

Insurance Industry

CASE STUDY

www.tcradvanced.com

Key Facts

Sector	Insurance Industry
Category	Investigation of Jacket Pipe-Polymer Line

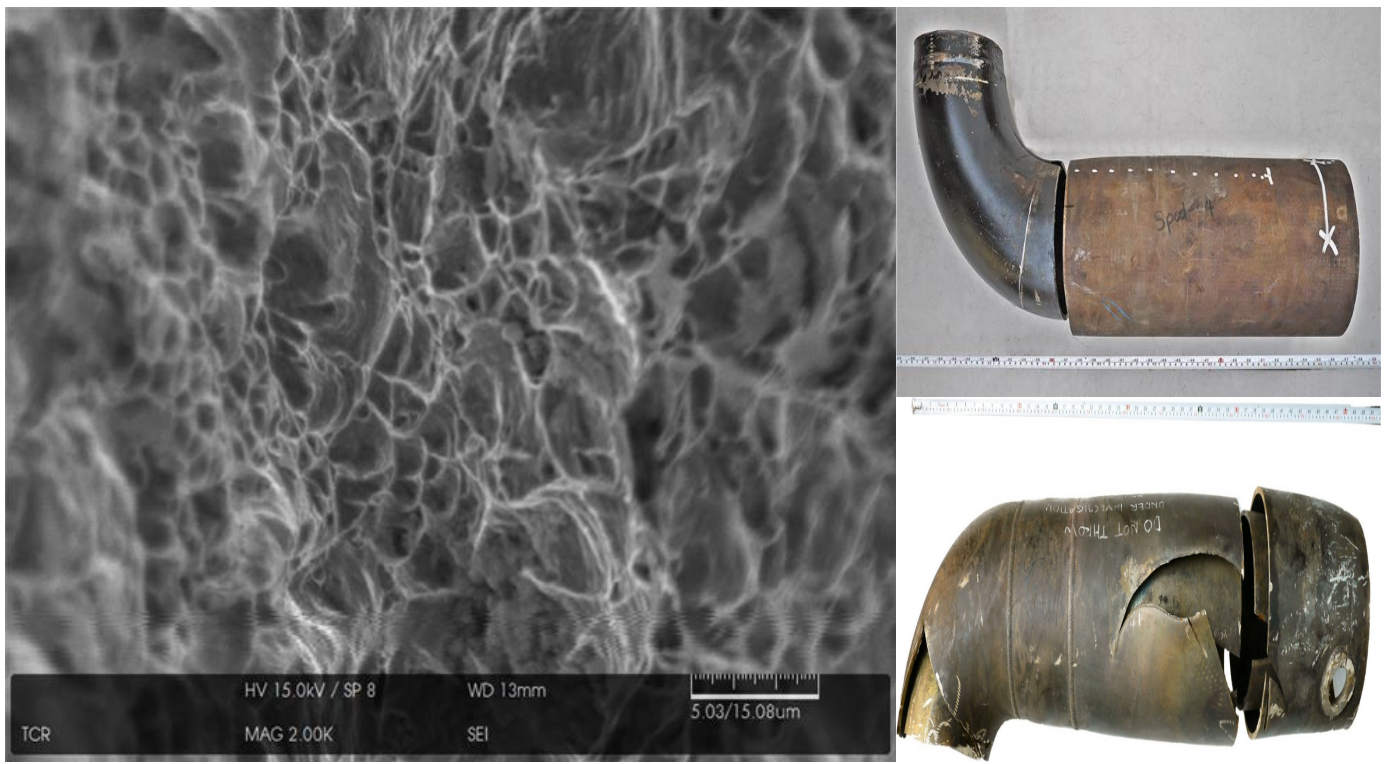
Problem

- The jacketed line connecting to extruder in polycarbonate plant was ruptured approximately 1 meter long in longitudinal direction.
- The failure was noticed as the extruder tripped all of a sudden due to high discharge pressure alarm.
- The failure had taken place twice at spool number 4



Diagnosis

- The failure of the inner pipe of polymer extruder from spool , in both the cases is due to combined influence of presence of residual stress, internal pressure and probable thermal shock along with use of SS316-L material instead of SS316.



Solution/Recommendations

- Failure pattern in both the cases appear similar;
- Stricter quality assurance with respect to material used, chemical composition & physical properties is necessary, ensuring the original stress analysis of jacketed piping meeting worst combination of temperature variation and cyclic variations which are possible during actual operation.
- It is necessary that the pipe should undergo proper solution heat treatment after cold working so as to confirm freedom from residual stresses. That can be ensured by microstructure as well as accepting the hardness in the range of $180 \text{ BHN} \pm 20 \text{ BHN}$ as an indirect check on residual stresses.
- The reasons for sudden temperature drop in the oil need to be investigated.

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