

HSCV15497A reduces H₂S and overall operational costs



SITUATION

An operator in South Texas needed to remove as much as 26 ppm of hydrogen sulfide (H₂S) from a dry gas stream to meet sales specification.

PROBLEM

The volume of gas to be treated for H₂S contamination would decline significantly as the gas reservoir was depleted, ranging from as much as 2 million standard cubic feet per day (MMcf/d) (57,000 m³/day) to as little as 0.5 MMcf/d (14,300 m³/d) as the wells depleted.

The dehydrated gas was transported in a 4-inch (102 mm) pipeline at a pressure of 755 psig (5274 KPa) and at 90°F (32°C). The incumbent water-soluble H₂S scavenger, pumped at volumes of up to 40 gal./day, was insufficient to treat the gas stream to the desired H₂S specification and was increasing the dew point of the gas to unacceptable levels. The operator asked ChampionX to survey the system and recommend a solution.

86%

LOWER COSTS THAN INCUMBENT SYSTEM

INSIGHT

ChampionX assessed the system and identified operating characteristics that would have to be taken into account when selecting an H₂S scavenger, including:

- Low superficial gas velocity and accompanying laminar flow, which could result in poor mixing.

- Contact time of 17 minutes or more while gas was in the transportation pipeline was a reasonable length of time for an H₂S scavenger to react.
- Since the gas was dry, an H₂S scavenger that was not soluble in water would be needed. The low flow velocity, while providing adequate contact time, was not sufficient to ensure good mixing of an H₂S scavenger with the gas.

SOLUTION

Based upon the evaluation of the dry-gas production system's H₂S-related operating parameters, ChampionX recommended the operator inject HSCV15497A due to its solubility and proven performance in similar systems.

Volume	2.0 mmscfd	0.5 mmscfd
Gas Velocity ft/sec	5.1	1.3
Contact Time/minute	17	69
HSCV15497A \$/day	\$48.80	\$9.76
HSCV15497A \$/mscf	\$0.024	\$0.019
Incumbent \$/day & \$/mscf	\$360, \$0.18	—

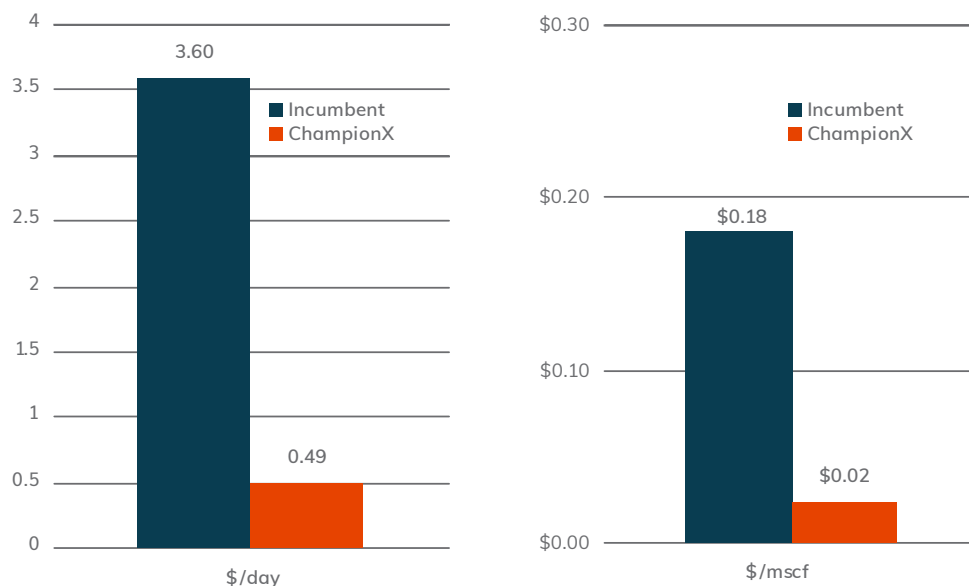
RESULTS

The HSCV15497A injection was started, and it reduced H₂S to acceptable levels without changing the dew point of the gas, as anticipated by ChampionX.

Optimization of injection rates resulted in treated gas costs of \$0.024 per thousand cubic (\$/Mcf), versus the incumbent cost of \$0.18/Mcf, an 86% cost reduction. The added value came from not increasing the dew point of the gas stream while removing the H₂S, as shown in Figure 1.

As gas production declined and the amount of contact time increased, the absolute efficiency of HSCV15497A improved to \$0.019/Mcf, an additional 21% efficiency improvement. Overall, the customer reduced treating costs by 86%, an annual savings of more than \$113,000.

Figure 1



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