

ELIMINATING GRAPHITE REVERSION IN COMPACTED GRAPHITE IRON (CGI) CASTINGS BY USING ACTICOTE CG COATING

PARAMETER:

| | |
|-------------------|-----------------------------------|
| Alloy: | Compacted Graphite Iron |
| Casting Weight: | 20 - 500kg |
| Pouring Temp.: | 1,380 – 1,400 °C |
| Moulding Process: | Polyurethane coldbox core package |

ENGINE BLOCKS AND HEADS

FOUNDRY:

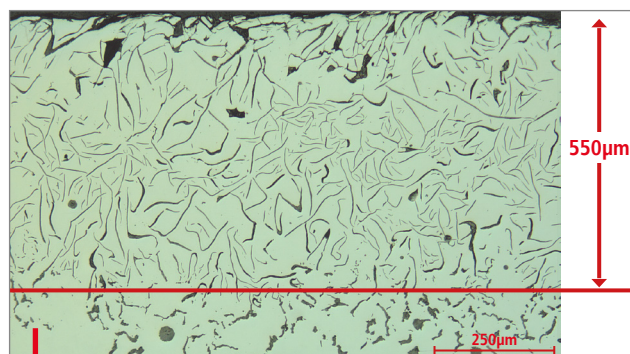
High production iron foundries producing engine blocks and heads for trucks and commercial vehicles in compacted graphite iron.

FOSECO PRODUCTS

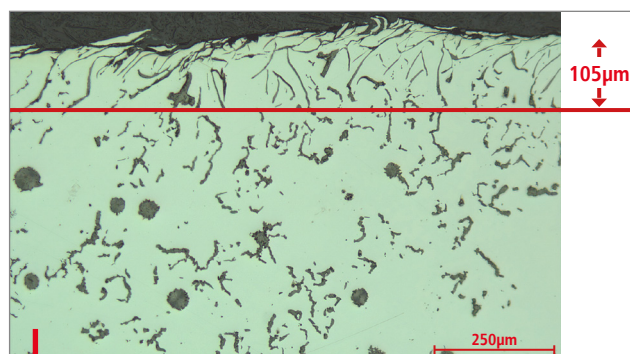
ACTICOTE* CG500 coating
ACTICOTE CG800 coating

KEY BENEFITS

- Reduction in flake graphite skin formation in the surface of compacted graphite iron castings
- Improved surface finish
- Reduction in re-work and scrap



Significant graphite reversion when using a conventional coating



Minimal graphite reversion when using ACTICOTE CG800



THE CHALLENGE

To fulfil the requirements of emission reduction legislation such as Euro VI, large diesel engines for trucks and commercial vehicles need to operate at higher pressures and temperatures whilst also reducing their overall size and weight. This requires the use of higher strength alloys such as compacted graphite iron (CGI). There is a tendency for the graphite in CGI to revert to flake graphite at the casting surface reducing the overall integrity of the component.



OUR SOLUTION

A new range of core coatings was developed to specifically limit the reversion of the compacted graphite. By focusing on the key mechanisms, the new ACTICOTE CG coating both reduces the flow of damaging sulphur bearing compounds into the liquid metal and optimises the insulation characteristics of the applied layer. This ensures an increased solidification rate compared to conventional coatings, effectively limiting the opportunities for graphite reversion.



THE OUTCOME

When compared to a number of conventional coatings that are typically used for the production of large diesel engine castings, the ACTICOTE CG coating was shown to significantly reduce the graphite reversion to acceptable levels. For example, in one trial in the water jacket area the flake graphite skin was reduced from greater than 550µm to typically less than 110µm.

