

SPIDFLOW™

A new generation of rapid flotation

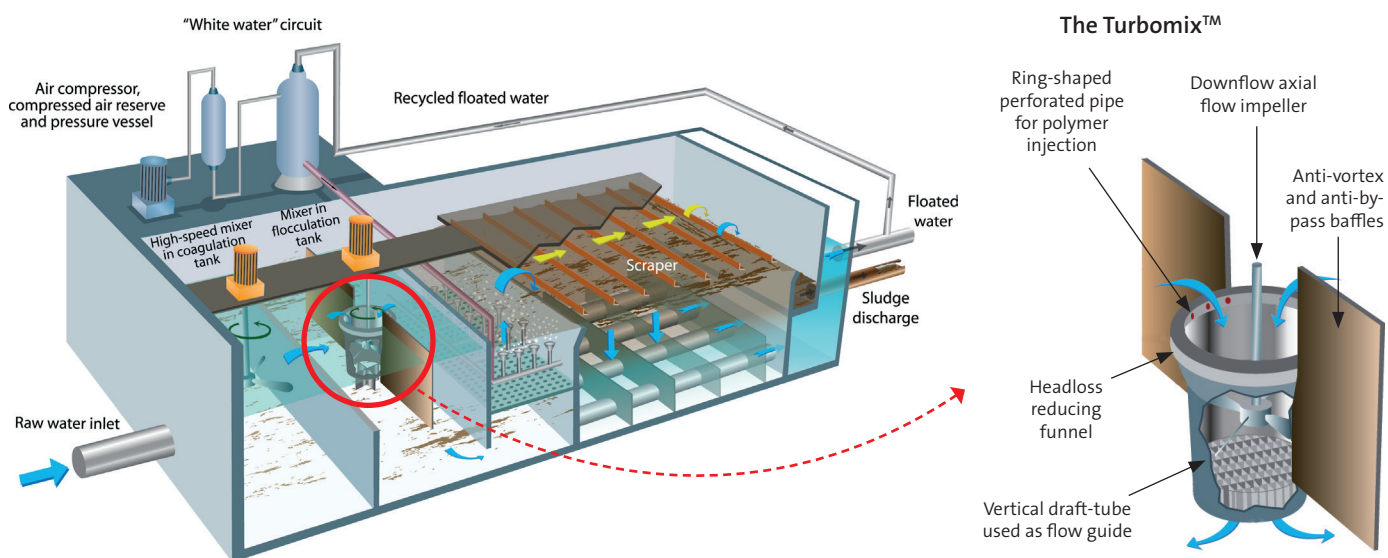
Clarification of water containing low density particles is a delicate step, especially during episodes of fast algae growth.

This is why Veolia Water Solutions & Technologies has developed Spidflow, a new generation of rapid and compact flotation units that can produce high-quality drinking or process water.

No matter the kind of water resources to be treated, Spidflow effectively removes colour, organic matter and algae, even when present in high concentrations.

The Spidflow process

- Spidflow comprises a coagulation stage, followed by a flocculation step and a clarification phase through fast flotation. The flocculation stage may also use a Turbomix when dealing with cold water.
- The fine air bubbles, formed by pressurising air in water (at pressures of 5 to 6 bar) when producing white water, are injected into the Spidflow flotation units through a dedicated distribution system. This ensures the separation of Suspended Solids (SS), algae, oil, and hydrocarbons, which are trapped in hydroxide flocs formed by the addition of coagulant.
- The hydraulic sequencing of the various compartments of the Spidflow process has been designed in accordance with specific Computerized Fluid Dynamics (CFD) type studies. Spidflow has a floor for the distribution of flocculated water, which is located before the mixing step with white water. It also includes anti-spiral flow plates that break down any short circuits and collection lines which uniformly distribute water flow.
- This unparalleled process optimisation ensures that Spidflow achieves levels of treatment efficiency which allow it to operate at clarification rates between 30 and 50 m/hour.



Applications

- Spidflow fits specifically well seawater desalination pretreatment, as an upstream step of a reverse osmosis membrane treatment chain. Spidflow is especially efficient during red tide algal bloom periods.
- This process significantly maximises filtration cycles duration following pretreatment steps and protects reverse osmosis membranes against ill-timed clogging. As a result, Spidflow guarantees very low SDI (Silt Density Index) figures that remain stable over time.
- Spidflow is also an excellent solution for:
 - Clarifying surface water (from lakes, dams, or rivers), containing up to 80 mg/l of SS in occasional peaks, into drinking water.
 - Severe cyanotoxine and/or pesticide issues management. Spidflow can in this context be used in association with Powdered Activated Carbon (PAC). The addition of PAC noticeably increases Spidflow range of use and enables various organic micro-pollutants to be removed by adsorption.
 - Underground water treatment (turbidity, Fe, Mn, H₂ while re-oxygenating it).
- To meet the needs of large capacity production plants, Spidflow is installed in concrete works.

The process is also available as Spidflow Package Plant, in a metal, modular and compact version. This specific product range is ideal for industrial installations with small treatment capacity.

References

For seawater desalination:

- Fujairah 2, United Arab Emirates (2010), 369,000 m³/day
- RWE Power Production Plant, Eemshaven, The Netherlands (2011) 30,000 m³/day

For drinking water production:

- Annet sur Marne, France (2009), 2,400 m³/day
- Toulon La Valette, France (2010), 67,760 m³/day
- Kermorvan, France (2011), 6,000 m³/day

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Advantages

- Even without the additional use of polymers, Spidflow provides unequalled water treatment efficiency by eliminating:
 - Over 99% of algae
 - Over 50% of organic matters
 - Over 90% of colour
- And over 90% of oils and hydrocarbons, making Spidflow an excellent protection system for installations in locations that are sensitive to unplanned petrochemical releases (hold blasting and ballast discharges).
- A significant reduction of the clogging ability of water, thanks to excellent clarified water SDI.
- A direct concentration of floating sludge of 30 g/l on average, which does not require an additional thickening stage.
- A flexible and highly reactive solution to variations in the quality of water to be treated, thanks to full and extensive automation.
- Competitive operating costs, thanks to a well-managed energy consumption and a moderate use of chemicals.
- Limited footprint, allowing Spidflow™ to be installed in treatment plants of all sizes, including during retrofitting of installations.
- Full-time operating reliability as well as simplified maintenance and operation.

