

TEST BENCHES For study of Engine Frictional Characteristics

Dynaspede is at its best when it comes to Total Solutions right from conceptualizing through implementation of application Specific machines and control systems. What sets Dynaspede apart?.... is that we enjoy working long hours..... on off-the-beat concepts..... that very often results in resolving problems than solving them. Our Special Projects Group (SPG) is a multi-disciplinary group of academicians and practicing engineers, working in an institutional atmosphere and well trained in the art of looking beyond the obvious.

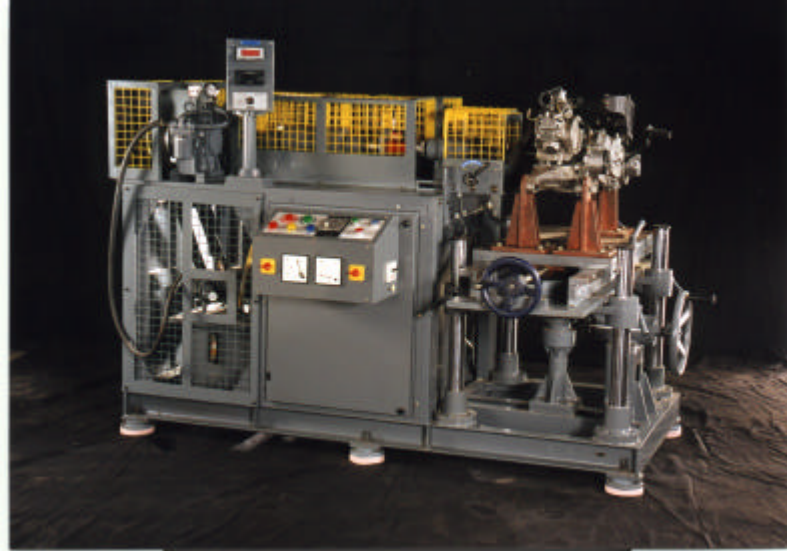
Dynaspede offers a wide range of custom built test benches for endurance and production line testing for the automobile sector.

TEST BENCHES designed and manufactured by Dynaspede include:

- Load testing of Engines.
- Engine friction monitoring
- Endurance testing or production line testing of Mechanical transmissions Viz., Gear boxes, Belt transmission, Chain transmission, Axles etc.
- Load testing of starter motors
- Load testing of wiper motors
- Testing of window regulators
- Performance evaluation of Alternators
- Customised requirements.

SYSTEM COMPONENTS for Test Benches Offered by Dynaspede include:

- Variable speed drives.
- Dynamometers
- Force and speed sensors.
- Dynamic loading system for 4 square test benches



ENGINE FRICTION MONITORING TEST RIG

OBJECTIVE : The objective of this test rig is to study the engine frictional characteristics and evaluate the frictional horse power both at the crank shaft end and wheel shaft end, by externally driving the engine at adjustable speeds.

INTRODUCTION: Frictional horsepower of an engine decides its efficiency. For the manufacturers of engines, it is important to reduce the frictional horse power of engines. This test rig facilitates monitoring of frictional torque accurately both at crank shaft end and wheel shaft end and thus evaluate frictional horse power at adjustable speeds.

TEST SETUP :

Engine mounting fixture

The mounting fixture is designed with vertical, lateral and longitudinal adjustments. This 3-axis adjustment provides precise shaft alignment for different types of engine to be tested.

Torque monitoring arrangement

To monitor the frictional torque at the crank shaft end and the wheel shaft end, two independent torque transducers are provided. The torque transducers are high accuracy brush-less in line rotating torque transducers to sense the frictional torque accurately.

Drive arrangement

The drive arrangement will include a suitably rated induction motor controlled by an adjustable speed drive. The drive to the crank shaft will be taken through a speed increase arrangement to achieve speeds up to 10,000 rpm and the drive to the wheel shaft will be taken directly to achieve speeds up to 3000 rpm.

As the test calls for monitoring of frictional torque at various speeds, an adjustable speed drive with close speed holding ability is provided.

Suitable arrangement will be provided to engage either the crankshaft or wheel shaft of the engine to the drive arrangement at a given time.

Mounting structure

The mounting structure to accommodate the engine fixture, drive arrangement, torque and speed transducers is a sturdy mechanical structure designed for low vibrations. The test bed will include fly-wheels to dampen the engine torque fluctuations as reflected on the torque transducers and will have provisions for mounting additional flywheels externally. Safety guards for all the rotating elements will be provided on the test bed with interlocks for safe operations.

PC based system is offered optionally for complete or partial monitoring/ evaluation of the following:

- 1) Evaluation of Frictional horse power
- 2) Plot characteristics of Speed Vs. Frictional horse power
- 3) Plot characteristics of Crank angle Vs Instantaneous frictional torque at adjustable speeds.

A comprehensive test rig for evaluation of BHP can also be offered as a separate test rig or as part of the test rig detailed above.

Questionnaire For Engine Friction Monitoring Test

- Crank Shaft speed (max.) :
- Crank shaft torque (max.) :
- Wheel shaft speed (max.) :
- Wheel shaft torque (max.) :
- Weight of the engine (Kgs) :
- Mounting details of the engine :
- Accuracy of measurements
 - 1. Torque :
 - 2. Speed :

- Test required to be conducted at
 - * Only at Crank shaft
 - * Only at Wheel shaft
 - * Both the shafts

- Level of Automation
 - * Manual system
 - * PLC based system
 - * PC based system with printer

For more details and application assistance, contact:



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