



DAF

DISSOLVED AIR FLOTATION

Removal / recovery of solids, fat, oil and grease from wastewater or process water

- Exceptional separation performance
- Non-clogging saturation and pressure release system
- Lamella separator for high capacity on small footprint
 - Made of stainless steel, pickled in an acid bath

Applications

Process water is needed in many production processes as a solvent, for transportation of material, or for cleaning purposes. Water is recirculated and reused for economical and environmental reasons. Grease, oil, fat, floating and suspended solids, and dissolved components need to be separated to provide good and uniform water quality. Recovery of valuable product from the water may be another additional objective.

Where used process water is discharged as wastewater, pre-treatment is often required to prevent toxic or otherwise harmful substances from entering the sewer system. Industrial wastewater treatment can also be performed with the objective to reduce surcharges and fees.

Grease traps or gravity clarifiers are often incapable to achieve sufficient pre-treatment. Various types of flotation processes have been developed, whereof dissolved air flotation with pressure water recirculation has proven most effective. HUBER Dissolved Air Flotation Units are used for a wide variety of industrial and municipal applications, such as:

- Meat/ Fish processing and packing
- Dairies
- Oil and fat refineries
- Canneries
- Industrial kitchens and canteens
- Fast food providers
- Cosmetics industry
- Textile industry
- Chemical industry
- Petrochemical industry
- Metal processing
- Galvanizing, electroplating

Benefits

DAW Corporation have developed a particularly effective and efficient DAF system that offers the following benefits:

- Generation of saturated pressure water with a single multi-stage pump; no need for air compressor or pressure tank
- Single, large, non-clogging and easily adjustable pressure release valve
- Coaxial tube feeder for thorough blending and mixing of influent and super-saturated water, and for even distribution of the influent over the entire width of the tank
- High capacity and efficiency on a small footprint due to lamella separator
- Full-automatic operation
- Low maintenance
- Made of stainless steel, pickled in an acid bath for perfect finishing and corrosion protection
- Experience from over a hundred installations

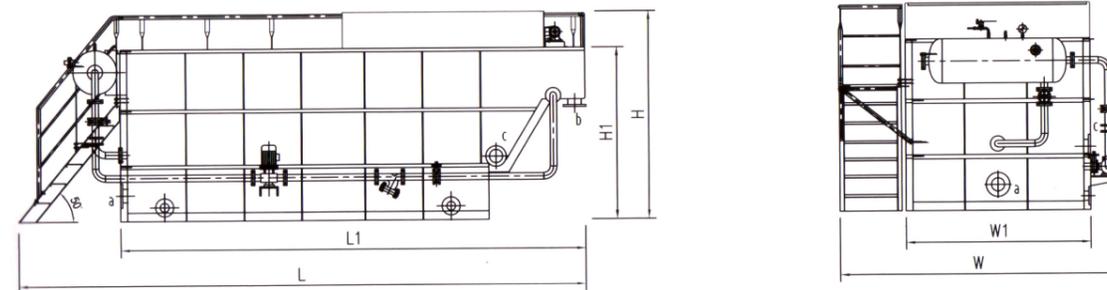
Features

Dissolved air flotation (DAF) is used for the separation of particles, fat, oil and grease from water. Micro-bubbles are generated and attached to the surface of such matter. Due to their increased buoyancy, the aggregates of solids and air bubbles float to the water surface where they form a scum (or flotat) layer that is skimmed off.

Generation of micro-bubbles and influent

feeding Influent to be treated is blended with so-called "milky water", an emulsion of millions of micro-bubbles per gallon of water, having a diameter of 20 to 40 microns. Such micro-bubbles are generated when the pressure of air-saturated water is suddenly released. This is the same effect as when a soda bottle is opened.

