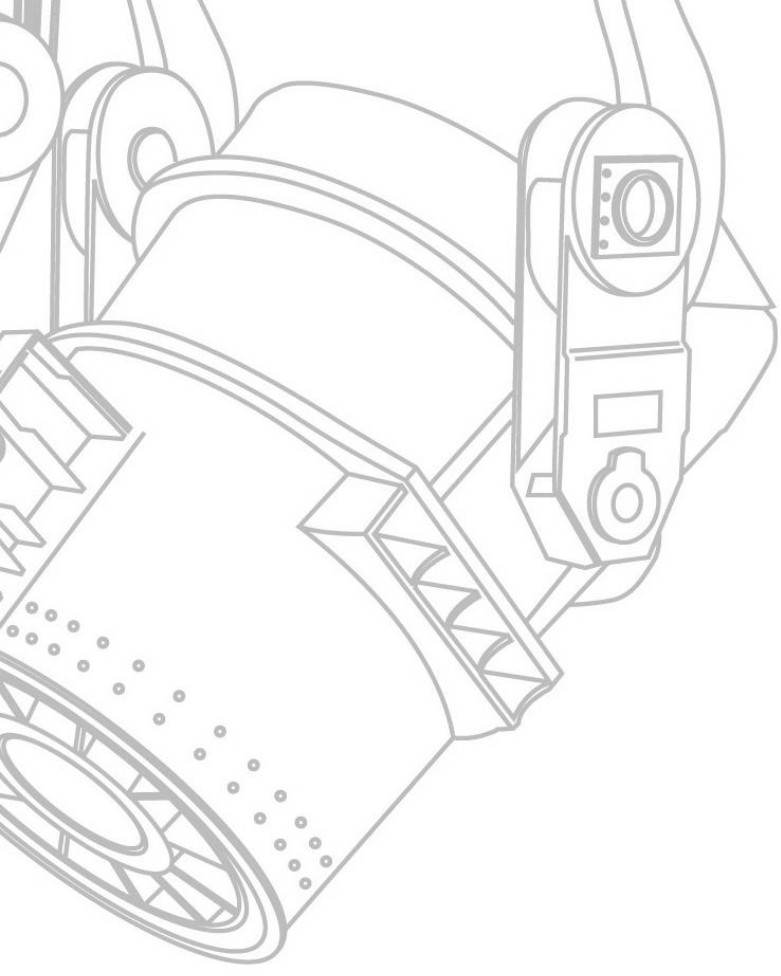
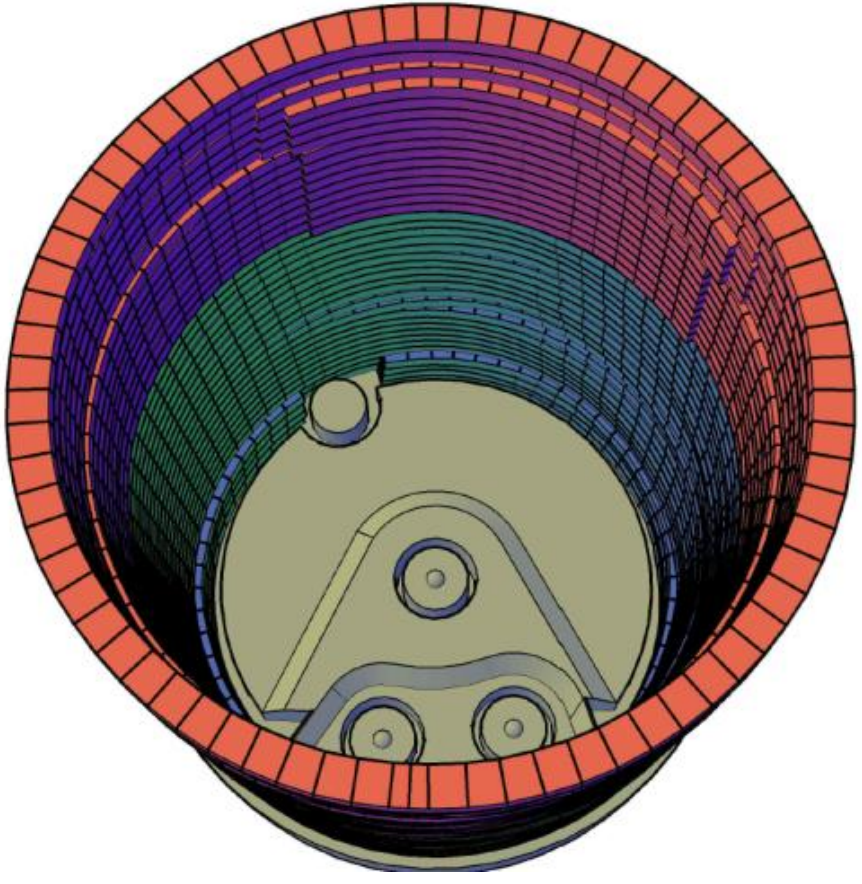


