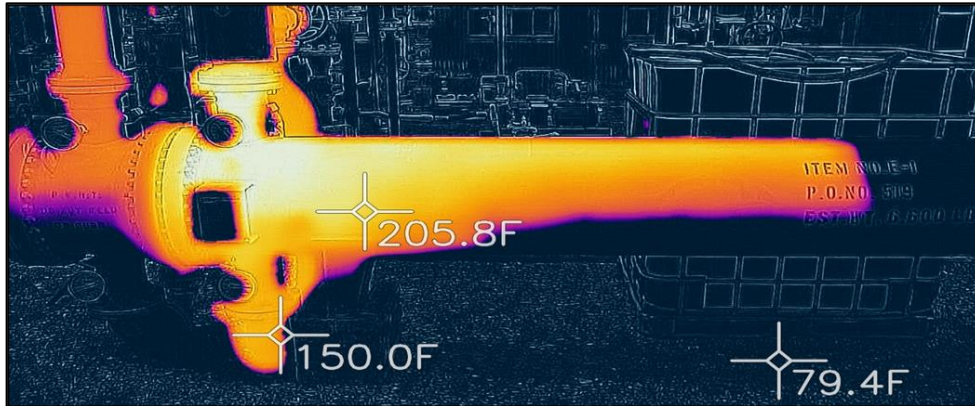


## Corrosion Troubleshooting – Case Study

When analyzing amine, it is important to look at all factors especially potential corrosion. A facility had high levels of iron and chromium (stainless steel corrosion byproduct) in the amine analysis and appeared to have increased concentrations of corrosion byproducts recently with an addition of a new lean/rich exchanger.

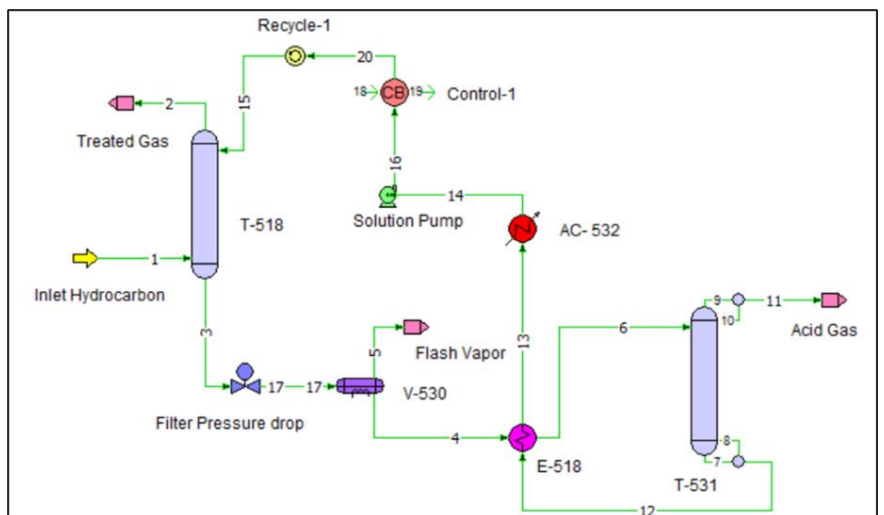


When Nexo Solutions was onsite, the various parameters around the system were gathered along with thermal images of the unit. The parameters such as flow rate, pressures, and temperatures were used to simulate the process and determine high areas of corrosion and what can be done to improve the amine

corrosion. It was found that the primary amine, MEA was no longer the optimal amine as gas composition changes over the years resulted in rapid corrosion rates. The thermal images taken indicated that the high chromium level was due to the new lean/rich exchanger internals nearly completely corroded.

The thermal image above indicates how the lean amine (hottest temperature, bright color) does not flow through the entire vessel. This indicated that the stainless-steel seal strips were compromised by corrosion. It was also found that when recently installed the rich outlet temperature was 195F and rapidly decreased to 160F. The lack of heat provided to the regenerated caused the reboiler to work much harder and in return stripped high levels of CO<sub>2</sub>. When CO<sub>2</sub> stripping occurs in the reboiler high corrosion rates may appear in the reboiler and bottom of the regenerator.

The simulation performed results indicated that the lean rich exchanger and reboiler were at high risk of corrosion due to the high CO<sub>2</sub> stripping. MDEA was the optimized amine to use to reduce corrosion. With only a pump to replace the facility could strip the gas at higher rates and a reduction of 30% heat duty to the reboiler with substantial decrease of corrosion



For more information on our various case studies, contact us at [support@NexoSolutions](mailto:support@NexoSolutions) or visit our website.