

Analysis of Pocket Thrust Bearing Using DyRoBes BePerf Ver 12

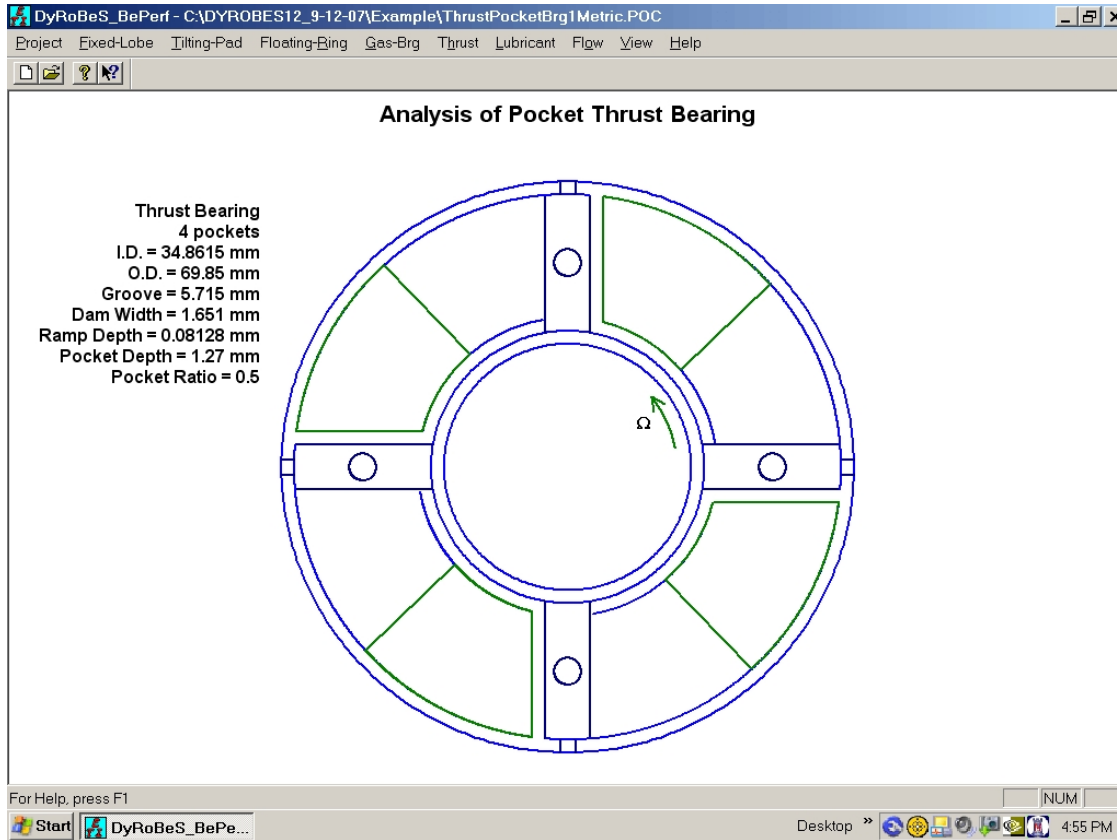


Figure 1 View of Pocket Thrust Bearing With Metric Dimensions

Fig 1 shows a schematic of a 4 pocket bearing generated by the DyRobes hydrodynamic bearing program BePerf Ver 12

