

## HASLE Ceramic Vortex Finder, Generation 3

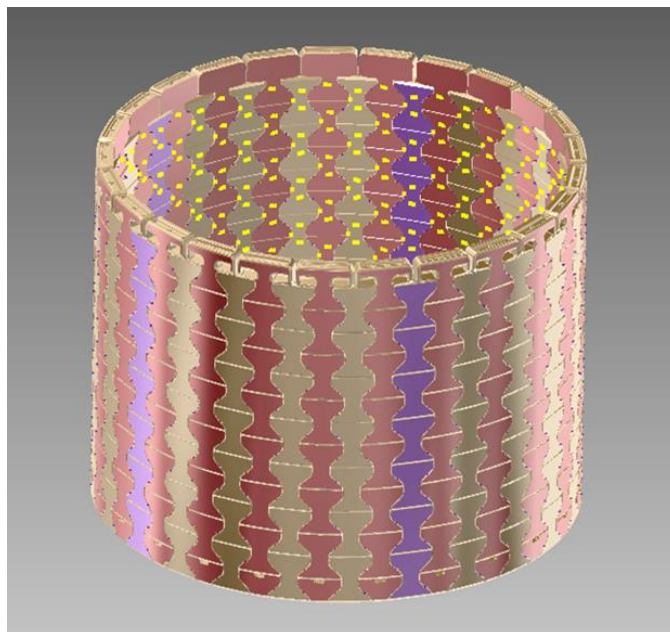
### Description

With HASLE Ceramic Vortex Finder, generation 3, HASLE Refractories A/S brings to market a new and stronger version of the well-known HASLE Ceramic Vortex Finder (HASLE CVF).

HASLE CVF generation 3 offers the same advantages as the previous generation, but at even higher levels.

Compared to the steel vortex finders HASLE CVF presents the following advantages:

1. Very high resistance to alkali, sulphur and chlorine attack.
2. Does not buckle, no reduction in efficiency over time
3. Fast installation- no use of cranes or other mechanical equipment as elements are only 6,6 -19,3 kg.
4. Easy to increase or decrease CVF height if required.
5. Potential falling elements, very rarely blocks the cyclone, compared to falling sections from a steel dip tube.



*CVF generation 3*

**WE PROTECT YOUR PROCESS**

## Generation 3 – design

HASLE's CVF generation 3 is assembled by individual precast elements weighing between 6,6 kg and 19,3 kg, which interlock to form a stable cylinder hanging from the brackets in the roof of the cyclone.

A brand-new system of elements has been designed to allow for diameters between 1,5 m to 7,6 m. The new system gives improved roundness of the CVF and the gap between realizable diameters is down to less than 1 cm. Each element in the HASLE CVF, generation 3 has been dramatically improved compared to previous generations. The improvements have been achieved via choosing a different castable, by pre-firing to 1350°C and by optimizing the design of elements:

### New casting material

By choosing a HASLE castable with a higher content of SiC HASLE has increased the tensile strength, the crack resistance, thermal shock resistance and the chemical resistance of the elements.

### Higher pre-firing temperature

By pre-firing to 1350°C the material of the elements have sintered giving highest possible strength.

### New design of elements

The HASLE CVF elements have been re-designed in order to increase the flexural strength, the bending resistance and the maximum load.

Tests show that the strength of a CVF element has increased by more than 84 % compared to generation 1.

## Proposed method of installation

1. A steel ring is welded to the roof of the cyclone
2. Ceramic fibre is installed – to allow for thermal expansion
3. The top ring of HASLE precast elements are installed
4. The ceramic fibre is trimmed
5. The HASLE Ceramic Vortex Finder is erected without any use of mortar or castable