



# VALLEY FORGE LOAD INDICATING SOLUTIONS OIL & GAS INDUSTRY

**LOCATION:** Illinois, USA

**SPECIFIC APPLICATION:** HF Alky Heat Exchanger

**PARTNER:** Lamons

**BOLTING ISSUE:**

A heat exchanger in service for about 20 years which has always been a notorious “leaker”. Before this installation, this heat exchanger would leak after every cycle.



**VALLEY FORGE SOLUTION:**

Supply bolts with Valley Forge SPC4™ Load Indicating Fasteners instead of standard conventional studs. Installers relied on load, reading directly on each stud as torque was applied. Rechecks were done after all fasteners were loaded and ones out of range were tightened back into range. Perfect load on each fastener was achieved before putting the heat exchanger back into operation. The bolts were used in combination with Lamons’ Corrukamm gasket and Belleville washers.

**INSTALLATION:**

**120E-503 Regneration Heater Data**

	Shell Side	Tube Side
Process Fluid	Isobutane/Olefin Feed	600# Superheated Steam
Design Temperature	400°F	750°F
Design Pressure	410 psig	650 psig
Normal Flow (when online)	3560 BPD	6350 LBH
Temperature when hot	390°F	650°F
Temperature when cool	145°F	Amb.

\*\*Exchanger runs at the hot cycle for 7-8 hours every 3 days.

	Tubesheet to Shell	Channel Cover
Current Bolting Material	SPC4 Headed Studbolt B7	SPC4 Headed Studbolt B7
Number of Bolts	20	24
Bolt Diameter	3/4"	3/4"
Washers	4 belleville per nut	4 belleville per nut
Current Gasket	CorruKamm 3/32" thk. CS	CorruKamm 3/32" thk. CS

Bundle is integral to channel.

Recently increased thickness of channel cover and flange to prevent cupping.



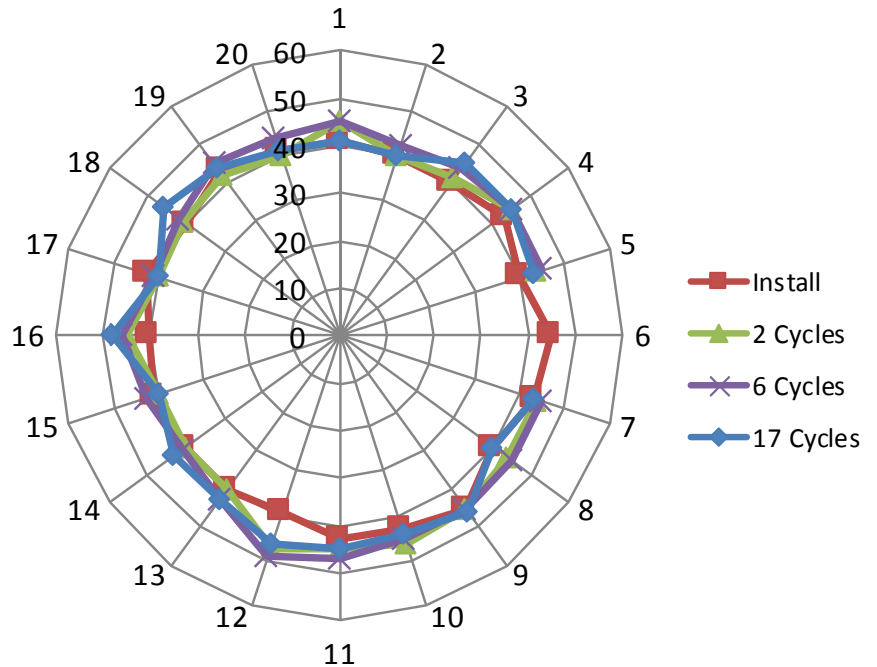
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## OUTCOME:

After 22 thermal cycles on this exchanger:  
Unit does not leak anymore!

## CONCLUSION:

Cost of fixing this leak issue on exchanger resulted in the amount of approximately \$213,000 savings in the last 4-5 years. The loss over the last 20 years was not extrapolated nor was the maintenance cost! The loss is calculated from the exchanger leak rate of 600 lbs steam and Isobutane.



In the 20 years before load indicating fasteners were installed, there had not been any cycle without leaks.  
**WITH SPC4™ LOAD INDICATORS: Completed 22 cycles leak free.**

