Third Laureate
Research & Development

Project Title: Design and manufacturing of Dry Gas Seal

Representative: K. Hemati Alamdari (Ph.D.)

Abstract:

Dry Gas Seal (DGS) is applied for stopping a leaking in compressor. Regarding to the highest sensitiveness of DGS, it is used high developed technology and the latest technical achievement in production and manufacture of DGS. The aim of the project is to achieve technology of DGS design and manufacture in industrial scale. Seat and Face is reckoned as two components of DGS. Also, it is important to consider two groups of forces as major forces in designing of DGS. 1- When the compressor starts working, the force resulted by pressure of compressed gas, spring force and force resulted by in friction of contact surface with O-RING causes SEAT and FACE compress together; 2- produced force in effect of condensing gas injected in macron grooves on FACE surface and formation of gas pad causes separating SEAT and FACE from each other. If FACE and SEAT fully stick together; during rotation caused by rising heat, SEAT and FACE break mechanically.

As a result, there should be multi micron GAP of gas between these two surfaces until FACE moves on this layer of gas. For design of DGS, in regard to dynamic rules of gas and transcript of special codes as well as using of the governing relations on static forces, DGS will be designed. For making grooves on the surface of FACE, laser machinery with 0.1 micron scale and for other part of DGS CNC machine is used. The DGS has several application in oil, gas and petroleum industries.