

Abstract

Plunger lubricant is necessary for pressing the molten metal into sleeve, plunger tip and piston chamber in the die-casting process. Proper lubrication of the plunger is essential to provide smooth filling of the cavity, reduce energy consumption during the shot and extend the life of the plunger tip and sleeve.

To cater to modern plants and environmental requirements, Hardcastle Petrofer offers an entire spectrum of Plunger lubricants; Graphite-based and Graphite-free products manufactured at their works located at Sarigam, Gujarat.

Hardcastle Petrofer Pvt. Ltd. range of plunger lubricants covering varied application requirements are appended below:

Product Range

Graphite Base

Hilubric PL G1 graphite in oil

Graphite Free

Hilubric PL NG 32 having a viscosity of 320 cSt @ 40°C

Hilubric PL NG 45 having a viscosity of 450 cSt @ 40°C

Hilubric PL NG 63 having a viscosity of 630 cSt @ 40°C

Hilubric PLNG having a viscosity of 1000 cSt @ 40°C

Piston Powder

Hilubric PP GS graphite based powder

Hilubric PP NG graphite-free powder

CASE STUDY

GRAPHITE-FREE HILUBRIC PL-NG-63

Trials were conducted at a leading Die Casting component manufacturer with our Hilubric PL-NG-63



A Case Study Is Being Shared Below:

➤ Trial Criteria

- Customer looking for
 - Cost Savings
 - Improved productivity
 - Reduced down time
 - Operator convenience

➤ Results

- Significant improvements Observed:
 - Average Plunger tip life increase up to 780 nos.
 - No. of Plunger tip changes/day decreased from 37 to 29
 - Machine downtime due to plunger tip change reduced
- Customer requested us to continue trials for 10 more days to establish & conclude
- Trial continued for 10 days under close observation
- Concluded at **Successful!**

Cost Benefits Evaluated Are As Below:

Description	Competitor Product	Hilubric PL-NG-63
Shots (per M/c per month)	1,500 shots * 25 days = 37,500	SAME
Plunger tip life with competitor product	600 Shots	780 shots
Plunger tip used	Cast Iron	SAME
Plunger tips required with competitor product	$37,500 / 600 = 62.50$	
No of Plungers Saving :	$62.5 - 48.0 = 14.5$	
Down time for changing 1 plunger	30 mins	
Total Components in 30 min	30 pcs	
Extra Productivity	$30 * 14.5 = 435$ pcs	
Extra Productivity Cost (@ 30 Rs/Pcs)	$435 * 30 = \text{Rs}13,050$	
For one Machine Extra Productivity	Rs13,050	
For 15 Machines Extra Productivity	$\text{Rs}13,050 * 15 = \text{Rs}195,750$	
For One Machine Cost Saving in plunger tips	$14.50 * \text{Rs}250 = \text{Rs}3,625$	
For 15 Machine Cost Saving in plunger tip	$\text{Rs} 3,625 * 15 = \text{Rs}54,375$	
Total Saving	$\text{Rs}1,95,750 + \text{Rs}54,375 = \text{Rs}2,50,125$	
Extra Cost on our Plunger Lube	$(\text{Rs}108 - \text{Rs}90) = \text{Rs}18 * 1,200 = \text{Rs}21,600$	
Net Cost Saving to CUSTOMER:	$\text{Rs} 2,50,125 - \text{Rs}21,600 = \text{Rs}228,525$	

TANGIBLE BENEFITS:

- Average Plunger tip life increased by 23%
 - No. of Plunger tip changes/day decreased by 22%
 - Cost Saving of Rs2.28 lacs/month achieved
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INTANGIBLE BENEFITS:

- Cleaner working environment as the product is graphite-free.
- Suitable for use in automatic lubrication equipment or swabbing / drip feed

CONCLUSION

Hardcastle Petrofer plunger lubricant Hilubric PL-NG-63 offer's a holistic solution by lowering production costs, improvement in productivity and a cleaner working environment