CEPS Research Newsletter

MAY 5, 2025

Message from the Dean's Office

Greetings… this is the first research newsletter, and we hope to continue with this exercise, as it creates value for the college enterprise and for you personally. Each newsletter will have three parts: a) Message from the Dean's office on information that may be of interest to you, b) Research highlight on some effort that may of interest to a wider audience in the college, and c) some major research opportunities (> $2M) that have been vetted by us, and we believe that we have a good chance to put together a competitive proposal in a reasonable amount of time (4-6 months). Hopefully, these opportunities will be of more value than emails with just listings of grant opportunities.

Research Highlight

GMRC R&D Grant: Tribology lab (AETL) wins project to understand basic surface phenomena and improve pipeline gas compressors

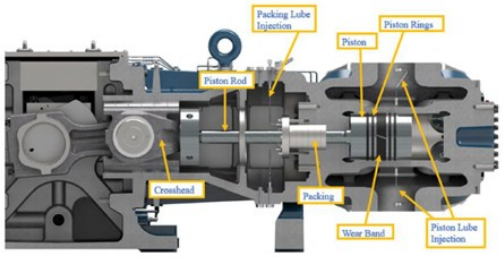

Figure 2: Cutaway view of a single throw of a compressor (Ariel Corporation)

Description: The Akron Engineering Tribology Lab (AETL) has been selected to investigate lubrication and surface wetting of polymer piston rings used in industrial and pipeline reciprocating compressor systems. Efficient gas compressors are key to sustainable economy based upon natural gas, CO2 and hydrogen transport and use. These gases, especially at high pressures (up to 1500 psi) interact with lubricants in ways that are poorly understood, leading to shortened equipment life and higher costs. The project fully funds a Ph.D. student and involves measurements of surface energy and wetting of lubricants in high pressure gases. The results will inform new models to predict wear behavior and to guide the development of new lubricants and piston ring materials. The work is sponsored by the Gas Machinery Research Council (GMRC) a community of proactive natural gas companies dedicated to investigating technical issues within the rapidly evolving gas machinery industry and uncovering innovative solutions that improve reliability, efficiency, and cost-effectiveness of mechanical and fluid systems.

Major Opportunities

1. DOD-AFOSR Fiscal Year (FY) 2026 Department of Defense Multidisciplinary Research Program of the University Research Initiative (MURI) **- $15M, applications close 9/5/2025**
2. DOD-AMC Fiscal Year (FY) 2026 Department of Defense Multidisciplinary Research Program of the University Research Initiative (MURI) Department of Defense **- $7.5M, white paper due 9/5/2025**
3. NSF – Engineering Research Initiation **- $11M total funding, applications due 9/16/2025**
4. NSF - Advanced Technological Education **- $7.5M, applications due 8/2/2025**
5. NSF Cyberinfrastructure for Sustained Scientific Innovation **– $34M, application due 12/01/ 2025**

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