



FOR IMPROVED FOUNDRY PRODUCTIVITY

INITEK* PROCESS

ADVANCED NODULARISING TECHNOLOGY FOR DUCTILE AND COMPACTED GRAPHITE IRONS

Low metallic charge cost

Low Mg alloy consumption

Low operating temperature

Low fade rate

Casting yield / finishing benefits

Stable mechanical properties





INITEK process

Advanced nodularising technology for ductile and compacted graphite iron grades

Introduction to the “initialising” principle

The production of magnesium treated iron castings is witnessing a radical change in the way liquid metal treatment practices are performed. The nodularising and inoculation practices are being fundamentally reviewed in the light of findings that are declared in a new Foseco patent named “improved method of producing ductile iron” and designated in this brochure as the „initialising practice”.

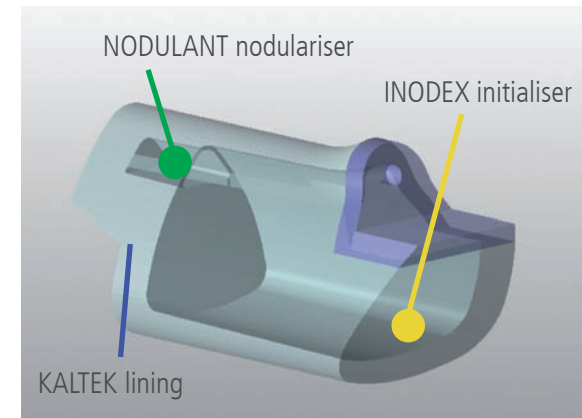
This new metal treatment practice makes good use of the base liquid iron oxygen activity of your melt shop process. The active oxygen is utilised to facilitate an effective and long lasting inoculation event prior to the conventional spheroidisation treatment.

For the first time, the timing and sequencing of both nodularising and inoculation practices are implemented within your melt shop process. Results are spectacular and reproducible as the fundamental oxygen variable is deactivated and utilised efficiently to improve your ductile iron quality.

To achieve this, Foseco has developed new know-how, new products and a new metal treatment converter.

The many benefits of the INITEK initialising process are centred around the considerable reduction of the ductile iron pouring temperature achievable. Not only is the associated energy saving obtained; but further benefits related to productivity, quality, and consumable consumption are also achieved. The pouring temperature is a strong cost indicator of your overall foundry practice – the lower the temperature, the lower your casting production costs will be.

INITEK process description



Foseco converter

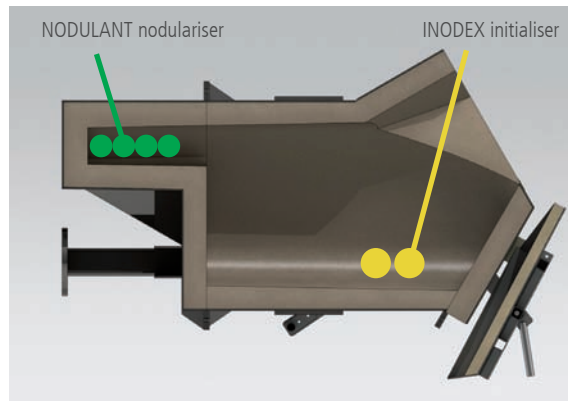
The Foseco converter is a prism shaped treatment ladle that can also be used for pouring. The Foseco converter is lined with KALTEK ISO and pre-loaded with INODEX*, a FeSi based initialiser and NODULANT*, a FeSi based nodulariser (Figure 1).

The converter is delivered as a shell assembly together with KALTEK lining formers. The rotation can be manual or assisted for automation. The converter can be handled by crane, forklift or fitted on a fixed station below furnaces.

NODULANT Mg alloy is loaded into the chamber at a rate ranging from 0.65 to 1% max.

The Foseco converter is then orientated into a horizontal position and the INODEX initialising alloy is placed into the ladle (figure 1).

Figure 1: Loading of initialising and nodularising products



The molten iron is then tapped into the ladle and mixes with the INODEX but does not reach the level of the reaction chamber (figure 2).

The treatment reaction is started by rapidly bringing the ladle into the vertical position. The molten metal comes into contact with the NODULANT and a head of metal above the reaction chamber is established (figure 3). Using this technology, a magnesium recovery of up to 97% is achievable.

