

CASE STUDY

Ring Damped Valve Saves Thousands in Energy Costs for Gas Gathering Facility

SCENARIO

Operators of a gas gathering facility in North Dakota were searching for ways to reduce energy costs. The facility operates a Dresser Rand RDS-4 reciprocating compressor running at 896 rpm to process natural gas. The customer has traditionally used Dresser Rand PF valves for this application.

SOLUTION

The quest for greater energy efficiency motivated the customer to replace their compressor valves with patented Cook Ring Damped Valves. Unique features in the Ring Damped Valve design allow them to run at higher lifts than traditional plate valves, resulting in maximum flow area for any given valve size. Increased flow area significantly reduces the horsepower required to move gas.

Cook designed and manufactured 6.09-inch OD Ring Damped Valves to outfit the two first-stage cylinders, which operate at 330 psig suction and 810 psig discharge pressures. A Windrock 6320 PA/VA Portable Analyzer was used to measure the performance of the Ring Damped Valves every 2,000 hours of operation.

RESULTS

Analysis of the data revealed substantial benefits of the Ring Damped Valves over the PF valves:

- 18% higher flow (MMSCFD)
- 25°F (14°C) lower operating temperature
- 11% better economic performance (\$/MMSCF) due to 14% lower energy usage (HP/MMSCFD)

Figure 1 compares horsepower usage between the Ring Damped Valves and PF valves. It also displays the financial benefits accrued from reducing horsepower. The facility's energy consumption decreased by approximately \$2,200 per year for each Ring Damped Valve installed – a remarkable return on investment with corresponding environmental benefits from reduced energy usage.

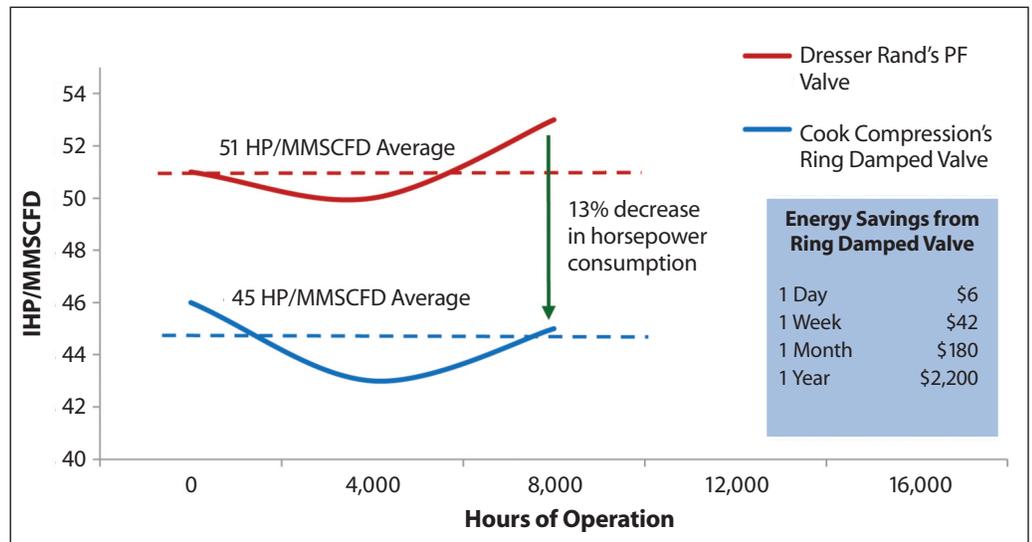


Figure 1. IHP/MMSCFD usage comparison

