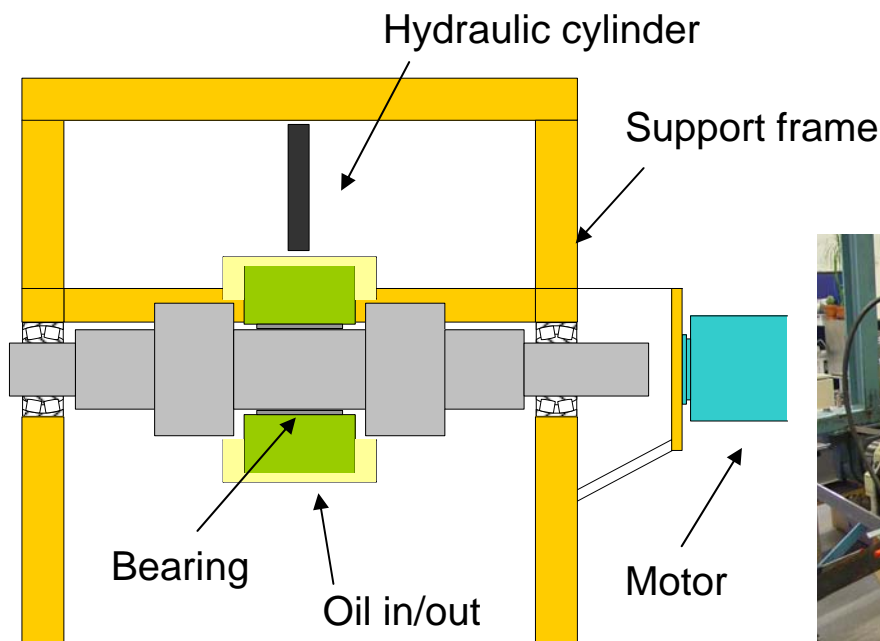


Hydrodynamic Journal Bearing Rig



A 440 V, 15 kW motor powers the test rig. It is attached, via a flexible coupling, to a horizontally mounted shaft. This shaft is in turn supported by means of two spherical bearings mounted on either side of a support frame. The provision of a frequency converter allows the shaft rotational speed to be varied. The journal bearing itself is installed in a spherical steel unit which is in turn mounted within a steel "housing". The lubricating oil is supplied by means of a small pump unit from a forty litre tank with inlet and outlet on the underside of the steel housing. The temperature of the circulating oil is controlled using a water-cooled heat exchanger. Load is applied to the bearing by means of an hydraulic cylinder. This is attached to the steel housing by a "yoke". A hand pump is employed to adjust the pressure within the cylinder while a load cell is used to accurately monitor the value of the applied load. A number of K-type thermistors are installed in the bearing and at the oil and cooling water inlets and outlets to monitor temperature. Oil film thickness within the bearing is recorded by means of a series of four evenly distributed inductive sensors. Full details of these sensors are given later on in this report.



TECHNICAL SPECIFICATIONS

| | |
|----------------------|--|
| Speed: | 0 – 2500 rpm |
| Load: | 0 – 15000 N (ca 2.2 MPa) |
| Measurements: | Temperature, Power losses, Film thickness, Eccentricity (shaft displacement) |