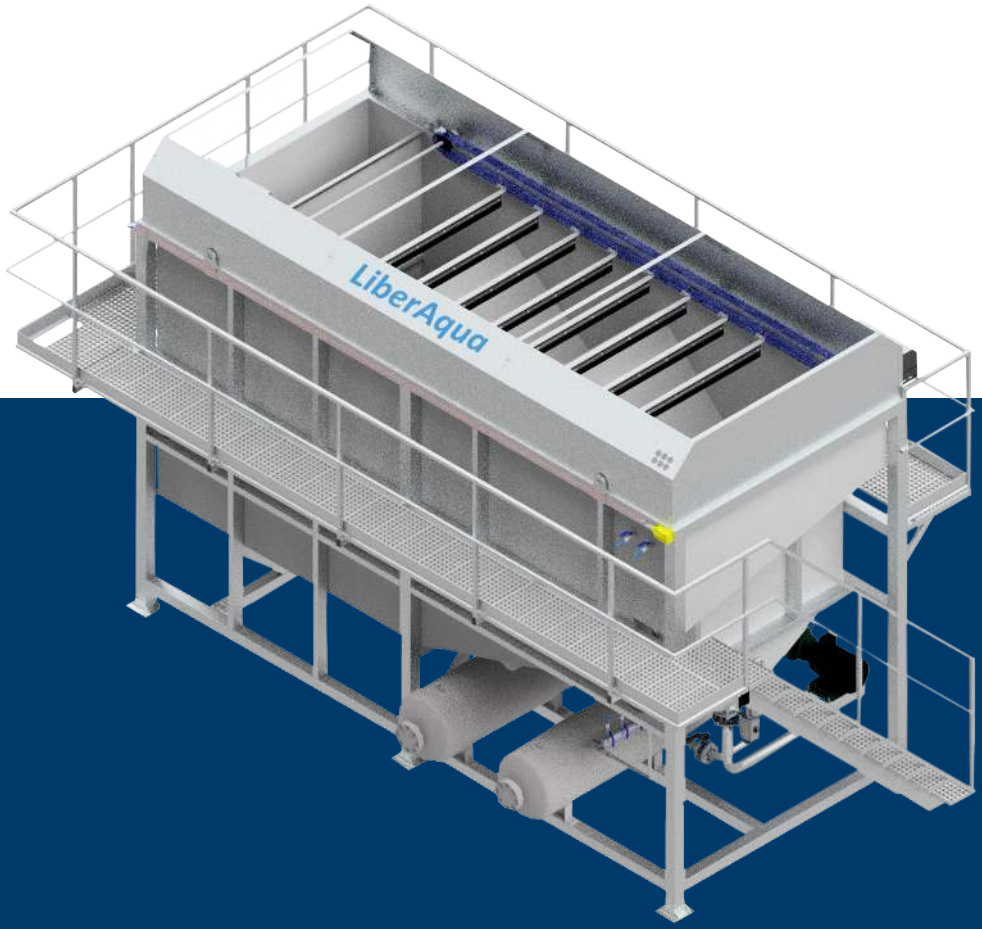
LiberAqua

KLINGER Portugal

DISSOLVED AIR FLOTATION SYSTEMS

Physico-Chemical Treatment. Solid–Liquid Separation. Sludge Thickening



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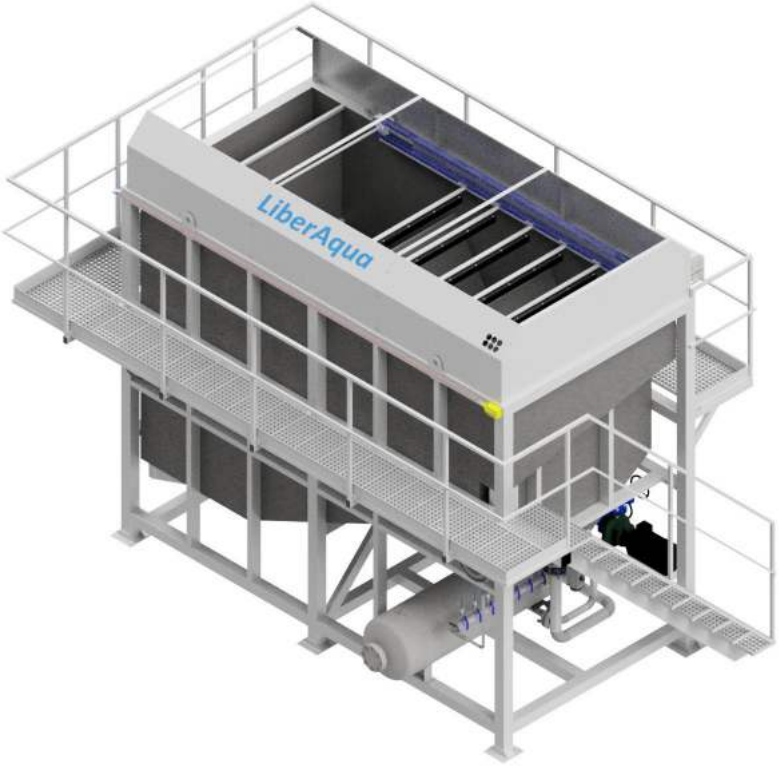
DAF: DISSOLVED AIR FLOTATION SYSTEMS

We design, engineer, manufacture, and install Dissolved Air Flotation (DAF) systems optimized for maximum solid–liquid separation efficiency, low energy consumption, and simplified operation.

The DAF system operates in countercurrent flow, with sludge discharged at the inlet zone. This configuration minimizes solids carryover and maintains a high concentration of microbubbles in the area with the highest solids loading, preventing sedimentation.

