

STELEX* ZR

Zirconia based filters for high temperature, high strength steel applications



STELEX ZR filters

for the filtration of ferrous alloys

STELEX ZR ceramic foam filters are manufactured from zirconia. They were originally developed for the filtration of molten steel and are suitable for pouring temperatures up to 1680 °C.

Due to the combination of high mechanical strength and superior filtration capacity, STELEX ZR filters are also applied to large ductile and grey iron castings.

The application of STELEX ZR filters in the gating system will prevent non-metallic inclusions reaching the mould cavity. This reduces the need for additional finishing such as the removal and repair of slag inclusions. The total manufacturing time and costs for the castings are reduced.

STELEX ZR filters also minimise molten metal turbulence within the mould cavity, reducing the formation of the reoxidation defects.

KEY BENEFITS

- + Cleaner casting surfaces
 - Reduced casting repair
- + Less inclusions
 - Reduced repair welding
 - No additional heat treatment
- + Reduced machining allowances
 - Longer tool life
- + Less cleaning effort
 - Shorter lead times
 - Lower costs

Selection of STELEX ZR filters



STELEX ZR filters for investment casting

STELEX ZR filters

ensure clean castings

Calculation of the gating system

With gating systems using STELEX ZR foundry filters, the cross-section of the downsprue should be the smallest or controlling section of the running system. The calculation of this choke area (D_A) is based on the "general downsprue formula".

$$D_A = \frac{22.6 \cdot G}{\rho \cdot t \cdot \xi \cdot \sqrt{H}}$$

D_A :	Downsprue area [cm ²]
G:	Poured weight [kg]
ρ :	Density [g/cm ³]
ξ :	Friction factor
t:	Desired pouring time [s]
H:	Effective pouring height [cm]

Based on an extensive range of applications and experience, Foseco recommends the following gating ratio.

Downsprue	1.0
Runners	1.1
Ingates	1.2

The area of the entry face of the filter must be large enough to ensure that casting cavity is filled with molten metal before the filter becomes clogged.

Foseco recommends the front face filter area to be at least 3 times larger than the calculated choke area (D_A). It is also important to ensure the exit face of the filter is well supported. A support area of 30 % of the front face area should be applied.

Application of STELEX ZR filters

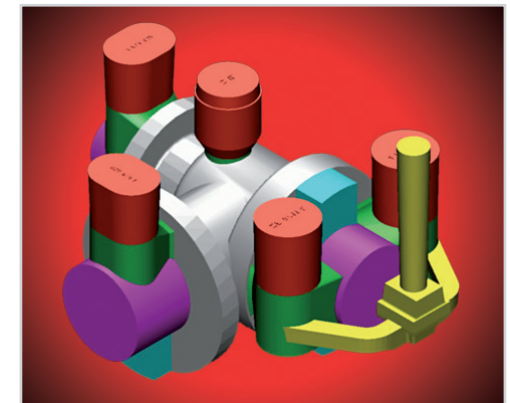
Filtration effectiveness largely depends upon the correct application of STELEX ZR filters. When applying filters we always recommend using STELEX filter prints which have been developed in close co-operation with foundrymen and Foseco experts. Positioned horizontally in the runner system and close to the downsprue, STELEX ZR filters will prime quickly, thereby ensuring a consistent flow through the whole filter area. Typically, these filter prints are placed on the parting line.

In order to avoid turbulence, abrupt changes in the direction of metal flow after the filter should be avoided. This is especially important when casting steel alloys, because a turbulent flow will lead to reoxidation and the development of new non-metallic inclusions within the metal stream.

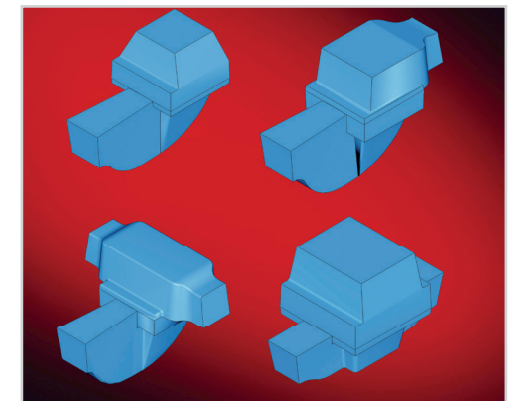
Simulation support



Valve housing with STELEX ZR filter applied



STELEX filter prints



Quality is assured

Higher quality and lower costs

Quality management

The Foseco quality management system is certified against DIN ISO 9001 and ISO 14001. All relevant product quality features of STELEX filters are controlled and recorded according to these quality standards.

Further information regarding filter sizes, flow rates and filter capacities can be obtained from your local Foseco team.

Service

Our engineers and product managers work in partnership with our customers to help them improve productivity, process control, casting quality and the working environment.



Impingement testing unit



Visual quality control



Statistical process control



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