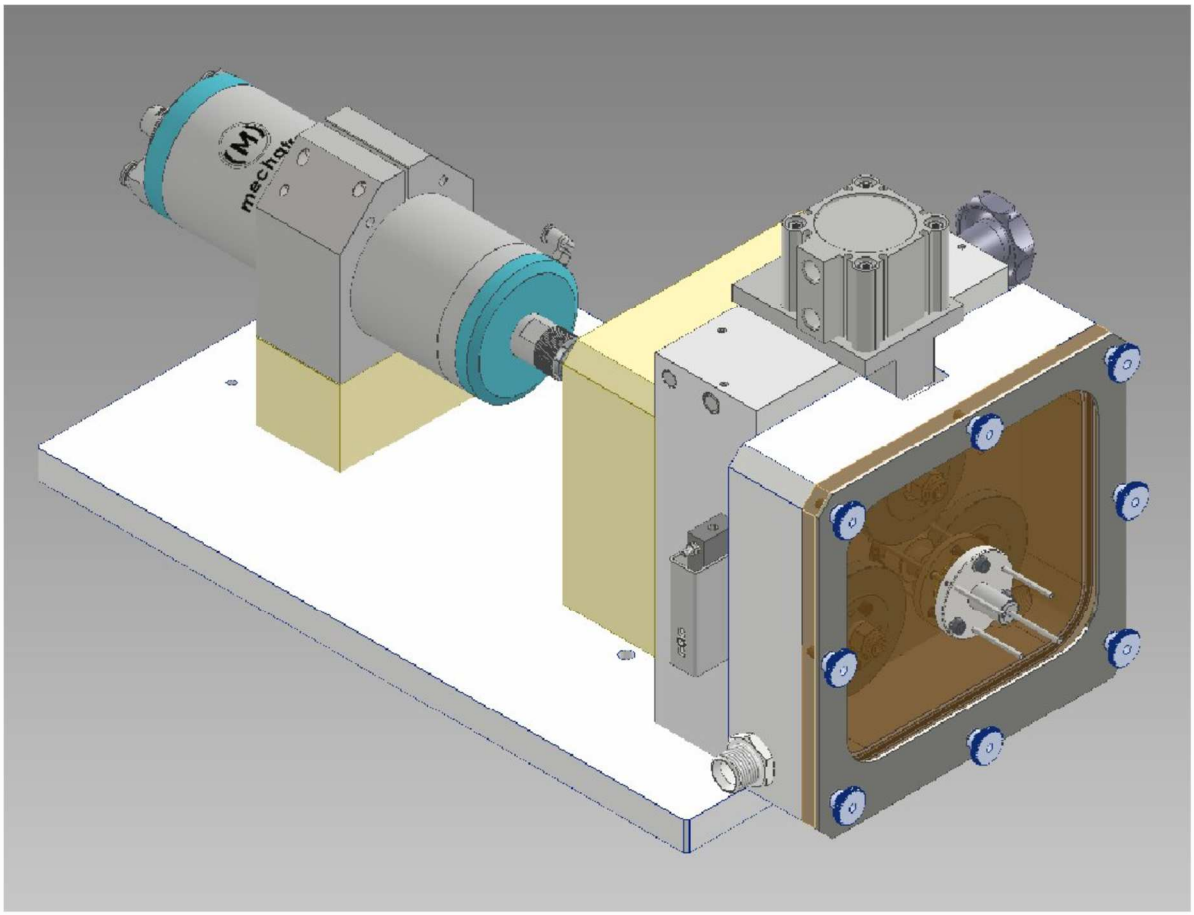
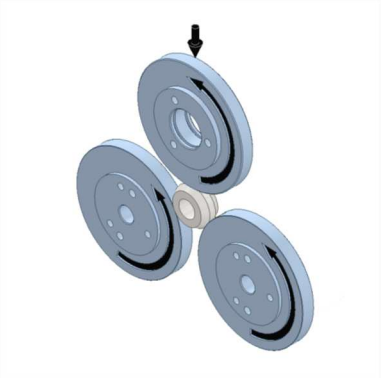
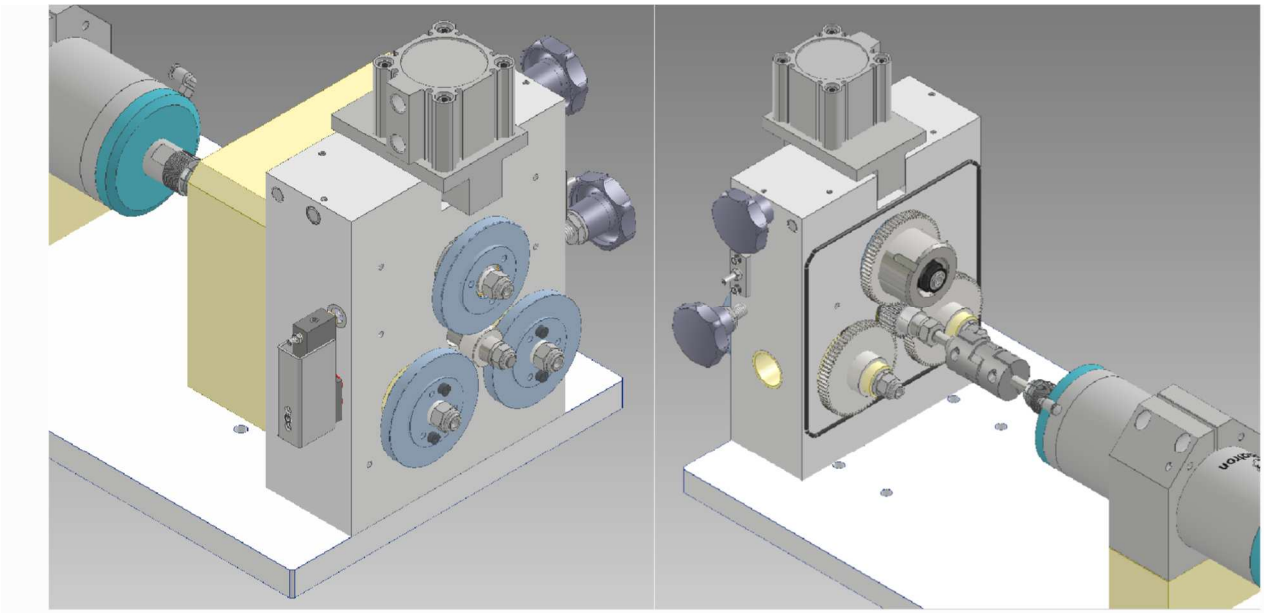
ST-PR PITTING RIG – THREE DISCS ON ROLLER





