

Water Technologies & Solutions

poseidon* Saturn* dissolved air flotation units

industrial process water and wastewater treatment

The patented poseidon* Saturn* unit uses dissolved air flotation technology to separate fine dispersed particles from water. The unique design of the poseidon Saturn unit provides for cost-effective water treatment and allows for the achievement of a high solids capture rate and thicker sludge with maximum operational flexibility.

SUEZ's poseidon Saturn units offer a column shape configuration. The Saturn units are modular, preassembled, extremely space-efficient and require very small footprints and minimal field erection.

Different stainless steel grades, such as 304L, 316L, Duplex 2205 and other corrosion-resistant materials are used for construction to fit process needs.

ready for the resource revolution



feeding the unit

SUEZ's poseidon Saturn unit can be fed by pumping or by gravity, with either a constant or variable flow. The unit tolerates variations in feed concentration, which allows for operational flexibility. A dual chemical or a single chemical system may be required for optimum suspended solids removal. In a dual chemical system, a coagulant is mixed with the influent at the suction of the feed pump or at the inlet of a flocculator in order to coagulate the finely dispersed material. Downstream, prior to the inlet compartment of the flotation unit, a polyelectrolyte (flocculant) is mixed into the stream, initiating floc formation. In a single chemical system, the flocculant is also mixed into the stream prior to the inlet compartment. If the feed flow rate varies, a proportional flow regulator for the chemical dosage pumps will allow for the right chemical addition rates.

proprietary recirculation system

The micro-bubbles required for flotation are produced with a recirculation system. This system, designed to operate on a continuous basis, meets the essential conditions for proper air dissolution and micro-bubble generation. It also ensures a high solids capture rate by allowing the combining of flocs and microscopic air bubbles, forming air-floc conglomerates.

The recirculation system is composed of a pneumatic box, a patented poseipump* recirculation pump (U.S. Patent 5.385.443) and a pressure release system. The efficiency of the recirculation system is mainly attributed to the poseipump, which ensures fine air dispersion into the recirculated water and builds a proper pressure to allow for air dissolution. The poseipump is fed from the clarified water outlet, the recirculation water ratio being about 10% to 15% of the total flow. The micro-bubbles are formed when the recirculated water is released to atmospheric pressure prior to entering the inlet compartment of the unit.

The poseidon air dissolving system generates very small air bubbles (30-40 μm) and ensures the combination of the micro-bubbles with the flocculated particles, increasing their buoyancy. The floatable air-floc conglomerates, along with the rest of the wastewater stream, enter into the flotation unit inlet compartment and then into the separation cell. The floatable material then rises to the surface and any heavy settleable particles (sand, grit, etc.) settle into the cone-shaped bottom.

intermediate capture surface zone

The poseidon Saturn unit is equipped with a series of cone stacks which constitute an intermediate capture surface zone that maintains a low overflow rate and ensures a high capture rate. The separation cones also allow for low polymer consumption. Suspended contaminants having different densities will rise



benefits

- **HIGH PERFORMANCE AND OPERATIONAL FLEXIBILITY:**
 - + High capture rate
 - + High sludge/float consistency
 - + Easily handles upstream variations in flow rate and contaminant concentration
- **LOW OPERATING COSTS:**
 - + Efficient polymer consumption
 - + Minimal operator monitoring required
 - + Minimal maintenance required
 - + Stainless steel and complete corrosion-resistant construction
- **LOW INSTALLATION COSTS:**
 - + Modular preassembled units
 - + Space-efficient small footprint
 - + Minimal field erection time: unload, position and connect

and form the sludge / float layer at different rates. Fast rising contaminants will rise rapidly without entering into the intermediate capture surface zone while smaller, slow rising contaminants, will be either entrained with the fast rising contaminants which are forming a filtering layer in the peripheral zone of the intermediate capture surface zone, or be separated within the intermediate capture surface, located prior to the outlet of the flotation unit. The clarified water flows down through the separation cones and is collected by a water collection system and finally directed towards the outlet of the flotation unit.

sludge/float removal system

SUEZ's poseidon Saturn unit is equipped with a scraping system which allows for continuous proper removal of the sludge/float. This system includes a sludge/float scraper and one rotary thickener each of which are equipped with a motor-reducer with variable speed adjustment capability. This provides for reliability and flexibility of the sludge/float consistency and removal.

water level adjustment

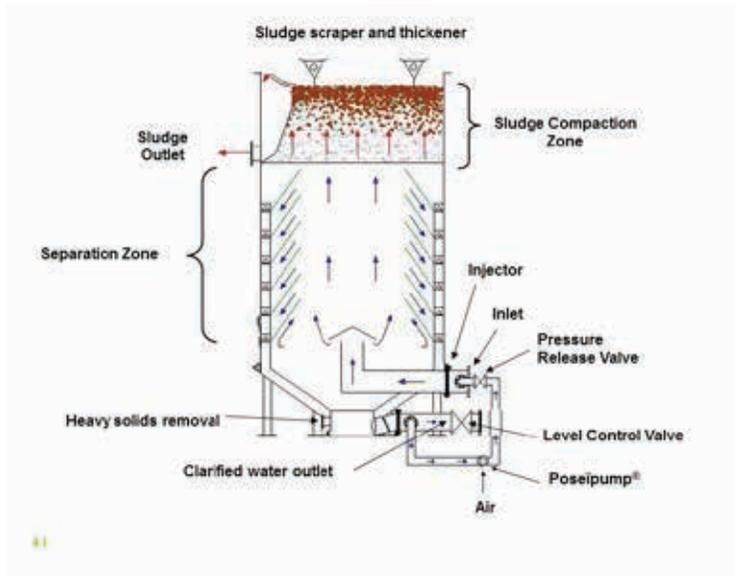
The poseidon Saturn units are operated with an automatic level control system consisting of a level control valve and a level transmitter. This type of level adjustment allows for flexibility of the sludge/float consistency and removal. It also increases the stability of the treatment by maintaining a constant level in the unit, even during flow variations of the raw water.

sediment removal system

In order to avoid any build up of heavy solids at the bottom of the unit, a sludge cone and an automatic drain valve are installed. The sequence of drainage is set relative to the particular application requirements.



poseidon DAF Saturn unit Model TCE shown



Preassembled, modular, space-saving design

Small installed footprint saves space and new building cost



poseidon Saturn

dissolved air flotation units



integrated treatment solutions

As a full treatment line specialist, SUEZ draws upon a broad portfolio of proven technologies to assist industries and municipalities in meeting their water and wastewater treatment challenges. We custom design integrated equipment solutions and offer a comprehensive set of chemicals, monitoring instruments, and digitally enabled services for a wide range of applications:

- industrial water and wastewater
- municipal drinking water
- municipal wastewater
- biosolids management

We also offer global expertise in the design, build, operation and maintenance of water treatment plants and systems, all delivered to your specific demands.

piloting

SUEZ offers pilot systems and services for this and many other of our product offerings. Pilot studies are a practical means of optimizing physical-chemical and biological process designs and offer the client several benefits, such as:

- proof of system reliability
- optimal design conditions for the full-scale system
- raw water lab analysis
- regulatory approval

If you are interested in a pilot system, please contact us.

contact Find a contact near you by visiting www.suezwatertechnologies.com and clicking on “**Contact Us.**”

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BRclposeidon_DAF_Saturn_EN Jun-18