The metal in the converter is then deslagged (figure 4) and then transferred to an automated pouring unit or poured directly into the moulds.

Figure 2: Liquid iron tapping and initialising

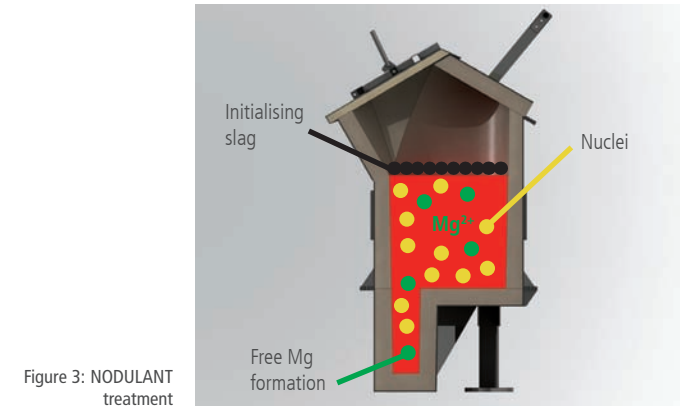
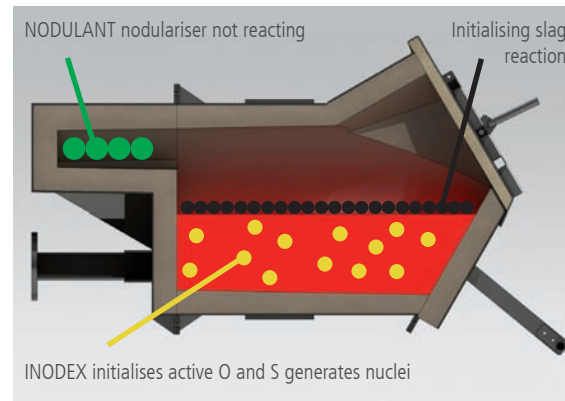


Figure 3: NODULANT treatment

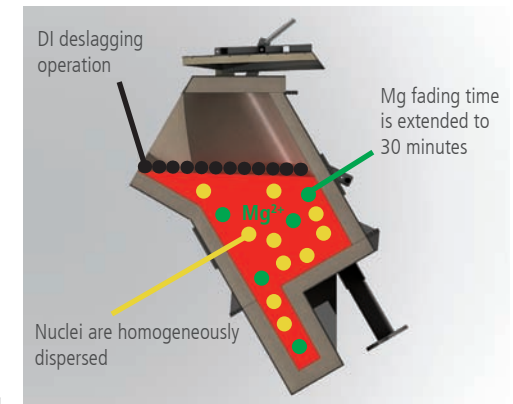


Figure 4: Deslagging



Figure 5: Direct pouring

INITEK process

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INITEK process benefits

The benefits are numerous, and most, if not all of the following may be achieved in your foundry:

- Lower metallic charge cost and simplified materials sourcing
- Up to 50% lower Mg addition
- Elimination of ladle inoculation and optimisation of the late stream inoculation rate
- Improved liquid iron fluidity
- Reduced melting, holding and pouring temperatures
- Reduced energy consumption
- Maximised melt-shop refractory life-time
- Improved pouring / filtering / feeding operations
- Lower requirement for high-refractory moulding materials and green sand reclamation needs
- Improved casting yield
- Improved foundry productivity
- Maximised as-cast mechanical properties
- Reduced metallurgical rejects
- Increased machining performance

The novel INITEK process repositions the "metal" at the centre of the foundry process. On average, 35% of the total casting cost can be directly attributed to the melt shop management.

The quality, fluidity and temperature of the liquid iron have a fundamental impact on mould and coremaking, feeding and filtration, as well as after cast operations such as finishing and machining. Stabilising and improving iron quality offers opportunities to reduce costs and/or further improve quality and productivity downstream. Consequently, major cost and quality improvements can be attributed to the INITEK process.

FMS concept – Ferrous Melt Shop Foseco offer

The INITEK process is part of the Ferrous Melt Shop Foseco offer. It also includes:

- ITACA thermal analysis unit
- FURNACECALC metallic charge optimising software
- MSI metal stream inoculation unit

Please contact your local Foseco team for further information and a detailed review of your melt shop practice.

Foseco FMS experts work in partnership with the foundry to achieve the optimum metallurgical and economical results



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