The venturi-type pressurization system makes full use of compressed air, reducing air consumption by up to 50%. Recirculation pumps equipped with open impellers allow the passage of solids up to 20 mm, preventing clogging and ensuring reliable operation.



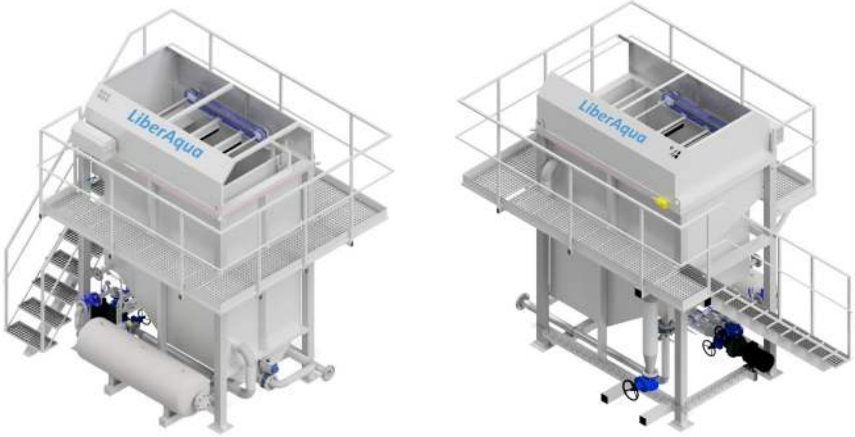
PRODUCT DESCRIPTION

Manufactured at our facilities, with standard construction in AISI 304 stainless steel. Upon request, units can be supplied in AISI 316 for more aggressive environments.

The equipment can be delivered as a standalone unit, with an electrical control panel designed to manage all stages of the flotation process. The following optional features are available:

» Automatic flocculant preparation (powder or liquid);
» Automatic dosing of reagents (coagulant, pH correction);
» Transfer pumping to downstream treatment;
» Treated water quality monitoring;
» SMS alert notifications, among others;
» Remote supervision and technical support.

