

CASE STUDY 44

(NEAT CUTTING OIL FOR BROACHING OF WORM GEARS)



CUSTOMER DETAILS :

A powertrain component manufacturer based in South Tamilnadu, supplying clutch hub, turbocharger, connecting rod, turbine shafts and worm gears to leading automobile companies around the world.



OBJECTIVES FOR CONDUCTING THE TRIAL

1. No EHS Issues - Operator & Environmental Friendly.
2. To achieve the surface finish below 1.6 Ra.
3. To reduce the overall oil cost.

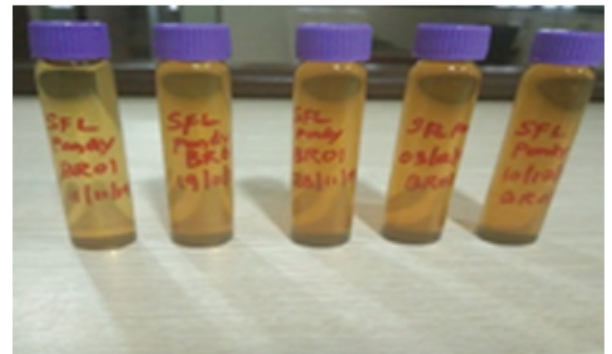


OPERATING / APPLICATION DETAILS:

1. Machine : Cranebel Broach M/C
2. Part : Worm Gears ,
3. Material : Steel
4. Application : Broaching
5. Cycle time : 60 Secs
6. Tool – Broaching tool
7. Filtration : Magnetic Conveyor
8. Initial Loading : 400 Ltrs
9. Chiller unit : Not Available
10. Broaching Stage : 3 Stages – Roughing, Semi finishing and Finish
11. Depth of cut : Up to 4.5 mm – Depth of Cut stage 1 – 2.5mm
Stage 2 – 1.25mm – Finish – 0.75mm
12. Machining Area : 210 mm
13. Trial Period: 3 months

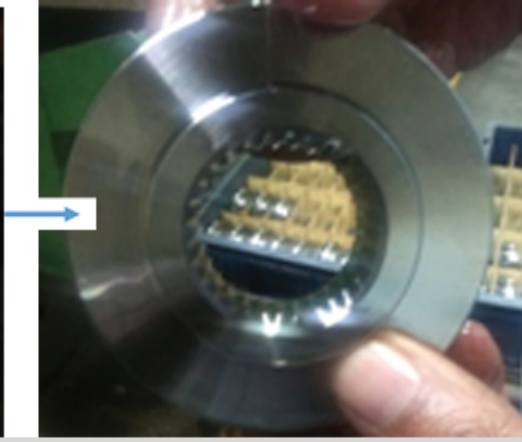
Details	
Trial Started on	05.11.19
Trial Monitored Up-to	07.02.20
Initial Fill up	420
Top-up	840
Surface Finish Requirement	<1.6 Ra
Teeth Distance	Achieved Required Finish

OIL SAMPLE COLOR AT PERIODIC INTERVALS :





COMPONENT VIEW



PRODUCT RECOMMENDED: HICUT BR 01

TRIAL RESULTS



No EHS Issues observed -
Operator & Environmental Friendly.



Achieved finish between of 0.9 Ra
to 1.2 Ra. – without any burn marks



Good Flushing properties
observed



Good oxidation stability observed



Direct Cost saving by 5%
achieved