cost-effective, accurate, automated, software driven, highly capable test system.
- Fully Computerized. Manual & Semi-Automatic also available.
- Pumps Drive: 10000 RPM, 160kW. Speed control & Speed measurement.
- All Aviation Fuel Pumps can be TESTED on this Test Stand.
- Special flow measurement circuitry.

Fuel (ATF) Nozzle Pressure Ratio Test Stand

Series NE-A0440

Very special & critical Test Stand with mix of vacuum, positive Nitrogen Pressure & Fuel Pressure available at various ports. The control & measurement accuracy is in mm of Hg.

The Test Bench consists of Fuel circuit, Nitrogen circuit & vacuum circuit. The control of each is implemented in software. Manual option is also available



OXYGEN CHARGING AND DISTRIBUTION VEHICLE UGSSO2



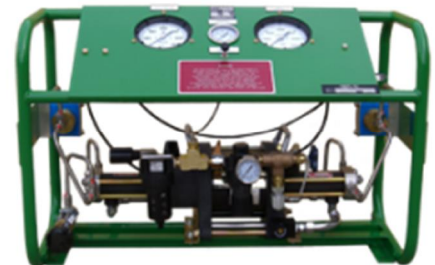
UGSS-O₂ is used as Oxygen charger for charging the Oxygen bottles of the SU-30MKI aircraft. It consists of **TWO MAJOR UNITS** as follows:

1. Main Oxygen Charging Vehicle (Tata Truck with special Canopy housing the Oxygen Storage SKID, Oxygen Gas Boosters SKID with two Oxygen gas boosters & Oxygen Distribution Panel).
2. Engine Driven Towable Compressor Trolley to drive the Oxygen Boosters on the Main Oxygen Charging Vehicle.

Key Features: Internal Oxygen Boosting (Between Storage Oxygen Cylinders), Oxygen Purity Panel to automatically stop Oxygen Booster in case Oxygen gas is not pure.

S. No.	Specification	Parameter
1	Max Oxygen Pressure	up to 335 Kg/cm ² (~4500 PSI)
2	Outlet Pressure Available	1- 1 to 5.5Kg/cm ² , 2- 150 to 230Kg/cm ² . 3- 230 to 350Kg/cm ² , 4- 350Kg/cm ² .
3	No. of Oxygen Storage Cylinders	12 Nos. Water capacity of each cylinder- 40 Liters

Pressure Pac (Portable/ Static High Pressure Gas Station)



Purpose: Designed for Boosting Gas Pressure for Oxygen, Nitrogen, Hydrogen, Helium or virtually any Gas. It is required to Boost Nitrogen pressure for various charging works at Air Force Stations.

S. No.	Specification	Parameter
1	Operating Pressure	up to 400 Bar
2	Drive Power	Plant Air (Drive Pressure 5 Bar)

Helium Charging Station



Helium Re-Charging & Hydrostatic Testing System is a HIGH PRESSURE facility for **Decanting, Hydrostatic Testing and Refilling** of the Helium **Flight Bottles** which are accessories to emergency floatation system of the Helicopter.

Helium Gas at 400 bar is filled in these bottles of capacity 9 & 18 liters and get utilized or vented during emergency landing of the helicopter on water. These Bottles are returned back in empty/vented condition and semi filled /filled (in case of not use) to the Base and where there is need of Recovery of Helium Gas (Decanting), Hydro Testing (1.5x W.P) and refilling the tested bottles with Helium Gas at 400 bar.

SYSTEM SPECIFICATIONS

S. No.	Characteristic	Value of Characteristic
1	Air Drive Pressure	7 Bar
2	Air Consumption	40-50 scfm
3	Flight Bottle Specs	WP 289 bar ,WC 18 Liters & WP 239,WC 9 Liters
4	Rejection Pressure after Decanting	15-20 bar
5	Maximum Recovery Pressure	>150 bar ,WC 9,18 Liters
6	Hydro Test Pressure	500 bar ,Plain Water
7	Recharging Pressure in the Tested Flight Bottles	WP 289 bar ,WC 18 Liters & WP 239,WC 9 Liters

High Pressure Nitrogen Generator Station



Neometrix High Pressure Nitrogen Generator Plants are for getting High Pressure pure & dry Nitrogen at high pressure up to 350 Bars. Nitrogen Purity – 99.99%, Mode of operation – Diesel Engine Driven, Dryness of Air & Nitrogen – (-) 60 Degree C, Nitrogen Flow Rate: 2 NM³/Hr

HALON Recovery, Reclamation, Recycling & Refilling Facility



Executed for Indian Airforce as a turnkey project, the HRRF facility has been set up to RECLAIM HALONS (1211) from OLD Fire Extinguisher Cylinders, Clean the reclaimed HALON, Test cleaned HALON in LAB and finally REFILL HALON in to cleaned & hydro tested fire CYLINDERS.