Model	Capacity (m ³ /h)	(kW) Power			(m) Dimension			(DN) Nozzle List		
		Recirculation pump	Air compressor	Skimmer	L/L ₁	W/W ₁	H/H ₁	Inlet (a)	Outlet (b)	Sludge outlet (c)
DAF002	2	0.75	0.55	0.2	3.2/2.5	2.4/1.16	2.2/1.7	40	40	80
DAF003	3	0.75	0.55	0.2	3.5/2.8	2.4/1.16	2.2/1.7	80	80	100
DAF005	5	1.1	0.55	0.2	3.8/3.0	2.4/1.16	2.2/1.7	80	80	100
DAF010	10	1.5	0.55	0.2	4.5/3.8	2.7/1.36	2.4/1.9	100	100	100
DAF015	15	2.2	0.75	0.2	5.5/4.5	2.9/1.6	2.4/1.9	100	100	100
DAF020	20	3.0/5.5	0.75	0.2	5.7/4.8	3.2/2.2	2.4/1.9	150	150	150
DAF030	30	3.0/5.5	0.75	0.2	6.5/5.5	3.2/2.2	2.5/2.0	150	150	150
DAF040	40	4.0/5.5	0.75	0.2	7.7/6.7	3.6/2.6	2.5/2.1	200	200	150
DAF050	50	7.5	0.75	0.2	8.1/7.1	3.6/2.6	2.5/2.1	200	200	150
DAF060	60	7.5	1.5	0.2	9.5/8.4	3.8/2.8	2.5/2.1	250	250	150
DAF070	70	11	1.5	0.2	10.0/9.0	3.8/2.8	2.5/2.1	250	250	150
DAF080	80	11	2.2	0.2	10.5/9.5	4.0/3.0	2.5/2.1	250	250	150
DAF100	100	15	2.2	0.2	11.7/10.6	4.2/3.2	2.5/2.1	300	250	150
DAF120	120	15	2.2	0.2	12.5/11.4	4.4/3.4	2.5/2.1	300	300	150



Up to 30 % of the effluent is recirculated for the generation of pressure water. A multi-stage centrifugal pump generates a pressure of about 90 psi (0.6 MPa). A compressor feeds compressed air to the pump rotor that generates small bubbles with a large surface for quick water saturation. Saturation of the water with air is completed in a tubular reactor. The saturated water flows through a single pressure release valve. By using a single large valve, we avoid the problems that are typical for systems employing a multitude of small valves: Clogging of the small valves, uneven distribution of the milky water, and the need for frequent cleaning and difficult re-adjustment of many valves.

The milky water flows into the inner tube of a coaxial tube feeder while the influent to be treated enters the outer tube at the opposite end. The milky water flows through slots from the inner into the outer tube where it thoroughly blends with the influent so that all solids get in close contact with a sufficient number of micro-bubbles. The coaxial tube feeder thus ensures optimal mixing of super-saturated water and wastewater from the very beginning. The blended influent flows upward through slots of the outer tube into the tank of the dissolved air flotation unit.

Solid / liquid separation

A lamella separator is submerged in the tank to achieve very effective solids/liquid separation on a small footprint. The effective clarifier area is the sum of the horizontal areas of all lamellae, and is about ten times the horizontal area of the lamella packet. While the water flows down through the gaps between the inclined lamella plates, buoying flocs rise a short distance and attach at the lower surface of the upper lamella and dense particles sink a short distance to the upper surface of the lower lamella. These lamellae have a special honey-comb surface to retain thin layers until they are grown into thick and compact layers that finally detach from the surface and slide quickly up or down along the lamella surface. Detached light aggregates slide up and rise to the water surface where they form a floating scum layer. Heavy sludge aggregates slide and sink down to the bottom of the tank. The water, after it has passed down through the lamella separator, rises up again through a channel to an effluent box. The water level in the tank and the immersion depth of the scraper is adjusted by the position of an effluent weir. Recirculated effluent drains from the effluent box into the pump.

Scum and sludge thickening and removal

A grate is installed just below the water surface. As the scum layer within the grate becomes thicker and thicker, it is compressed and partially lifted out of the water by its buoyancy. The scum is thus drained and thickened. A chain scraper travels over the grating and skims off the top of the scum. It drives the scum over a small ramp and drops it into a scum hopper.

The scum flows into a container or sludge tank. Sediment is gravity thickened in the conical sediment hopper. From time to time an automatic valve is opened and the sediment flows into the sludge storage tank where it is blended with the scum. The removed sludge is usually dewatered in a ROTAMAT® Screw Press RoS 3.

Mobile units for on-site testing

Our mobile units permit on-site pilot testing and design of reliable systems. Our compact test units, including the equipment required for chemical pre-treatment of the influent, fit in a 20' container.



DAW Corporation (Pvt) Ltd.

8/665, Ethul Kotte,

Kotte - 10100 Sri Lanka

www.daw.lk

Direct +94 114 063528, +94 114 063525

+94 114 063526, +94 114 063527

Fax

+94 112 883395.

eMail : info@daw.lk

