bemi

TECHNOLOGY DIVISION

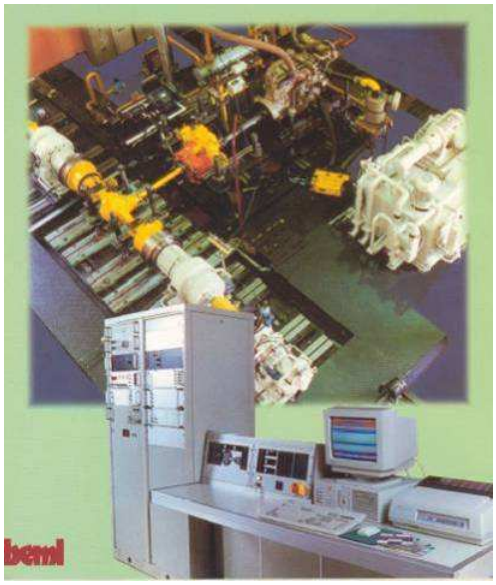
e–Engineering & Systems Design

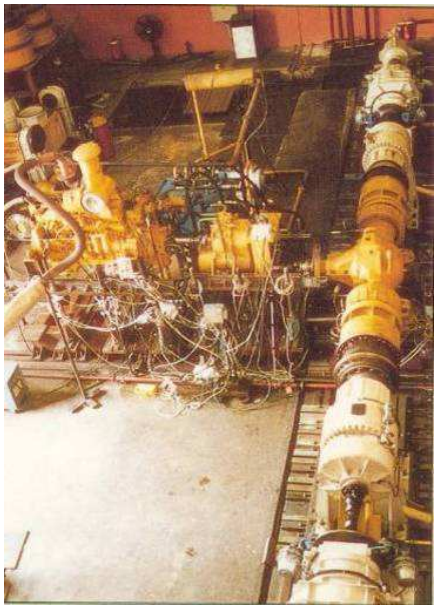
TESTING FACILITIES

- **NABL ACCREDITATION FOR CALIBRATION CAPABILITY.**
- **POWERLINE LAB FOR TESTING ENGINES, TORQUE CONVERTERS, TRANSMISSIONS, AXLES/FINAL DRIVES, ETC.**
- **STRUCTURAL ENGG LAB FOR FATIGUE TESTING, EVALUATION OF DESIGN BY STRESS ANALYSIS.**
- **FLUID POWER LAB FOR TESTING HYDRAULIC PUMPS, MOTORS, CONTROL VALVES, CYLINDERS, HOSES & FILTERS.**
- **MATERIAL SCIENCE LAB FOR TESTING FERROUS, NON-FERROUS MATLS, PAINTS, OILS & LUBRICANTS.**

POWERLINE LABORATORY

- **Established in 1989 with an investment of Rs. 16.2 crores.**
- **Encompassing an area of 2370 Sq Mtrs.**
- **It has extensive facilities for evaluating**
- **Transmissions, axles, torque converters and other gear drives.**





- Axle/ Transaxle Testing:

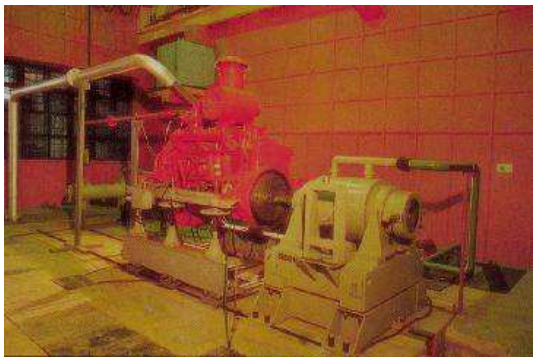
- **The system comprises of two test rigs and is capable of testing and evaluation of axles/transaxles in the power range of 50-1200 kW.**

- Transmission Testing:

- **The system comprises of three testers catering to transmissions from power range of 50 - 900 kW.**

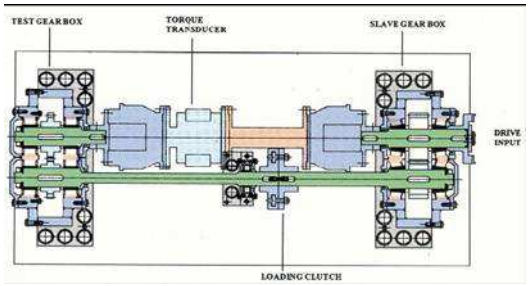
- Engine Testing:

- **The engine tester consists of a dynamometer interfaced to a test commander for data acquisition and automatic operation.**



