

Temperature Effect on Corrosion and Erosion in Transfer Line Exchange by CFD

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Abstract : There are some TLE (Transfer Line Exchanger) that their lifetime reduced to 4 years instead of 30 years and after 4 years, we saw corroded area on one part of those T.L.E. that named Oval header and this happened in condition that other parts of those TLE were safe and perfect. By using of thickness measurement devices, we find that thickness reduces unusually on that part and after research and doing computer analysis with fluent software, it was recognized that on that part, we have high temperature and when this out of range temperature adds to bad quality of water, corrosion increased with high rate on that part and after more research it became obviously that it case by more excess air in furnace that located before this T.L.E. that this more air case to consuming more fuel to reach same furnace temperature so it concluded that inner coil fluid temperature increased and after received to T.L.E, this case happened and deflector condition, creep in coil and material analysis confirmed that condition.

Keywords : Transfer Line Exchanger (TLE), CFD, corrosion, erosion, tube, oval header

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