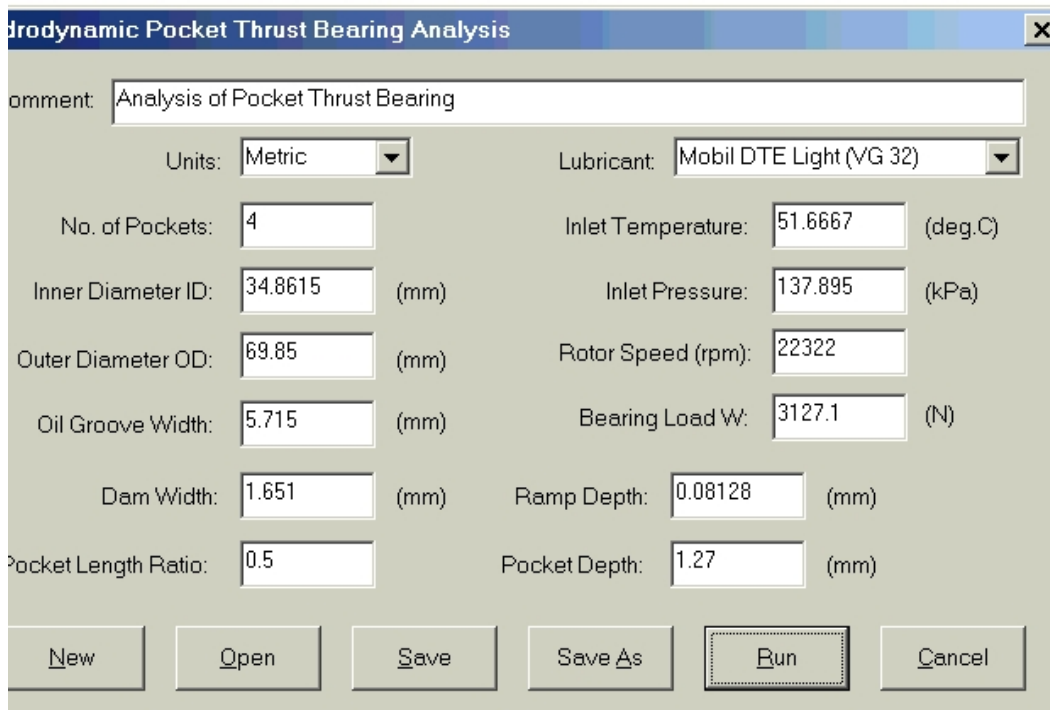


Figure 2 Input Table for Pocket Thrust Bearing

FileName: C:\DYROBES12_9-12-07\Example\ThrustPocketBrg1Metric.POC

Analysis of Pocket Thrust Bearing
Turbulence and Centrifugal Force Effects are Included

Number of Pockets = 4
Inner Diameter ID (mm) = 34.8615
Outer Diameter OD (mm) = 69.8500
Groove Width (mm) = 5.7150
Dam Width (mm) = 1.6510
Pumping Land Depth (mm) = .0813
Pocket Depth (mm) = 1.2700
Pocket Length Ratio = .5000
= E/(E+B+Dam)
E = Pocket Circumferential Length
B = Pumping Land Circumferential Length
Dam = Dam Width

Operating Conditions

Rotor Speed (rpm) = 22322.
Thrust Load (N) = 3127.10
Oil Inlet Pressure (kPa) = 137.90
Inlet Temperature (C) = 51.67
Lubricant Properties
Mobil DTE Light (VG 32)
Specific Gravity at 60 F= .86700
Coefficient of Expansion= .43377E-03
Viscosity 1 (cSt) @ F = 30.4000 @ 104.
Viscosity 2 (cSt) @ F = 5.1000 @ 212.
Specific Heat Coeff (Cp)= .41689 .48350E-03 .00000 .00000

Program Converged, The converged results:

Radial Pad Width (mm) = 17.494
Pocket Radial Width (mm) = 14.192
Pocket Circumf. Length (E) (mm) = 17.703
Pumping Land Length (B) (mm) = 16.052
Pumping Land Optimal-Depth (mm) = .07821

Pitch Line Velocity (m/min) = 3671.5
Brg Average Pressure (kPa) = 1262.2
Pocket Mean Pressure (kPa) = 1852.3
Actual Pumping Oil Flow(m³/hr) = .45821
Required Orifice Diameter (mm) = 1.9383
Operating Temperature (deg.C) = 61.48
Temperature Rise (deg.C) = 9.82
Minimum Film Thickness (micron) = 31.51
Frictional Power Loss (kW) = 2.13

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