GOYAL TECHNOCHEM PVT. LTD.

Case Studies of PihBond Induction in

Arpa Molding Line

By Goyal Technical Team

Agenda

❖The Goyal Group, trying to ensure better castings for the foundries, have now after considerable R&D effort, developed Single Additive product – ***PihBond series*** for foundry's green sand system and now associated with a Foundries with Arpa Molding lines.

- Goyal Group introduced Single Additive– ***PIHBOND series*** in the sand system with the following objectives:

✓ ***Improve the peel off and finish of castings.***

✓ ***Optimizing Shot blasting time .***

✓ ***Optimize the addition of various consumables.***

✓ ***Control Weight of Castings.***

✓ ***Reduction in Sand related Rejections.***

Sand Mixed Details

PARAMETERS	Pre-Trial	After Trial
AVG. RETURN SAND Kgs	400	400
NEW SAND Kgs	10.4	5 in mixer
GPI SAND Kgs	3.3	NIL
BENTONITE Kgs	4.5	2.4 (***PihBond***)
LUSTRON Kgs	0.8 Avg	
DUST FINES Kgs	Nil	Nil
MIXING TIME(Total)	150 Sec	120 Sec.
DRY MIX(SEC)	85 sec.	20 sec.

Sand Parameters

PARAMETERS	Pre-Trial	After Trial
TC %	12 - 14	13.20 - 13.50
AC %	9.50-10.50	10.50 – 10.95
TC-AC %	2.5 - 3.5	2.70 - 2.55
AFS	46-50	48 - 55
MOISTURE%	4.0-4.2	3.9- 4.0
COMPACTIBILITY	42-48	43-47
PERMIABILITY	138-152	142-163
GCS	900-980	1060-1210