The flotation units provide top access via staircase and walkway with handrails, all manufactured in stainless steel with grating. All moving components, such as chains and scrapers, are protected against accidental access by safety guards. The upper section of the equipment is fitted with a continuous safety lifeline along the entire accessible perimeter.



WORKING PRINCIPLE

The flotation process is based on the attachment of air microbubbles to solid particles, reducing their apparent density and causing rapid flotation to the surface. The addition of flocculants promotes the formation of larger and lighter aggregates, increasing solid–liquid separation efficiency.

The recirculated water is saturated with compressed air at 4 bar in a saturation vessel. When released to atmospheric pressure, the dissolved air is liberated as microbubbles, which adhere to the solid particles present in the raw water.

These particles are removed by scrapers and conveyed to a sludge collection box. Heavier particles, such as sand, settle at the bottom and are automatically discharged through pneumatically actuated valves operating on a timed cycle.

The flotation chamber is divided into three zones—inlet, separation, and treated water outlet—and features an adjustable weir discharge system. The weir level, scraper operation settings, and reagent dosing directly influence the degree of sludge thickening achieved.

APPLICATIONS

» Industrial Wastewater Treatment Plants (WWTPs).

» Urban Wastewater Treatment Plants.

» Physico-chemical treatment of effluents (reducing the load on biological treatment).

» Advanced solid–liquid separation (e.g., bulking, overloading in clarifiers).

» Thickening of biological sludge for anaerobic digestion.

TECHNICAL SPECIFICATIONS

The LiberAqua DAF system range has been developed to cover a wide variety of applications while maintaining high levels of efficiency and reliability. The following base models are available:

Characteristics	DAF 005	DAF 015	DAF 030	DAF 060	DAF 100	DAF 160
Maximum Treatment Capacity*	5 m³/h	15 m³/h	30 m³/h	60 m³/h	100 m³/h	160 m³/h
Total Power	7 kW	7 kW	9 kW	17 kW	17 kW	17 kW
Frequency	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
Voltage	400 V	400 V	400 V	400 V	400 V	400 V
Empty Weight	1377 kg	1783 kg	2400 kg	3065 kg	4000 kg	8000 kg
Operating Weight	7100 kg	10 000 kg	18 240 kg	27 300 kg	40 000 kg	77 000 kg
Length	3441 mm	3800 mm	5241 mm	6341 mm	8336 mm	9300 mm
Width	2695 mm	2695 mm	3245 mm	3445 mm	3445 mm	4200 mm
Height	3511 mm	3455 mm	3766 mm	3766 mm	3914 mm	3700 mm
Scraper Gearmotor Power	0.37 kW	0.37 kW	0.37 kW	0.37 kW	0.37 kW	0.37 kW
Standard Construction Material	AISI 304 / 304 L	AISI 304 / 304 L	AISI 304 / 304 L	AISI 304 / 304 L	AISI 304 / 304 L	AISI 304 / 304 L

