

## Analysis of End Face Rotary Valve Seals Including Viscoelastic Effects

Certain machines utilize end face rotary valves to distribute liquids from port to port. In these designs the end faces not only possess ports for distribution but also serve as end face mechanical seals to seal in the coolant. One such application is in the regenerator section of a magneto-caloric refrigeration cycle, where the cost, power usage and leakage are critical factors. Cost measures encourage the use of non-traditional seal materials such as elastomers and plastics, creating a potential for dynamic induced phenomena due to viscoelasticity. In this paper, a fluid-structure interaction model is presented that includes the frequency dependent response of the seal. Experimental results and a discussion are also presented.