Sand Sticking Before & After Trial

Sand Sticking Before Trial

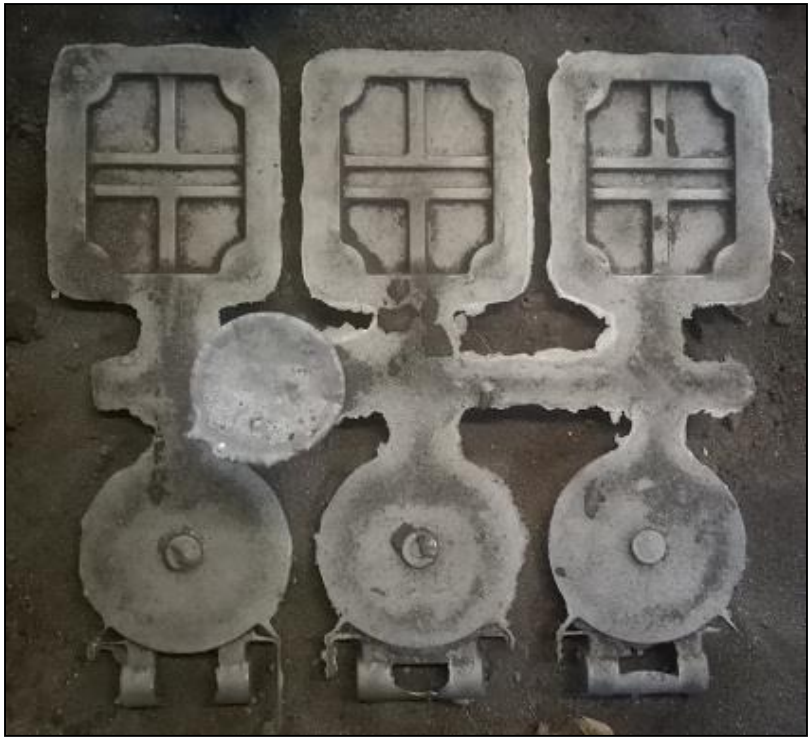
Sand Sticking After Trial

Sand Sticking Before & After Trial

Sand Sticking Before Trial

Sand Sticking After Trial

Improved Peel Off



Improved Peel Off

Shot Blasted Before & After Trial

Shot blasted before trial

Shot blasted after trial

Shot blasted Before & After Trial

Shot blasted before trial

Shot blasted after trial

Shot blasted Before & After Trial

Shot blasted before trial

Shot blasted after trial

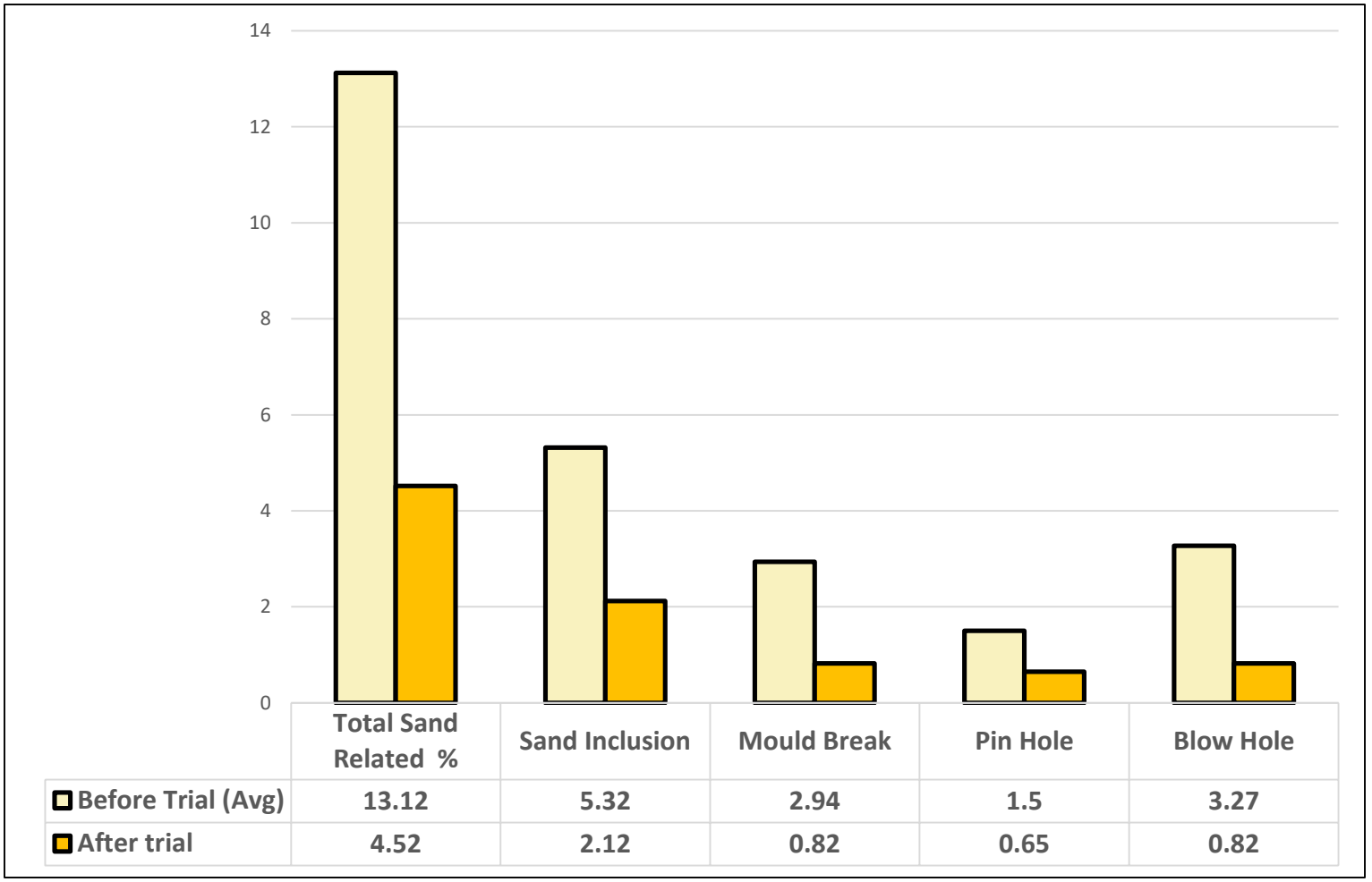
Improved Casting Surface Finish after use of *PihBond*

Improved Casting Surface Finish after use of *PihBond*

STATUS ON REDUCED CASTING WEIGHT

PART NAME	BEFORE	During	CASTING WT REDUCTION IN KG	% WT. SAVING
150 AVH Hsg	40.240	39.690	0.550	1.37
150 DVA Hsg	105.420	103.604	1.816	1.72
100 DAV Hsg	57.840	56.484	1.356	2.34
150 AVH cover	3.936	3.773	0.163	4.14
150 AVH Clapper	2.720	2.622	0.098	3.60
Average			0.797	2.64

REDUCTION IN SAND RELATED REJECTION %



	Total Sand Related %	Sand Inclusion	Mould Break	Pin Hole	Blow Hole
Before Trial (Avg)	13.12	5.32	2.94	1.5	3.27
After trial	4.52	2.12	0.82	0.65	0.82

Benefits Achieved after 40 Rotations of Sand

BEFORE TRIAL COMMITTED IN PROPOSAL	AFTER TRIAL ACHIEVED
Avg. *PihBond* will be reduce by 40% with compare to Bentonite & LCA used	Avg. *PihBond* reduced by 54 % with compare to Bentonite, LCA & Sand mix was used
Avg. weights of castings will reduce by 1.5 %	Avg. weights of castings is reduced by 2.64%
Avg. shot blasting time of castings will be reduce by 10 minutes	Avg. shot blast time of castings is reduced by 7.5 minutes
Avg. reduction in sand related rejections will be 2.5%	Avg. reduction in sand related rejections is 8%
New sand addition was 10.4 kg per batch	New sand addition is 5 kg per batch i.e. 52% New sand reduction in addition

Number of Intangible Benefits

- Retention of sand containing valuable active ingredients in the system
- Reduction in Pollution Level
- Lower Water Demand
- Lower waste sand generation
- Lower waste sand disposal
- Better casting finish
- Better sand control and condition
- Increased customer satisfaction level
- Improved production due to fast dispatches, Increased Throughput.
- Man Power Savings due to single handling of material.
- Technical service of the Goyal team

Conclusion

- The Foundry accrued Technical Advantages as stated in our proposal.
- WIP in the fettling was reduced considerably
- This enabled faster dispatch of castings
- Mould breakage reduction, enabled better production
- Shop floor pollution reduced considerably enabling better working conditions in the Foundry
- ***While the cost of PihBond enriched sand works out higher than Bentonite + LCA enriched sand, when considering the overall costing (cost advantage accrued by the tangible Technical Advantages) the Foundry was advantaged commercially in comparison to the Bentonite + LCA System.***