Mayerton Refractories
Case Studies – Ladle

June 2019

MAYERTON



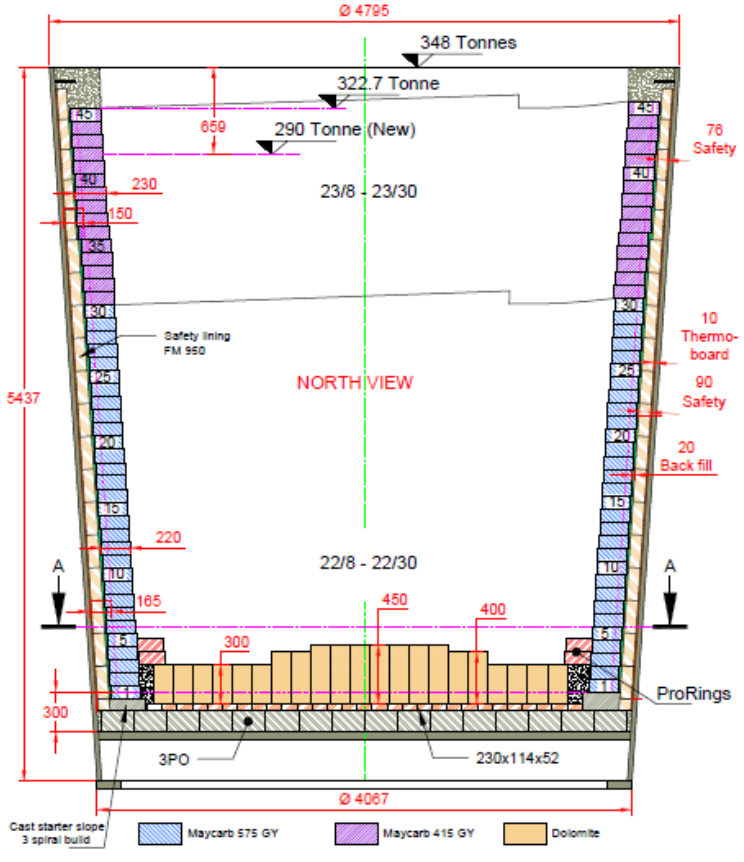
Case Study A

Ladle availability –

- 300 ton vessel silicon and al killed steel
- 35 metric tonnes of refractories per campaign…target 120 heats…with one slag line repair at 60 heats…life can be extended providing sufficient residual thickness…leaving residual thickness of 200mm in barrel at the end.
- Mayerton average is higher than compared to competition…50% supplier.
- We have record of 154 heats….

Concept

- Lining concept…220mm barrel bricks and 230 mm lag line bricks…lining concept…reduced to four shapes from 8 shapes…installation time…less bricks…
- Get better possibilities of third slag line through improved transition bricks…
- Tapped…lance blow…RH degasser…ladle arc furnace…concast…slabs, billets and rails…
- Three slag lines
- First 20 heats are more aggressive followed milder steel..
- Maycarb barrel and slag line…MC 575-GY and MC 415-GY
- Dolomite bottom…
- Gunning…



Case Study B

Project Ladles

- The challenge was to achieve 76 – 78 heats with 1 complete working ladle lining (Bottom, Barrel & Slag Line) without mid-campaign maintenance.
- 127 ton liquid steel ladle vessel capacity with al killed steel.

