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Customer Background

Pro Seal Products (PSP), a distributor of various non-metallic sealing products for the fluid power industry



Problem Statement

Pro-Seal requires the testing of several seal designs at various temperatures and pressures. The analytical results of the test data will allow Pro-Seal to distribute better seals to their customers and better compete with other

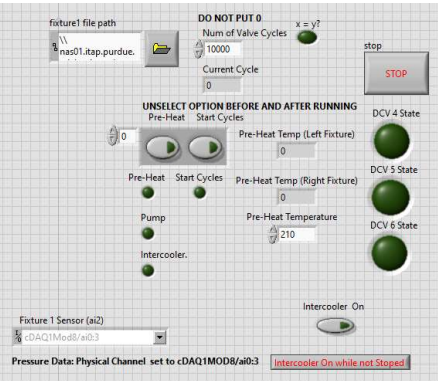
Requirements

Testing requirements include:

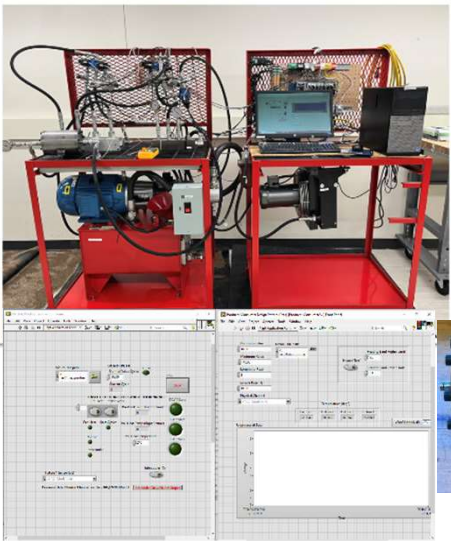
10,000 Cycles

3000 psi | 5000 psi

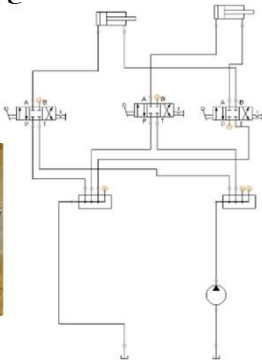
-40°F | 25°F | 225°F | 250°F



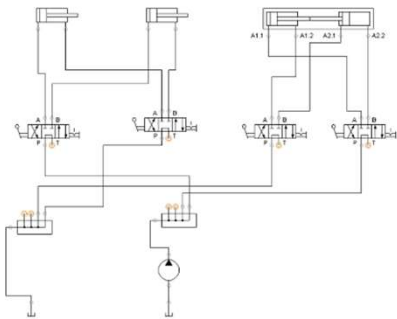
Experimentation and Concepts



At the beginning of capstone:
• One Head Seal Fixture



Final Design and Integration



Current Test bench can support:

- Heated Tests
- Multiple Head Seal Fixtures
- Rod Seal Fixture
- Can collect Temperature data

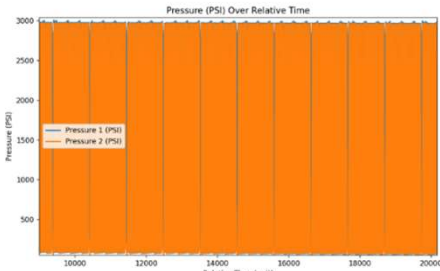


Testing

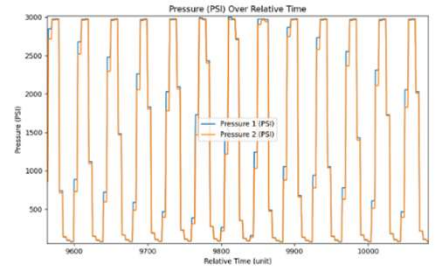
Raw Data:

	Pressure1	Pressure2	Temperature1	Temperature2
count	408618.000000	408618.000000	408618.000000	408618.000000
mean	1479.707736	1406.556913	84.181231	85.034471
std	1338.889357	1333.785948	9.372400	9.669090
min	0.085831	0.414133	67.632440	67.625110
25%	17.029884	11.984720	76.757920	77.107830
50%	1448.484000	1132.220400	85.510250	87.428810
75%	2962.796400	2955.426300	88.376670	89.861630
max	3038.883000	3018.378000	100.430600	101.220900

Graph of Data (Full Test)



Graph of Data (Sample)



Physical Analysis

