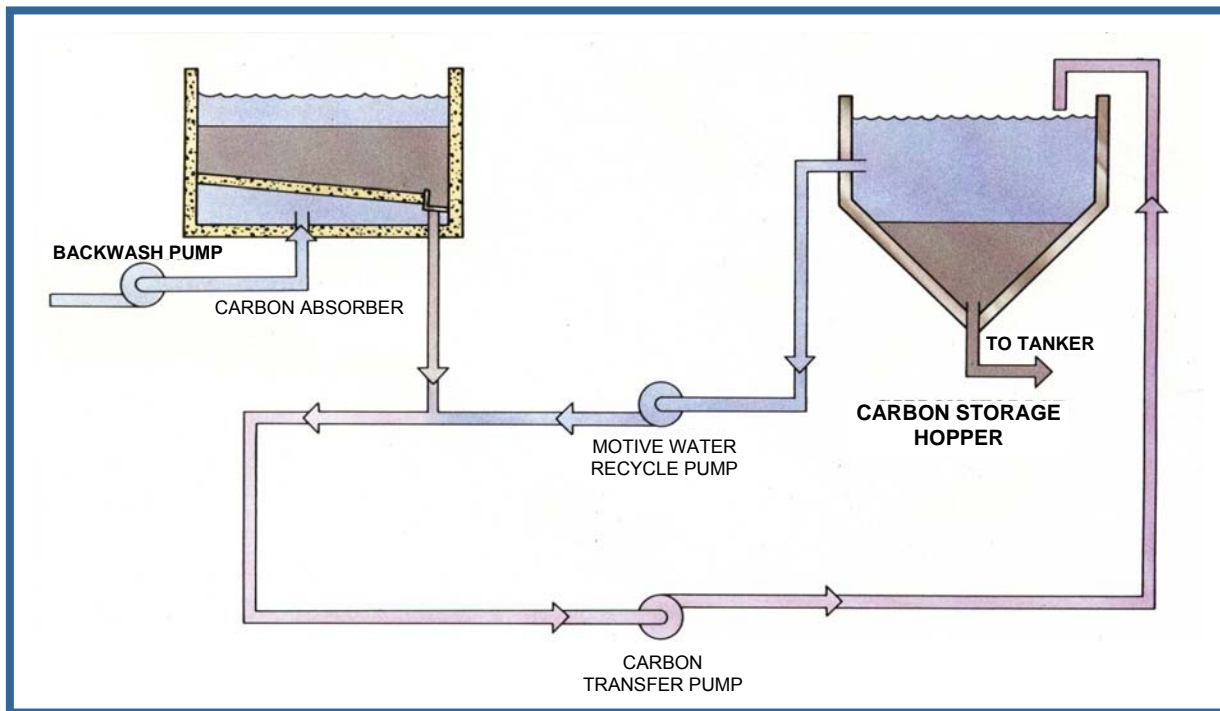


# GAC ADSORBERS

## Carbon Transfer



### Advantages

- A carbon transfer system which achieves full removal of carbon without manual assistance.
- Developed from established plenum floor filter technology (PCI Type K Floor). Proven effectiveness of air scour and upwash regime.
- Slurry transfer system to achieve transport of GAC:
  - a) From tanker to absorber
  - b) From absorber to tanker or spent carbon storage tanks
  - c) From spent carbon storage tanks to tanker or absorber
- No restrictions on size of units
- Rectangular plan area or circular (in smaller, less than 30m<sup>2</sup> sizes) to suit site requirements.

### Background and Problems

PCI Adsorber design is derived from practical experience of design, construction and operation of primary filters using carbon as filtering medium (up to (116 Ml/d), deep bed tertiary absorbers of 1 Ml/d per unit and a full scale carbon handling trial.

Experience has shown that a) absorbers receiving ozonated surface water will exhibit an increase in headloss due to accumulation of biomass, and b) removal of all carbon requires a different approach to that required for partial – up to 95% - removal if excessive water consumption is to be avoided.

## Solution

PCI and its predecessors have completed an extensive R&D programme to solve both problems culminating in an extended trial. It was found that effective washing was as important to long term process and hydraulic performance of absorbers as it is for primary filters. Effective washing was achieved by adopting filter design criteria to the floor and upwash system. The key to efficient carbon removal is the absorbers internal configuration and an upwash system. The key to efficient carbon removal is the absorbers internal configuration and an upwash system with a facility to introduce motive water necessary to transfer carbon as slurry.

The PCI K Floor suitably modified provides the solution.

## Application

The hydraulic implications of introducing GAC adsorbers to an existing works, or incorporating them in a new works are of great significance. Unless correctly addressed the works could be penalised by high pumping costs. PCI's unrivalled experience of treatment plant design qualifies us to address fully all aspects of the problems and engineer a low cost solution.

Our existing designs cover absorber volumes up to 225m<sup>3</sup> and transfer systems to and from absorbers, exhausted GAC storage tanks, regenerated GAC storage tanks and delivery/collection road tankers.

Adsorber operation is available in all modes up to fully automatic for unmanned plant. Transfer operation is available in all modes up to semi-automatic with operator initiation and supervision. Motive water can be recycled to reduce losses and transfers can be undertaken in small discreet volumes if necessary to minimise impact on normal works operation. (This usually applies to limitations on wastewater plant). Water consumption for transferring spent carbon amounts to no more than that required for a normal filter wash.

## Conclusion

The PCI System will fit into and integrate with any existing or new works because of PCI's very considerable experience of layout, process and hydraulic design with economy of capital costs.

The PCI transfer system provides efficient carbon handling with low use of motive water and minimal attrition of carbon.



*Pilot Carbon Adsorber*

