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## Technical Bulletin No.16

### Illustrations of HYRATE Polytower Filter Bases, Shells and Ventilation Arrangements.

The following photographs show various stages of HYRATE Polytower construction. Ventilation is normally provided around the base of the filter with air passing through the gaps formed by the timber media support matrix modules.

Media suppliers usually require approx 4% of the filter plan to be available for low level ventilation. Air passage is created through the media pack by thermal circulation.

Roughing and Secondary treatment filter do not normally require ventilation control, unless there is likely to be an odour problem. In this case controlled fan assisted ventilation is used with an extract odour scrubber system. Air being drawn down through the media pack.

Nitrifying filters are more susceptible to wind chill and therefore are often fitted with either partial or total ventilation control. A series of adjustable panels or hatches being provided around the filter base to regulate the amount of air passing into the filter.



Typical base slab showing in-situ cast concrete dwarf walls and centre outfall channel. Note that the concrete lintels are still to be installed over the channel.

The timber secondary media support matrix is then placed onto these dwarf walls ready to receive the modular plastic media.

Here the dwarf walls have been partially formed from in-situ cast concrete with the upper section formed from dense concrete blocks. Note that the concrete lintels have been fitted and our marking out frame has been fitted around the centre column to enable accurate positioning of the steel structure.





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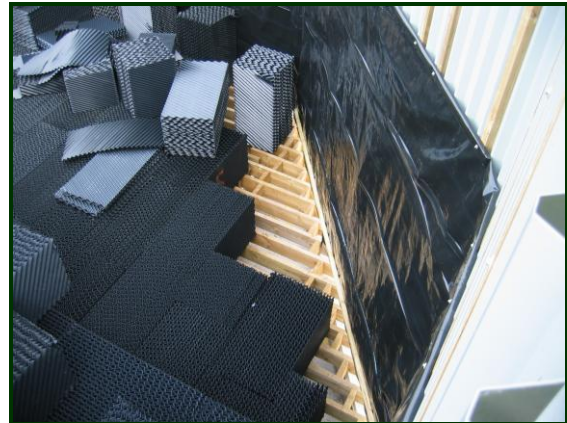
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Here the filter base has been fully decked with our factory jig built timber matrix modules. Beam spacing and timber section being selected and designed to support the full load applied from the media pack.

Media pack can be up to 7.2 mts deep with operational weights of up to 540 kg/m<sup>3</sup>.

Modular plastic media is delivered in closed super-coupe artics trailers and offloaded into the filter after the shell has been constructed and clad. Media is stacked in 600 or 300 mm deep layers onto the installed secondary media support matrix. Each layer of media being rotated through 90 deg so that maximum dispersion of effluent is achieved as it passes through the pack



Normal ventilation is ensured by providing an air gap below the filter wall on all sites of the shell. In most cases this automatically provides the required 4% of open air passage that satisfies the media pack requirements.

Partial ventilation control can be provided by only installing ventilation enclosures to alternate faces of the shell. This allows a degree of regulation and can be arranged to close off areas of the filter that are subject to strong cooling winds during adverse weather.





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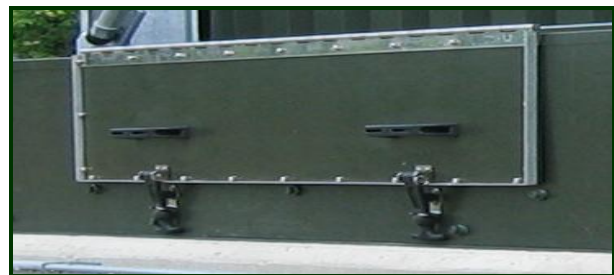
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This filter is located on the east coast of Norfolk and shows a typical HYRATE Polytower with partial low level ventilation panels fitted on the eastern side of an NTF filter. The total available air inlet area around the filter base is equal to 4.5% of the filter plan. 50% of the available ventilation area to the western side of the filter is permanently open with a further 50% of the filter plan controlled by opening 1 – 8 of the sliding hatches on the eastern side.



A large NTF filter with alternate faces fitted with lift-up type hatches to control air flow during the winter months.

Typical detail of ventilation panel fitted around the filter base



A new HYRATE Polytower filter constructed inside an existing concrete filter shell.

Sliding hatches fitted around all sides of the shell between the shell wall and the concrete surround to control ventilation.