

1. Test Bench supporting structure
2. Two drive Systems
3. Two step up Gear Boxes with lubrication system
4. Two low speed couplings and two high speed couplings
5. Four instrumented pedestals
6. Oil system to supply/scavenging oil to/ from Test rotor Bearings
7. Measurement, control and safety system
8. Control console
9. Test specimen - two type
10. Axial loading system
11. Safety enclosure

2.2. Test rotor-bearing support configurations

Based on the test rotor-bearing support configurations in Annexure B the requirements of the facility is as given below

- a) The maximum shaft diameter is 70 mm and the minimum shaft diameter is 15 mm.
- b) Maximum weight of rotor is 90 kg and inertia 1 kgm² rotor assembly, the maximum Disc diameter will be 750 mm.
- c) The Bearing types will be of rolling element type.
- d) The supports will be either rigid or flexible type with or without damping. The actual Bearings along with the actual flexible Bearing housings will be tested with variable damping for Squeeze film or Elastomeric damping.
- e) The other support casing elements will be included in the testing for their flexibility either directly or as equivalent elements as per the test facility design.

3.0. DETAILED SPECIFICATIONS:

3.1. Test Bench Base Structure

- i) The Mechanical structure which supports the Rotor-Bearing-Support assembly shall be designed to avoid excitations to the Test specimen in the operating speed range specified in table in Annexure B.
- ii) The floor/foot mounted mechanical structure shall be properly isolated from the external excitations and shall assimilate all the loads transferred from the Rotating system.
- iii) The structure shall be separately provided with instrumentation for vibration measurement of structure and one pair of proximity probes.
- iv) The structure shall be optimally designed to save space but meeting all above and other

operational requirements.

3.2. Drive system

The drive system consists of two numbers of drive controllers and motors with the following specifications.

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3.2.1 Drive Controller:

- ☐ Type: Variable speed AC drive controllers
 - ☐ Rating: suitable for 200 kW and 60kW
 - ☐ Braking: Regenerative with dynamic braking
 - ☐ Duty: Continuous
 - ☐ Input supply voltage: 380-415V \pm 10%, 3 phase AC
 - ☐ Supply frequency: 50 Hz \pm 5%
 - ☐ Output voltage: Suitable for the selected motor
 - ☐ Speed feedback: Encoder
 - ☐ Speed regulation: 0.1% of nominal speed
 - ☐ Torque accuracy: 3% or better
 - ☐ Overload capability: 150% for one minute
 - ☐ Efficiency: 95 to 97% or better
 - ☐ Type of enclosure: IP 21 or better
 - ☐ Working environment: 0-45°C, 5-95% relative humidity, 0-1000m altitude
 - ☐ Make: Siemens, Allen bradly, ABB, Control technic/ reputed
 - ☐ Max Acc/Dec rate: 100 rpm/s
 - ☐ Panel: Made up of 2mm thick CRCA sheet steel, floor / wall mounted
- Control Drive and motor shall be integrated with control system through PLC using SCADA program with dedicated operator PC
- ☐ Control program: User friendly with safety interlocks, alarms, auto shutdown, manual testing, auto program testing provision etc.
 - ☐ PLC make: Preferably Siemens/Allen Bradley.