Target

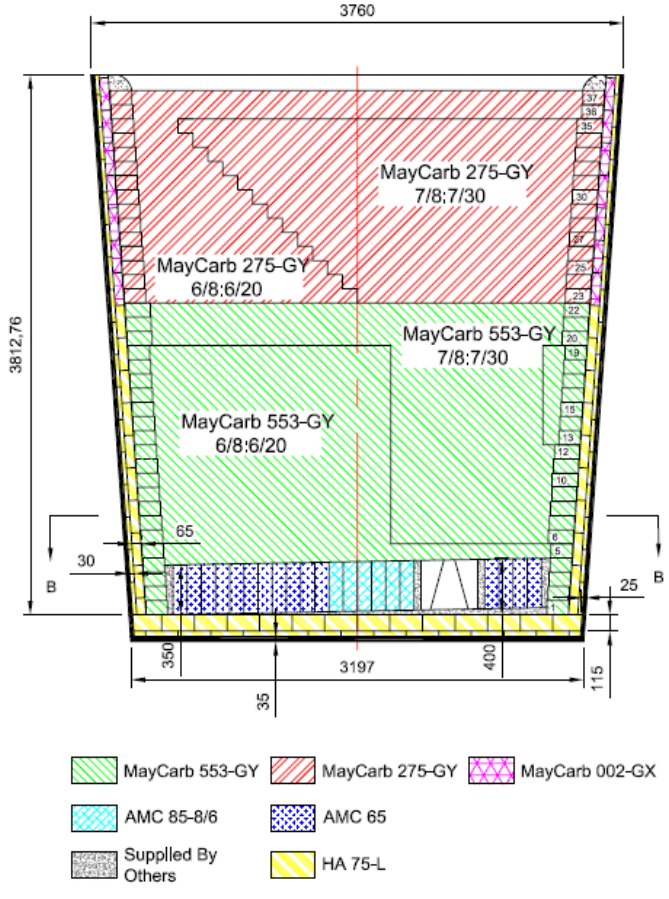
- Increased barrel by 1 inch from 6 inches to 7 inches…no reduction in capacity, as lining is 50mm higher.
- Lining weight 24mt with two slag lines.

General Benefits

- Mayerton achieves 2 heats more than the competition with its design

Materials

- MC 553-GX Barrel
- MC 275-GY Slag line
- HA75L Safety Lining
- MC 002-GX Safety Slag Lining



