



High Speed Motor Test Rig

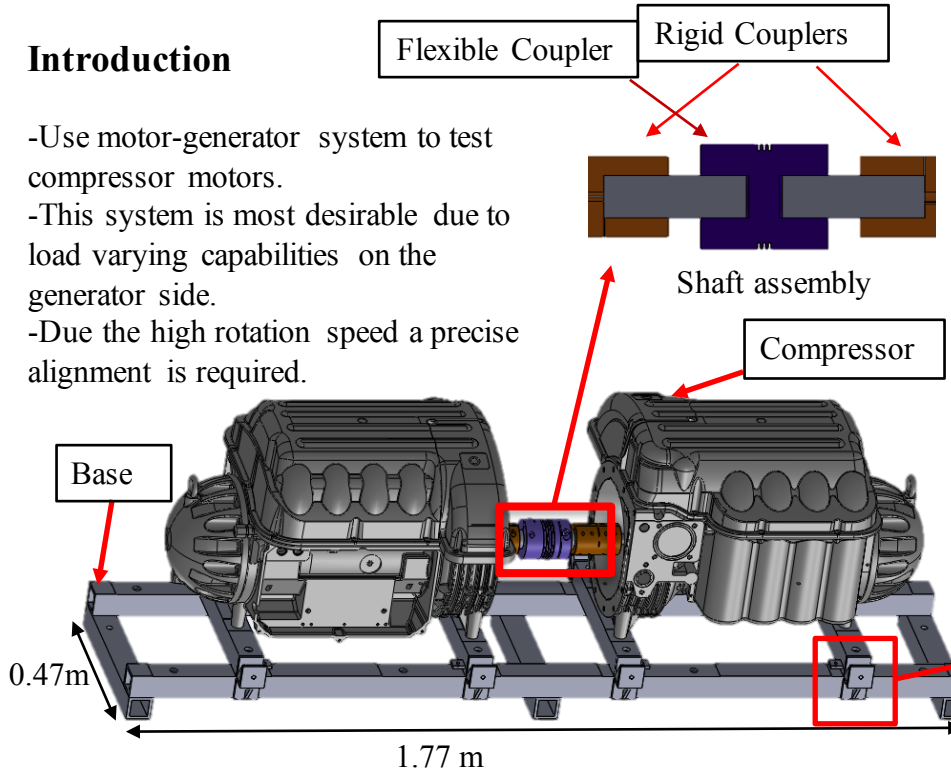


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Aim: Develop a test rig to test to qualify all TT-Series compressor electric motors, measuring the efficiency, and torque with a maximum 40,000 RPM rotation speed.

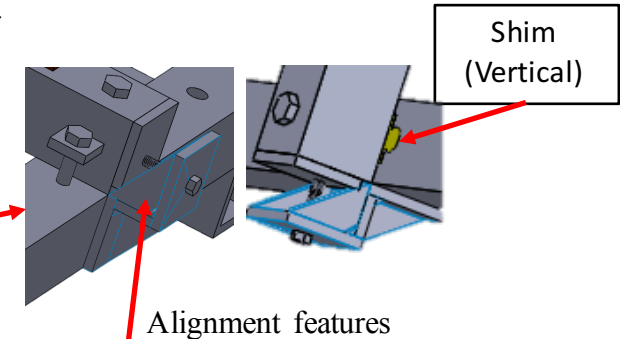
Introduction

- Use motor-generator system to test compressor motors.
- This system is most desirable due to load varying capabilities on the generator side.
- Due the high rotation speed a precise alignment is required.



Objectives

1. The natural frequency of the system should be higher than the operational speed (667 Hz).
2. Needs to be adjustable for a future torque transducer addition.
3. Alignment system tolerances cannot exceed 0.2mm lateral and 1° angular.
4. Radial force on the shaft cannot exceed 200lb.
5. Needs a safety shield in case of a failure in the system.



Assembly Procedure

1. Mount first compressor.
2. Rigid couplers, steel dowels, and flexible couplers are secured together to first compressor.
3. Mount second compressor.
4. Align using TKSA 31 laser alignment tool.

Alignment Procedure

1. Mount Alignment tool on the rigid couplers.
2. Shafts are rotated together.
3. Live readings are displayed, showing where and how much the compressor should be moved.

Future Work

- Assembling the system.
- Validating alignment system.