

# Automobile Industry

## CASE STUDY

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### Key Facts

Sector Automobile

Category Investigation on Flange to pipe joint of front DSL muffler

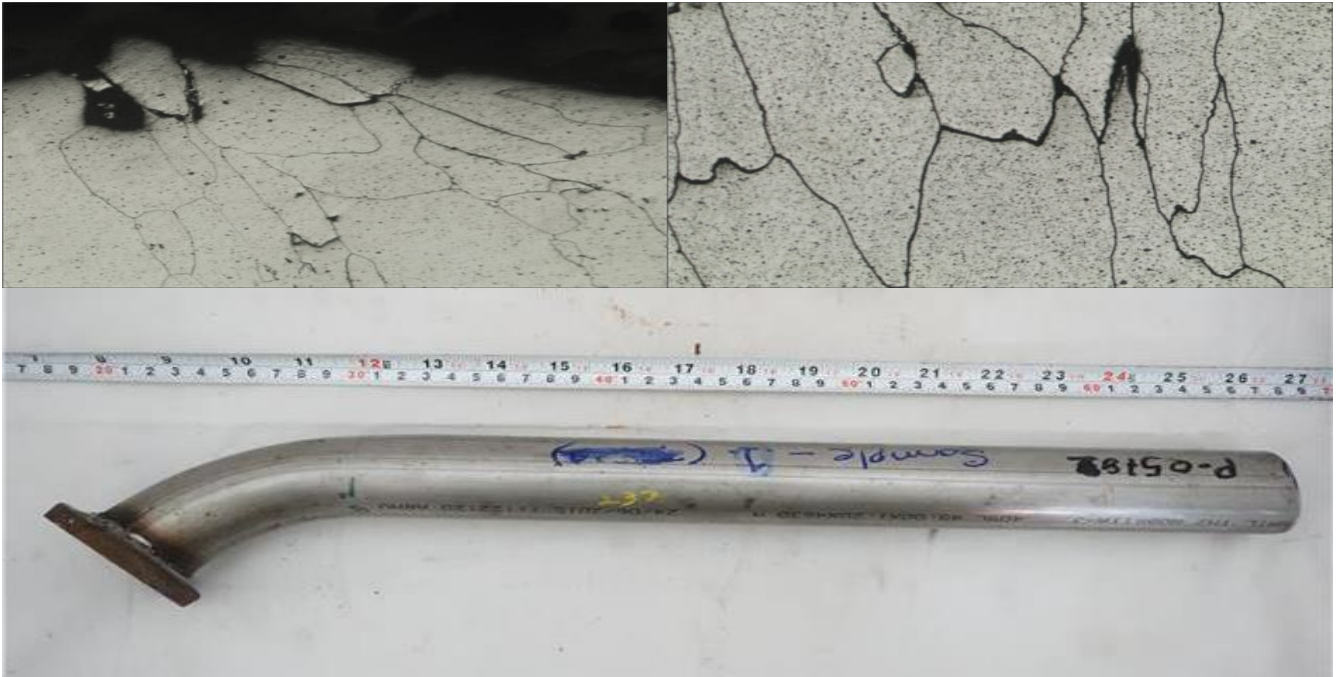
### Problem

- Front muffler failure was observed after vehicle run of 5775km.
- During period of six months, four more failures have been experienced in the identical manner.



### Diagnosis

- The failure of muffler assembly from the weld joint between flange and the pipe is because of intergranular stress corrosion cracking due to sensitized condition of the weld and prevalence of corrosive environment.
- The weld microstructure shows sensitized condition
- The failure is in form of intergranular cracks, filled with scale along the weld between pipe and flange from ID side



## Solution/Recommendations

- The metallurgical condition of both flange and pipe in terms of MOC, microstructure and hardness values is normal.
- The welding should be free from grain boundary carbide precipitation.
- The source of sulfur and moisture based contaminants needs to be identified and eliminated.
- Welding details of flange to pipe and its sequence may be examined for improvement to avoid distortion.

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## Contact Us

If you are interested to learn more about TCR Advanced,  
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