Oxygen Component Test Bench

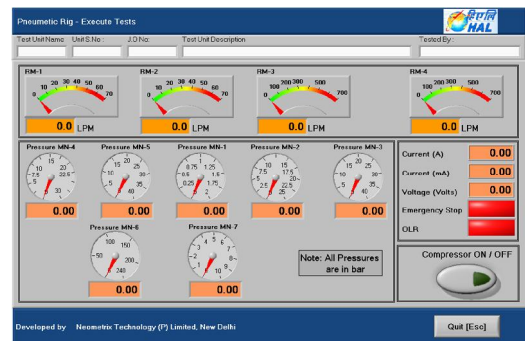


S. No.	Name of the Test Rig	S. No.	Name of the Test Rig
1	Oxygen Regulator Test Bench	6	Test Rig for Air Borne Angle
2	Oxygen Feed Valve Test Bench	7	Oxygen Rig for General Components
3	Oxygen Valve Test Bench	8	Test Rig for Oxygen Flow meters
4	Testing of Oxygen Units	9	Test Rig for Oxygen Masks
5	Testing of Oxygen Instruments	10	Test Rig for Oxygen Safety Valves

- **Cleanliness Level:** For Oxygen Systems,
- We use components (Cleaning & Packaging as per **ASTM G93 Level C** .
- **We propose to use Pressure Regulators with built in relief Valves for further safety**
- **Leak Proof:** Components (Proposed) are leak tested **and final assembly is also leak tested.**
- We follow following standards in our design, component selection and final assembly of the system:

- **NFPA 53:** Serious Oxygen System Fires
- **ASTM G4/ASTM G 128:** Fire Hazards in Oxygen Systems
- **G88/ MNL36:** Design Guidance for Oxygen Safety Systems

General Purpose Pneumatic Test Rig



This rig is designed for checking the leakage (air tightness), overflow, determination of flow rate of the air, checking the working efficiency and inspection of parameters of various pneumatic units of the aircraft.

The Test Rig comes with state of the art electronic Flow meters, pressure sensors. The complete TEST DATA is stored in the computer for further analysis.

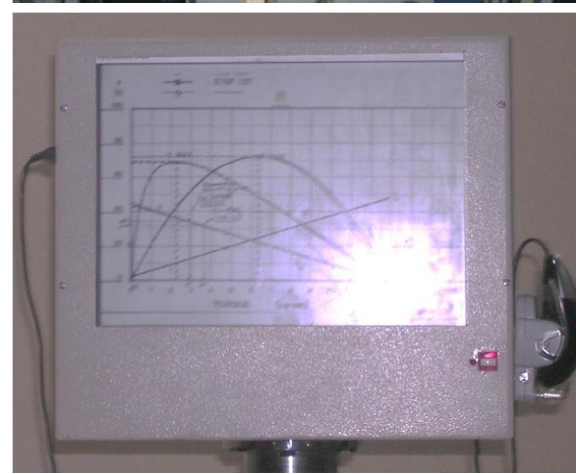
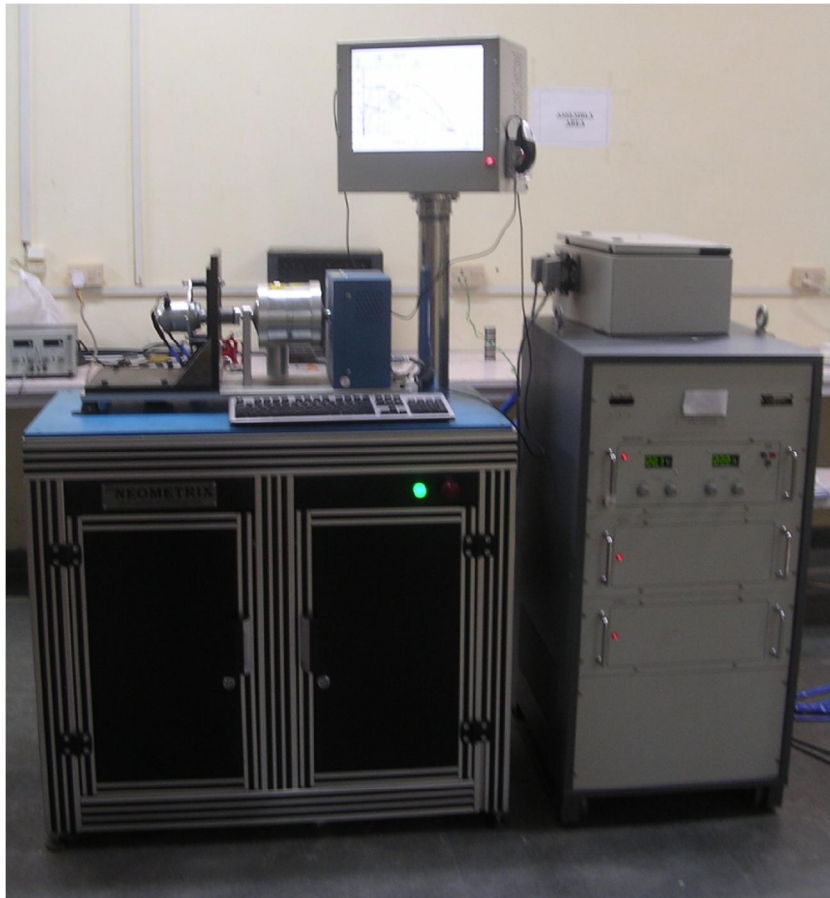
The software is customized for various TEST COMPONENTS. The Test sequences of the Test components are pre-programmed in the software.

S. No.	Name of characteristic	Value of characteristic
1.	Working Fluid	Air with dew point (-55 C)
2.	Purity of working fluid	Better than 2 microns
3.	Pressure of the working fluid	
	For high pressure line	200 Kgf/cm ²
	For low pressure line	8 Kgf/cm ²

Counter Timer Test Rig for DEFENCE Aviation Industry



Starter Generator Test Bench (6kW, 9 kW) for DEFENCE Aviation Industry



Hydraulics / Servo Hydraulics



Test Benches & Ground Support Equipments

High Pressure Gas Systems (O₂/N₂/H₂/He)



Test Benches & Ground Support Equipments

Aviation Fuel Systems



Test Benches & Ground Support Equipments

Electronics & Electricals



Test Benches & Ground Support Equipments

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