Taking Slow Sand Filters to the Future:
The Underwater Skimmer

Stream

The Industrial Doctorate Centre for the Water Sector

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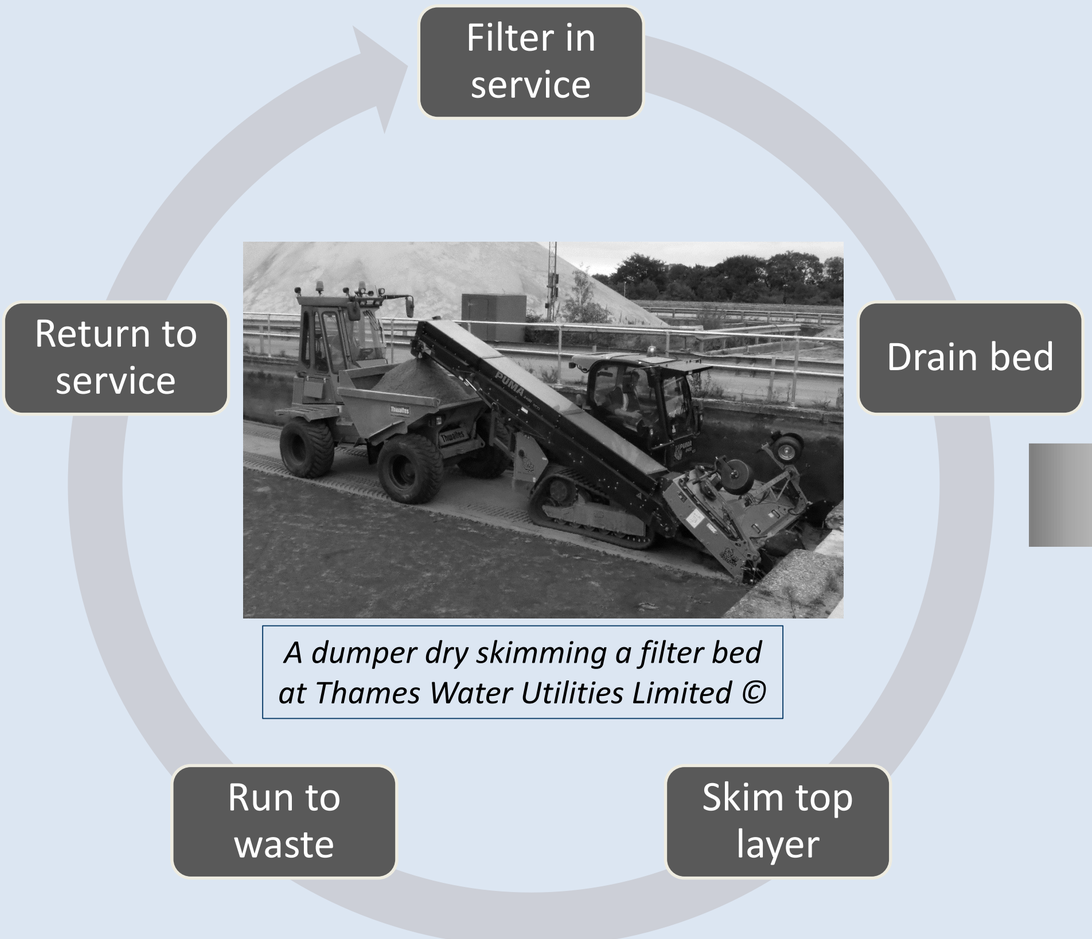
From Dry to Underwater Skimming

