

Innovative Technologies Advance Vacuum Equipment Application

Don't limit the use of vacuum equipment to conventional application

Steam ejectors, vacuum process condensers and liquid ring vacuum pumps are mature products and each has supported the chemical industry for decades. Manufacturers of vacuum equipment continue to research and develop new ways these products can improve the operation of various processes through lower capital cost, environmental impact reduction or improved operating efficiency. Innovative technologies continue to increase the applicability of vacuum equipment in the chemical industry. In this issue, specialized vacuum equipment applications are reviewed.

Ejector Systems

Alternate motive fluids: Chemical process industries (CPIs) continue to rely on ejector systems to produce and maintain vacuum for numerous vital processes. Most often an ejector system is used in its classic form, with high-pressure motive steam used as the motive fluid. This mainstay of the CPI has its place, however, there are factors that preclude steam as a motive fluid. A particular process may contain components that solidify within an ejector, requiring frequent system shutdowns for product removal. Perhaps steam contacting the process will destroy a product being manufactured. Or, your plant is try-

cyclohexane, refrigerants and phenol. The main advantages of using an organic fluid for an ejector are the motivating fluid acts as a solvent for the process vapors, the process fluid is not contaminated with water/steam, chemical treatment problems are minimized, and the total energy requirements are considerably less than if steam were used as a motivating fluid.

Vital processes where alternate motive fluids are used include, but are not limited to, toluene diisocyanate, methylene diphenyl diisocyanate, polyethylene terephthalate, styrene, butadiene and resins.

An organic motivated ejector system most often is a packaged, self-contained system that includes ejectors, condensers, a vaporizer, coolers, pumps, controls, piping, all auxiliaries and packaging. When specifying or evaluating this type of ejector system, be certain to assess a manufacturer's experience with the selected motive fluid or



Summary

Leading vacuum equipment manufacturers develop and research new technologies that offer advantages for the CPI. Conventional uses for vacuum equipment remain the mainstay. However, significant operating efficiencies and economic/environmental gains may be realized by extending the applicability of mature products like steam ejectors, liquid rings pumps, dry vacuum pumps, and process condensers. Alternate motive or seal liquids extend the use of steam ejectors and liquid ring vacuum pumps. Dry vacuum pumps meet the growing concern of reducing waste streams and environmental impact. Freeze condensation is an innovative technology to improve operational reliability and reduce environmental impact.

When you are confronted with an application where it may not appear that conventional vacuum equipment will suffice, turn to your vacuum equipment manufacturers. They may have proven solutions available or they can engineer an answer that meets the objectives.