

Petrochemical Industry

CASE STUDY

www.tcradvanced.com

Key Facts

Sector Petrochemical Industry

Category Investigation of Pass 4 Primary Quench Exchanger Process

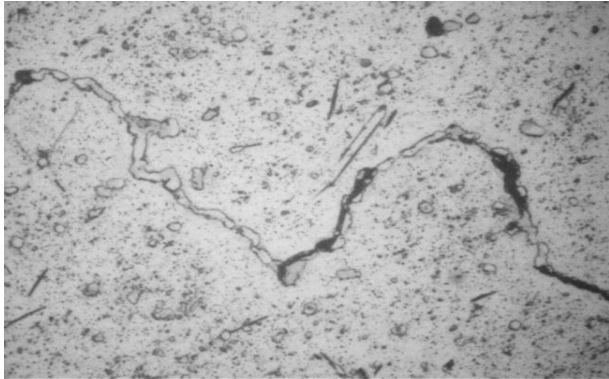
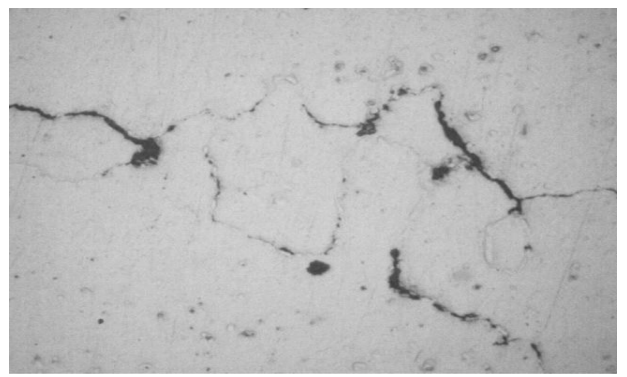
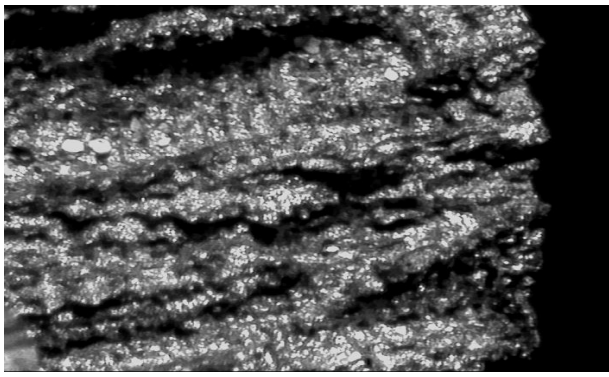
Problem

- The process gas inlet cast piece of Primary Quench Exchanger failed after 04 years of operation.
- High temperature process gas from pyrolysis furnace, exchanges the heat to generate steam in the quench exchanger.
- The material of construction for the PQE inlet casting is HP Modified grade alloy containing 35Ni and 25Cr.



Diagnosis

- The premature failure of inlet casting of primary quench exchanger appears to be under influence due to restriction in the inner tubular portion's thermal expansion that exerted tensile stresses at failed region and eventually failed under stress rupture mode.



Solution/Recommendations

- The length of the inner portion of the tube in inlet casting shall be strictly maintained as per upper tolerances as shown in the drawing; no oversize is permitted as it restricts free expansion.
- It is essential that dimensions to be checked to ensure the length as per the drawing, before welding.
- OEM may be consulted for possible alteration in tolerances /design modification in case when strict quality control cannot be ascertained.

Contact Us

If you are interested to learn more about TCR Advanced,
please send an email to: sohel@tcradvanced.com

Mr. Sohel Vaidya

Business Development Manager