

EPC Industry

CASE STUDY

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Key Facts

Sector EPC Industry

Category Investigation on 4" equal tee

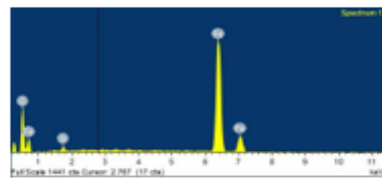
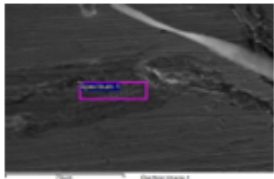
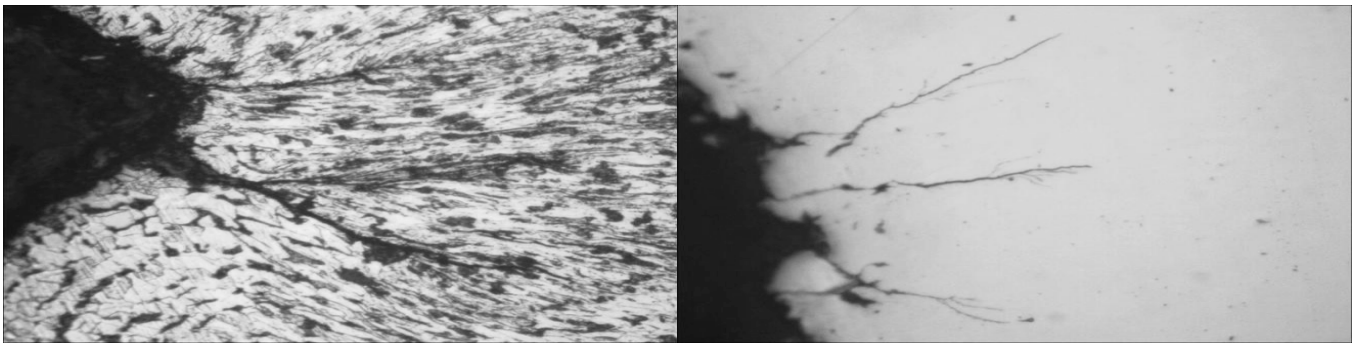
Problem

- 4" dia. equal Tee was found to have cracked from the middle portion, after a day from the completion of welding.
- Prior to welding DP test had been carried on bevel ends and branch area of tee and defects were not found.
- the tee was found to develop crack on belly portion next day even though the precautions were taken.
- The MOC of the Tee is ASTM A234 WPB, and it has been normalised at 920 deg. C



Diagnosis

- Premature failure of tee after welding is on account of presence of intrinsic defects like oxide scale entrapment and hairline cracks on ID as well as OD surface.
- The improper cold forming operation in absence of prior annealing treatment of the pipe, along with the poor post normalizing treatment of the Tee has retained the deformed structure.
- Overall it rendered the tee susceptible to cracking under influence of welding stresses as well as possibility of stress while handling the assembly.



Elements	Composition by weight per cent
Oxygen	27.76
Silicon	1.87
Iron	70.37

Solution/Recommendations

- The tee should undergo WFMPI to ensure freedom from crack like defects.
- Prior to cold working the pipe should undergo proper annealing treatment and ID surface should be free from adherent scale.
- In-situ metallography requires to be carried out to ensure proper normalizing treatment done to the tee on sampling basis.

Contact Us

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

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