



FILTRATION CASE STUDY STEEL

Casting: Ball Valve Body STELEX* filters

Foundry:

Engemasa Foundry, Sao Carlos,
Sao Paulo, Brazil

Metal grade:

ASTM A 743 Grade CF8M/
ASTM A 216 WCB
318C17/1504-161GR.B

Casting weight:

57 Kg

Pour weight:

Before – 130 kg
After – 139 kg 113 kg
(Alternative 100 kg)

Ladle/pouring practice/pouring temperature:

200 kg and 300 kg refractory-lined teapot ladles.

Pouring temperature

1630°C

Yield:

Before – 44%
After – 41% -50% (56%)

Moulding process:

Phenolic Urethane No-bake,
ISOMOL* 100/6A coating

Melting practice

Low-frequency 850 kg
induction furnace

Deoxidation practice:

Ladle Only = Metallic Silicon
0.25%/kg and Al 0.05%/kg

FOSECO products used:

STELEX ZR and
STELEX Pro Filters
KALPUR direct pour unit
KALMINEX* Sleeves
ISOMOL Coating

Gating ratios/feeding/filtration practice:

Before – Pressurised (1:1.12:0.82),
unfiltered gating system;
2x oval top, 6x side, 1x
round top. All sleeves
KALMINEX 2000

After – Unpressurised
(1:4.5:1.1:1.2) gating
system with 1x “inline”
STELEX ZR 75x75x25/10
Filter in Foseco filter print 7
6x side feeder, 1x top
feeder with 50% of neck
aperture. All sleeves
KALMINEX 2000

After 2 – (1:4.5:1.1:1.2) gating
system with 2x “inline”
STELEX Pro 55x55x25/10
Filter in Foseco filter print
6; 2x oval top ;2 side, 1x
top feeder sleeve with 50%
of neck aperture. All
sleeves KALMINEX 2000.

Problem:

Excessive inclusions, extended
lead-time, poor surface finish

Solution:

- Replacement of conventional pressurized, unfiltered gating system with redesigned unpressurized gating system incorporating STELEX ZR ceramic foam filter.
- Replacement of two side feeders and the STELEX ZR with two STELEX Pro filters



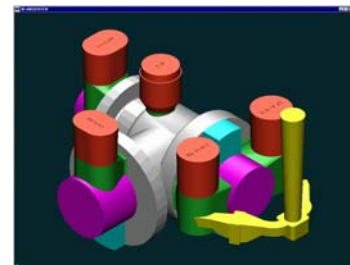
Alternative: KALPUR top gated

Key Benefits

- Removal and prevention of inclusions
- Reduced cleaning/repairing/inspection expense
- Lower scrap rates
- Improved yield



Redesigned gating system with STELEX ZR ceramic foam filter at base of downsprue in filter position FP 7



2x STELEX Pro filters in FP 6



KALPUR side gated