CASE STUDY 18

(INSITU POLYMER QUENCHANT UPGRADATION)

CUSTOMER DETAILS :

Customer dealing with Heavy Duty Metal Components used for specific application in Oil & Gas industries, Energy and Power Sector, Automobile and Heavy Engineering Projects

OBJECTIVES FOR CONDUCTING THE TRIAL

1.To switch from high quenching speed Polymer Hiquench P11 to lower speed Polymer Hiquench P12 (P145) by top-up and reduce cracks in components.

2. Adjust quenching time to reduce cracks

OPERATING / APPLICATION DETAILS:

1. Quenchant Selected: Hiquench P11 (80%)+Hiquench P12 (20%)

2. Hardening Temperature: 830-870 °C Variable with components)

3. Soaking Time: 2-4 Hours

4. Quenchant Temperature: 40-50 °C

5. Agitation: Full capacity

6. Quenchant concentration: 20%

7. Quenchant volume: 30000 Liter

8. Quenching Time: 10 Minutes

9. Microstructure requirement: .Martensite

10. Hardness Specification: 40-50 (Variable with component) HRc
Other requirement: No Crack

11. Tempering temperature: 500-650 °C for 4 hours.
(Variable with component)

COMPONENT VIEW

Tie rod ball pin bearings

PRODUCT RECOMMENDED: HIQUENCH P12

TRIAL RESULTS

Cooling curve Comparison with P11(20%),P12(20%) and (P11+P12 (20%)) shows feasibility of top-up P11 with P12

After top-up P11 with P12 crack % reduced from 10% to 1%.

By reducing quenching time from 30 minutes to 10 minutes , no cracks observed.