Description

The ST-PR Pitting Rig features a three-disc-on-roller configuration designed to investigate RCF failure mechanisms, including macro and micro pitting in rolling-sliding contacts under both dry and lubricated conditions. The test roller specimen is driven by a single motor, utilizing a circulating torque mechanism with gear pairs, which eliminates the need for high-capacity drive motors. Different Slide Roll Ratios (SRR) are achieved by selecting the appropriate gear pairs and/or varying the diameters of the discs and test roller.



Load is applied via a pneumatic cylinder action on the top disc, which is mounted on a floating shaft. A precision pressure transducer is used to indicate the load, which is then transmitted to the test roller, which is also mounted on a floating shaft. Finally, the load on the test roller is transmitted to the lower discs, which are mounted on fixed shafts.

A load cell reacts the horizontal force acting on the upper disc, which is generated by traction between the test roller and the upper disc.

The two lower discs are electrical insulated and fitted with brushes, allowing electrical contact measurements between each disc, through the contacts with the roller specimen.

Test Configurations

Various disc and test roller geometries can be used to achieve different Hertzian contact pressures and slide-roll ratios. Test speeds are controlled through a high-speed motor spindle with a frequency inverter to achieve the desired surface velocity of the discs and rollers. The test temperature is regulated via a lubrication circulation system with a temperature-controlled feedback mechanism.

Order As:

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Technical Specifications

Size of 3 Discs:	62 to 75 mm diameter (each) - can be varied
Size of Test Roller:	25 to 38 mm diameter - can be varied
Load Range:	0 to 2,000 N
Loading Method:	Pneumatic
Load Measurement:	Pressure transducer
Load Control:	Manual precision pressure regulator
Traction Force:	Load cell
Contact Resistance:	Lunn-Furey circuit or LCR circuit
Slide Roll Ratio:	0 to ± 30 % - can be varied
Surface Velocity of Test Roller:	up to 12 m/s
Wear Analysis:	Optical screening
Rotational Speed of Test Roller:	up to 6,000 rpm
Temperature Range:	Ambient to 150°C
Temperature Sensor:	k-type thermocouple
Motor:	1.5 kW a.c. vector motor with liquid cooling
Control & Data Acquisition:	PC with COMPEND software and USLIM interface

Automatically Controlled Parameters

Rotational Speed
Lubricant Temperature
Test Duration

Manually Controlled Parameters

Load
Slide-Roll Ratios
Lubrication Flow Rate

Measured Parameters

Rotational Speed
Load
Traction (upper disc - test roller)
Electrical Contact Resistance (lower disc - test roller - lower disc)
Vibration Signal (uncalibrated)
Temperature
Test Duration

Services

Electricity:	230 V, 6.4 A, 1.5 kW