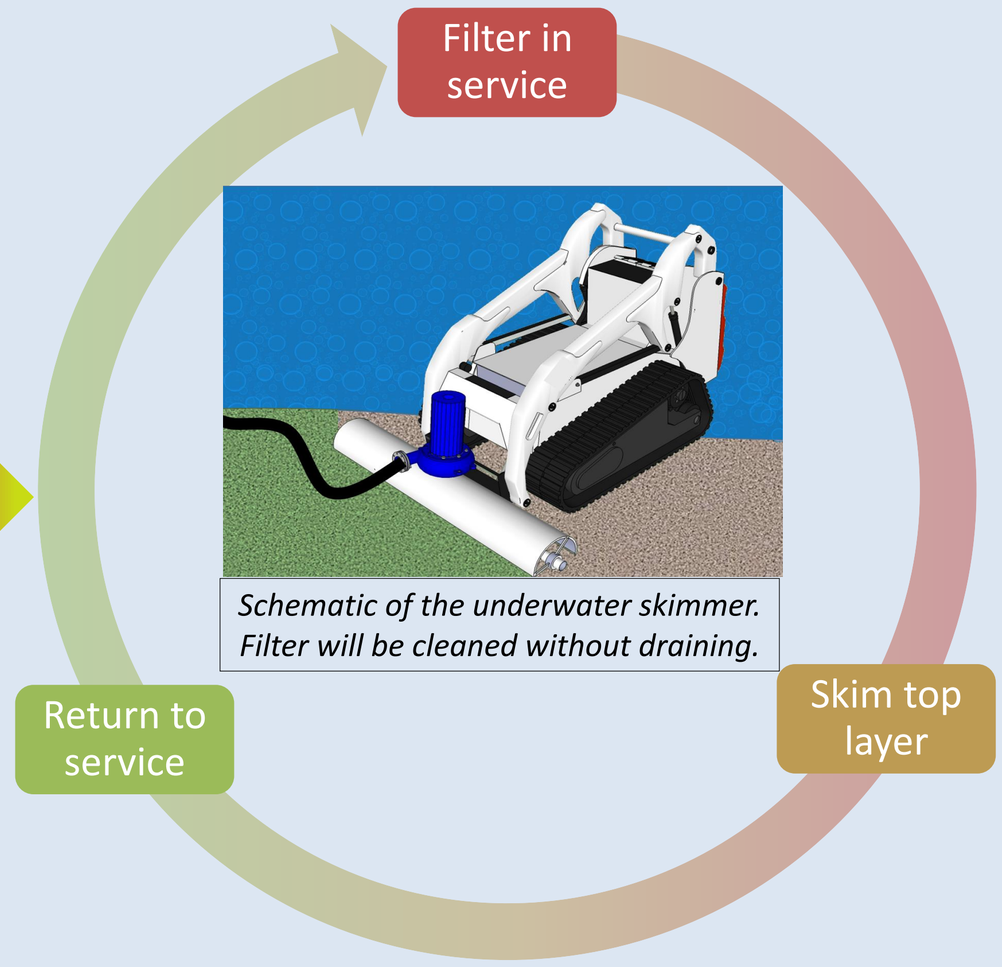
Dry Skimming: Traditional method



A dumper dry skimming a filter bed at Thames Water Utilities Limited ©

- Production downtime averaging 5 days
- Loss of biomass responsible for biological treatment

Underwater Skimming: Future method

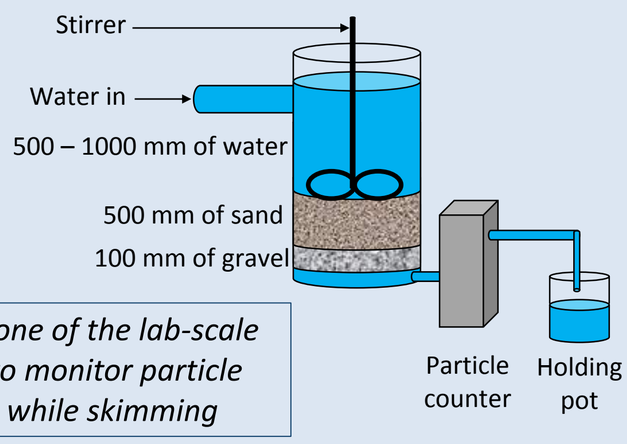


Schematic of the underwater skimmer. Filter will be cleaned without draining.

- Reducing production downtime to 12 hours
- More productivity from existing assets

What is the Impact of the Underwater skimmer on slow sand filter operation?

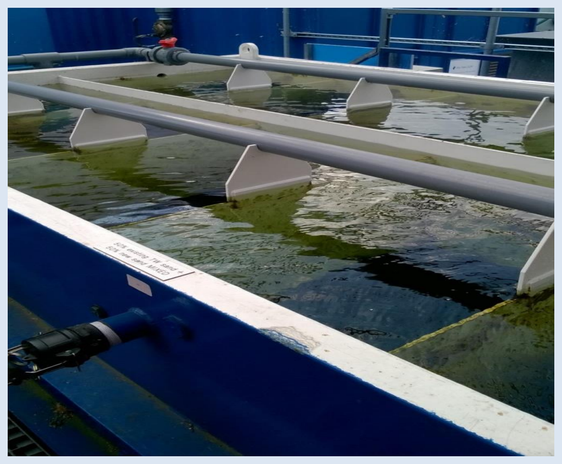
"Using the underwater skimmer will not compromise effluent water quality or SSF operation but with the increased speed and accuracy of cleaning, downtime will be minimised and biological activity will develop quicker."



Schematics of one of the lab-scale experiments to monitor particle penetration while skimming

List of some parameters to be monitored

Biomass (biofilm)	Turbidity
Total Organic Carbon	pH
Dissolved oxygen	Headloss
Coliform and *E. coli*	Temperature



SSF pilot rig at Thames Water Utilities Limited ©

Best Practice Guide

- Despite being one of the oldest technologies for treating water, it is still in use in metropolitan areas of the UK, USA, Japan, Sweden and the Netherlands.
- Project proposes to review the current 'best-in-class' practices within the industry.
- Produce a guide that can be practically utilised irrespective of diverse variables that makes each SSF works unique (such as source water, location and water demand).

A survey is currently underway, where the similarities and differences between various sites will be evaluated and best options will be mapped out.

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