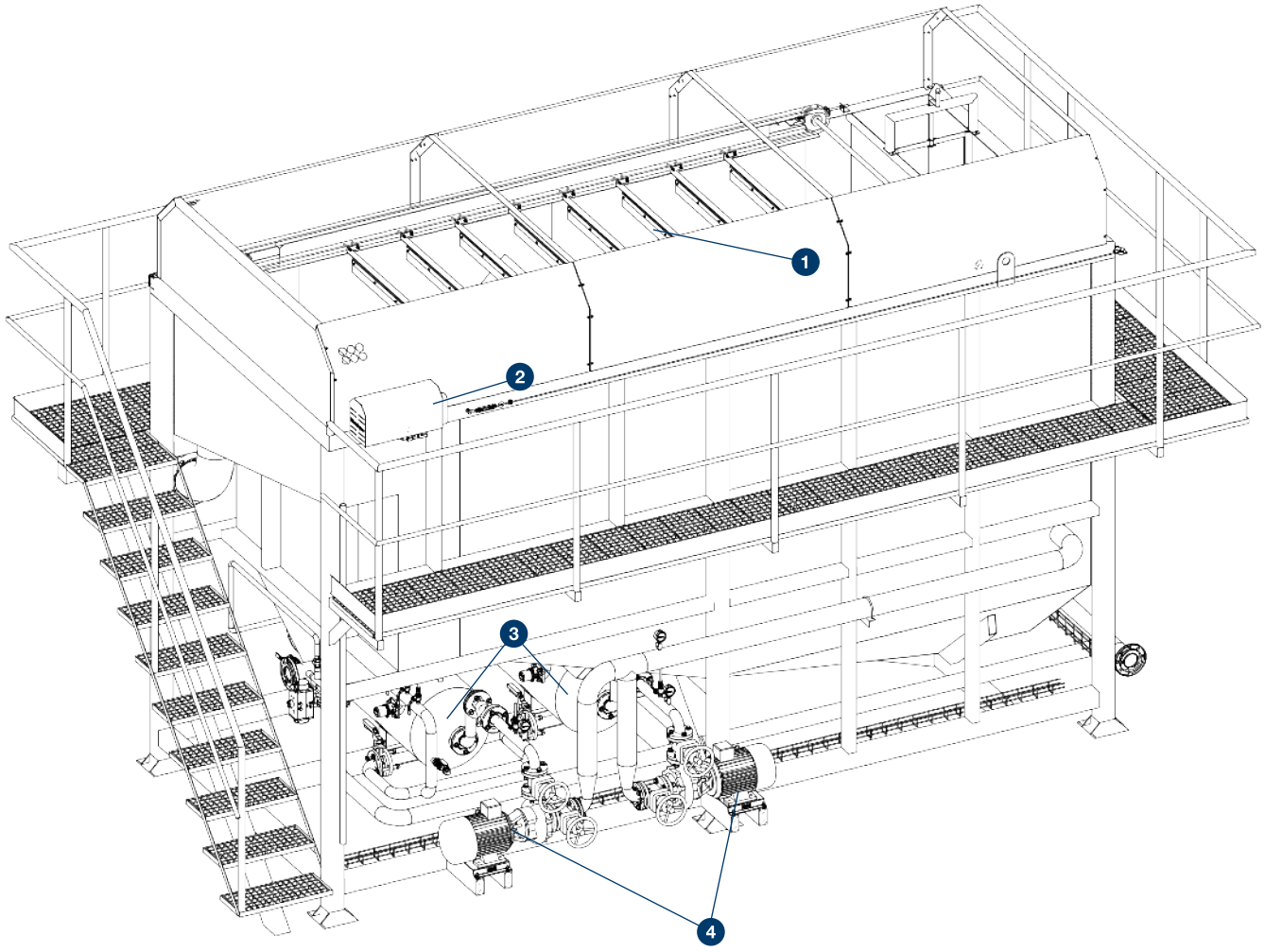
*The permissible flow rate depends on the total suspended solids (TSS) concentration and the effluent source. For proper sizing and additional information, please contact us.
**The technical specifications provided are approximate and may be adjusted depending on equipment customization. KLINGER Portugal reserves the right to make changes without prior notice whenever necessary for continuous product improvement.
***The images shown are for illustrative purposes only and do not constitute a commitment regarding the supplied equipment.

For flow rates above 200 m³/h, customized solutions can be provided through the construction of tailor-made units or the modular combination of existing models. This approach allows the system to be adapted to the client's technical and operational requirements while optimizing the available installation space.

All base models can be customized to meet the specific needs of each project, thanks to complete control over all production stages. Additionally, the electrical control panel can be configured to integrate and operate external equipment or instrumentation, enabling fully centralized and integrated management of the treatment line.

TECHNICAL DRAWING

The following image shows the equipment and its main components.



1. Scrapers
2. Scraper Gearmotor
3. Saturation Tank
4. Recirculation Pump

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