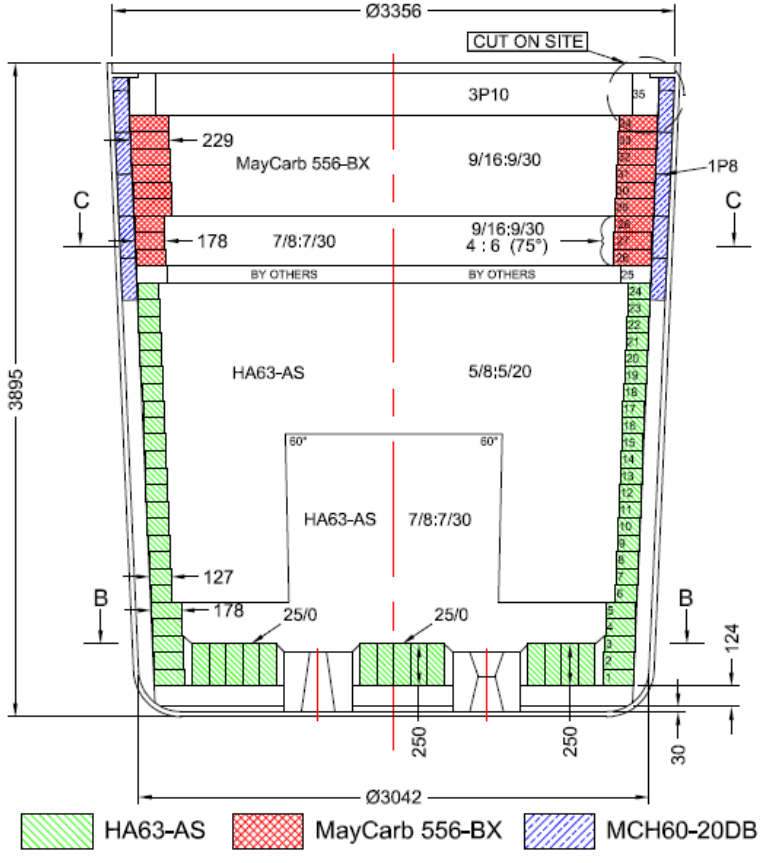
Case Study C

Project Ladles

- 120 ton ladle lining.
- Replaced SU745 and SU645 with mini – keys MK 9/16 and 9/30 and MK7/8 and 7/30 in slag line for more stability…less waste
- 23 heats per slag line with two repairs, so three slag lines….Residual heats…20, 20 and 20 to achieve heats…now its increased by 3 heats per slag line…so 9 more heats.
- In trial – Operation three successes.

Materials

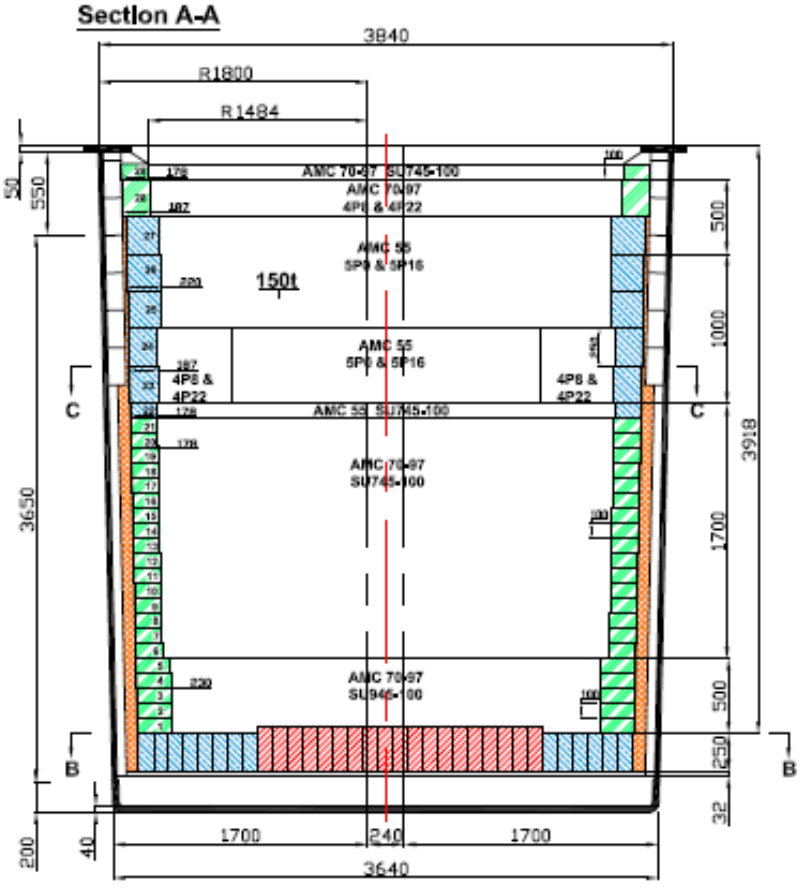
- MC 556-BX – SLAG LINE



Case Study D

Project Ladles

- 150 ton ladle lining.
- Slag Zone AMC 55 5P0 and 5P16
- Barrel AMC 70-97 SU 745-100
- Impact AMC 83-8/6 MK 30/0
- 6 Campaigns in 3 months with maximum 35 heats
- Special steel grades
- Improved Chemical Analysis with Mayerton



Case Study E

Project Ladles

- Our customer asked us to increase the capacity of the ladle without re-engineering the ladle steel structure.
- Bottom safety lining reduced in thickness and 25mm of safety ramming mass removed.
- Steel shell temperature show only a 30 degrees difference.
- Capacity increased from 315mt to 327mt.
- Balanced lining concept used to increase performance by 18 heats.
- CPT reduced by 22%
- Increased ladle throughput per campaign 7,560tLS