

BEGG, COUSLAND ENVIROTEC LTD.



Candle Filter Washing Procedure – Sulphuric Acid Service

If the Pressure Loss rises seriously above its normal operating condition on the candle filters, this is generally due to plugging/sublimation which blinds the candle filters and would necessitate washing as below.

Our advice is only to clean filters when the Pressure Loss indicates this is required. Cleaning of filters is likely to decrease the overall life of the filters, so automatic cleaning each shutdown has a risk if the Pressure Loss is not increased.

(A) Plugging with Sublimed Sulphur

1. Remove candle filters from vessel and neutralise in bath of 5% Sodium Carbonate (Na_2CO_3) for up to 30 minutes.
2. Remove from bath and rinse with clean water for 5 minutes at low pressure with a very low velocity hose.
3. Immerse candle filters in 0.5% solution of Na_2S (Sodium Sulphide) for 30 minutes. For best results use a horizontal tank and agitate the solution mechanically or by sparging with compressed air. If a horizontal tank is not possible, a vertical tank is next best option. Remember that most solids you are trying to loosen are on the gas inlet surface of the fibre bed, i.e. on the outside of the filter of a Hanging type and on the inside of a Standing type.
4. Rinse with clean water for 5 minutes at low pressure with a low velocity hose.

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5. Lay candles horizontally for 4 hours and then stand candles vertically and allow to dry before refitting.
6. Ensure candle filters are dry before returning to vessel to ensure minimum quantity of weak acid at start up.

Also check that filter media still has a tight seal at top flange - if there are any gaps then make-up pieces have to be fitted (Refer to Begg, Cousland)

(B) Plugging with Ferrous Sulphate (Sludge formation) & General Solids

1. Remove candle filters from vessel and stand upright.
2. Wash candles from top to bottom with copious clean water at low pressure from a very low velocity hose to prevent damage to filter elements.
3. Wash candles as per (2) in opposite direction to which gas would pass. As for (A) above, immersion in a horizontal or vertical tank is best.
4. Lay candles horizontally for 4 hours and then stand candles vertically and allow to dry before refitting.

GENERAL

After washing, candle filters should operate at or slightly above their design Pressure Loss, but other aspects that should be examined are:-

1. All gaskets should still be serviceable
2. All liquid seals are effective i.e. drain pots or sump have correct amount of liquid.
3. Hold down bolts are tight.
4. Mist load to filters is not in excess of design.
5. High temperature
6. Excessive gas volume.
7. Signs of corrosion on the mesh cage wires and welds of cage to flange.

All above can contribute to either high Pressure Loss or excessive mist load to atmosphere.