

SPIDFLOW™

- A new generation of rapid flotation



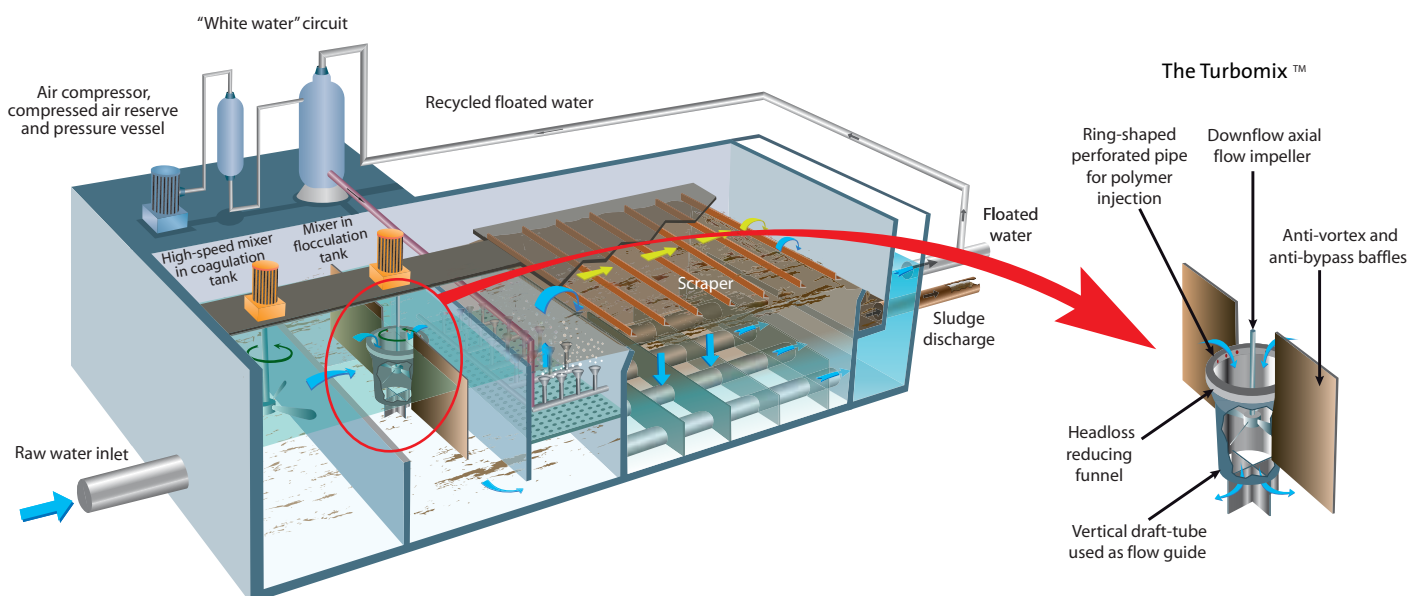
Clarification of water containing low density particles is a delicate step, especially during episodes of fast algae growth.

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.



SPIDFLOW™



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, H₂S), 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

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.