Replacements of Polonite Phosphorus Filters – Some Guidelines

Eventually, a Polonite-filter will start to lose its ability to capture phosphorus, and shall be replaced with a new one. P-capture will not cease abruptly, but will be reduced slowly and successively, so there is no hurry. Instead, replacements are normally planned as campaigns every sixth month. Replacement campaigns are essential both for cost efficiency and keeping the environmental impact from transports as low as possible.

1. Planning and preparations

In order to deliver the correct filter, make sure to know what type of filter that shall be replaced.

2. Vehicles:

Filter bags are easiest replaced using a crane lorry.

- Lifting moment (dry/new filters):
    - It is prescribed that a 500 kg-filter shall be installed no more than 10m from a position where a crane lorry can operate.
      This translates to 500 kg x 9,8 N/kg x 10 m = appr. 50 kNm

    - It is prescribed that a 1,000 kg-filter shall be installed no more than 5m from a position where a crane lorry can operate.
      This translates to 1,000 kg x 9,8 N/kg x 5 m = appr. 50 kNm

- Lifting moment (wet/used filters):

    - Water contained in the filter material may increase the total weight by appr. 60%. I.e. the real, total, lifting moment using the data above can be appr. 80 kNm

Occasionally, you might come across installations using Polonite as bulk material (i.e. no bag). Bulk installations are recommended for larger filters containing several tons of filter media, but for small sewers it is more of an exception. In such (rare) cases a vacuum truck will be required. If the material is old it might have cured into a half-solid form that needs to be crushed before it can be sucked by the vacuum truck. Use an iron bar. ***Replacement of Polonite in bulk form should not be co-planned with filter-bag replacements! Bulk replacements is more like emptying septic tanks!***

3. Manpower:

If you are not already used to perform filter replacements it is recommended to deploy two persons for the replacement. One person to control the crane, and the other to handle the filter itself.

4. The replacement procedure

A. Take away the old filter bag:

1. Open the lid to the tank where the filter bag is contained

2. Release the 'yellow hose' from the inlet in the tank. Make sure the rubber gasket doesn't come lose.

3. Fix the crane's lifting devices in the straps of the filter bag. Use all straps and use long enough lifting devices (or a hoisting beam) to make sure the straps are not strained towards the centre of the filter.

4. Hoist the bag straight up.

5. With the bag suspended above the tank, use a knife to carefully perforate it at a few places to let most of the water flow back to the tank underneath. Then place the bag on the lorry, preferably in plastic vessels of suitable size.

B. Fit the new filter bag

1. Move the crane's lifting devices to the new bag

2. Carefully lower the new bag into the tank. Tanks might look differently: turn the filter such that the yellow hose can run in a soft curve straight into the inlet. Use a knife to reduce the length of the hose if required.

3. It might require some time to allow the water in the tank to be pushed out. It might speed up the process if you either stand on top of the filter or otherwise add water on top with a garden hose etc.

4. When the bag is standing on the bottom of the tank the lifting devices will be disconnected.

5. Add amply of pipe lubricant on the rubber sealing in the connection device and introduce the yellow hose into it. Make sure the rubber connection is in its correct position – it is of fundamental importance that this connection is tight.

6. Before putting the lid back in place, check that the new filter bag is not blocking the tank outlet.

5. Recycling

A saturated Polonite filter is an essential resource; limestone and phosphorus – both valuable components for farming! Endeavour to identify a farmer interested in dissemination the material in his farmlands. Alternatively, the saturated Polonite can be used as a soil enhancer when producing new planting soil.