

INSTITUTE OF REFRACTORIES ENGINEERS

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Training Day 2015 Exercise – Vessel Lining Design

The sketch below shows a thermal oxidiser vessel lining which is to be lined with a two layer refractory lining installed by vibrocasting.

The backup layer is an insulating castable 100mm thick and the hot face layer is 150mm thick.

Flanges on outlet split for maintenance and removal of the expansion bellows at frequent intervals.

The area around the burner inlet is subject to thermal shock.

The area around the waste feed ports is subject to thermal shock and erosion from a dust laden gas.

The build up zone suffers from accretion of dusts which adhere to the walls and must be broken off at regular intervals with mechanical equipment

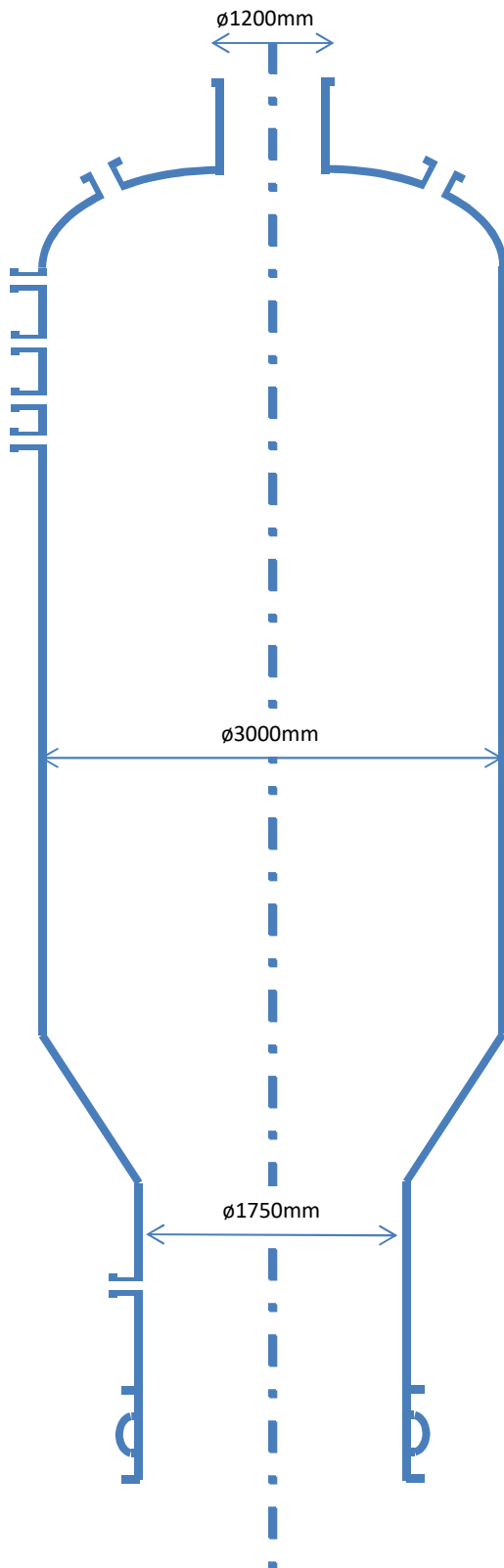
What type(s) of anchor would you use for

- The lining of the main walls
- The zone of dust build up
- The roof
- Burner inlet
- Inlet Expansion Bellows

How would you design the lining around the

- Inlet
- Instrument Branches
- Flanges
- Bellows

Consider the anchor shape, size and thickness



Roof – With waste feed ports, $\varnothing 250\text{mm}$

Instrument openings, $\varnothing 75\text{mm}$

10200mm

Build-up Zone

Instrument opening $\varnothing 50\text{mm}$

Expansion bellows – 40mm movement