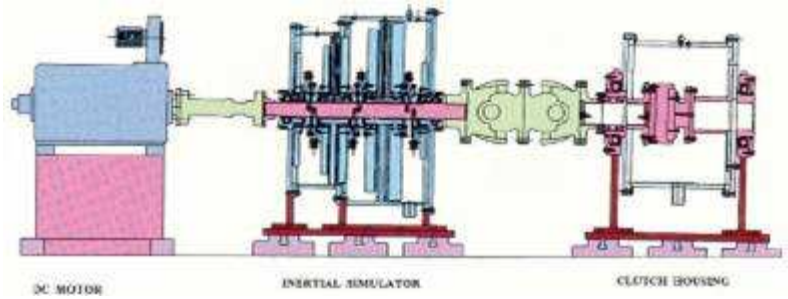
- Spur & Helical Gear Test Rig:

- **This rig is built to operate on four square principle.**



- Clutch & Brake Test Rig:

- **This is suitable for testing wet multiple disc assemblies for performance and durability.**



Calibration services: The lab has in-house facilities for calibration of pressure, flow, torque, speed, temperature and vibration measuring instruments.

The testing and calibration facilities have been utilised by industries in automotive, agricultural machinery & construction machinery sector extensively.

STRUCTURAL ENGINEERING LAB

Established in 1987 is equipped with state of the art facilities in fatigue testing, experimental stress analysis using strain gauge technique. The laboratory is involved in testing, evaluation and validation of structural components. The laboratory is partly funded by UNDP and covers an area of 1500 Sqm.

- Fatigue testing:

Equipped with computer controlled servo hydraulic fatigue testing system to carryout fatigue test on various structural components. The tests are conducted using linear actuators of 500kN capacity and using rotary actuators of 16kNm on a specially built strong floor of size 10m x 20m.

- Experimental Stress Analysis:

The facility comprises of strain gauge technique section and photo elastic analysis section. The strain gauge laboratory is fully equipped for static as well as dynamic stress analysis with signal conditioners, microprocessor based data loggers, tape recorders and telemetry data acquisition system.

FLUID POWER LABORATORY

- **Established in 1985, the laboratory has been provided with sophisticated control console.**
- **The laboratory was totally planned and executed through in-house expertise with indigenous resources available in the country.**
- **An impressive track record in the field of fluid power technology making significant contributions in the design and development of various components and systems.**

- Assets

- **Pump test rig - Max. pr. 210 kg/cm2**
- **Motor test rig- Max. pr. 210 kg/cm2**
- **Control valve test facility-Max. pr. 320 kg/cm2**
- **Hyd. Cylinder test facility-Max. pr. 320 kg/cm2**
- **Hose test facility-Max. pr. 480 kg/cm2**
- **A multipass filter test rig upto 600 lpm flow.**

Pump test rig

- Development Activities

- **Evaluation of components and systems for performance and reliability. Providing inputs for the design of hydraulic components.**
- **Research towards up gradation of hydraulic components and systems technology.**

Filter test rig

Gear pumps/motors:

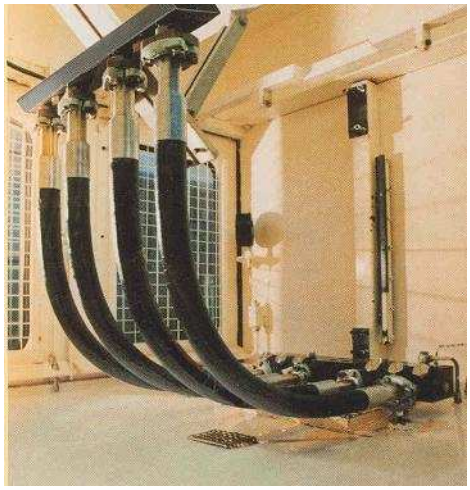
30 bar to 140 bar and 210 bar in pumps - single, tandem and triple design.

Cylinders:

Trunnion and Clevis mounted type- 90mm to 225mm bore & 140 to 320 bar pressure with a maximum stroke of 2000 mm

Valves:

Direction control valves in single and multiple spool configurations with manual and pilot operated features upto 600 lpm at 210bar and 320 lpm at 320 bar.



Hose test rig

In addition to the components developed, R&D has successfully engineered systems in premier technology areas like the introduction of hydrostatic transmission systems and radio control systems on bulldozers.

MATERIAL SCIENCE LABORATORY

Set up in 1987 for testing and analysis of materials to aid chemical, mechanical & microstructure studies.

- Equipped with a host of facilities for:

- **Analysis of chemical composition of metals and non-metals.**
- **Evaluation of mechanical properties for metals and non-metals.**
- **Study of metallographic aspects for metals.**

- Major functions:

- **Identification of materials and processes for specific applications, defect investigation and failure analysis.**
- **Providing centralized testing services for production units and identification of alternate materials and processes for value engineering.**

- Achievements:

- **Suggestion of alternate materials for improving the life of wear parts & as a measure of import substitution based on extensive laboratory and field trials.**
- **Suggestion of suitable heat treatment problems depending on composition of materials available.**