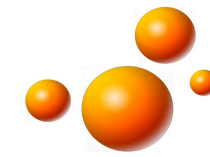


DISSOLVED AIR FLOTATION SYSTEMS

2-STAGE DAF SYSTEM FOR
PRODUCED WATER

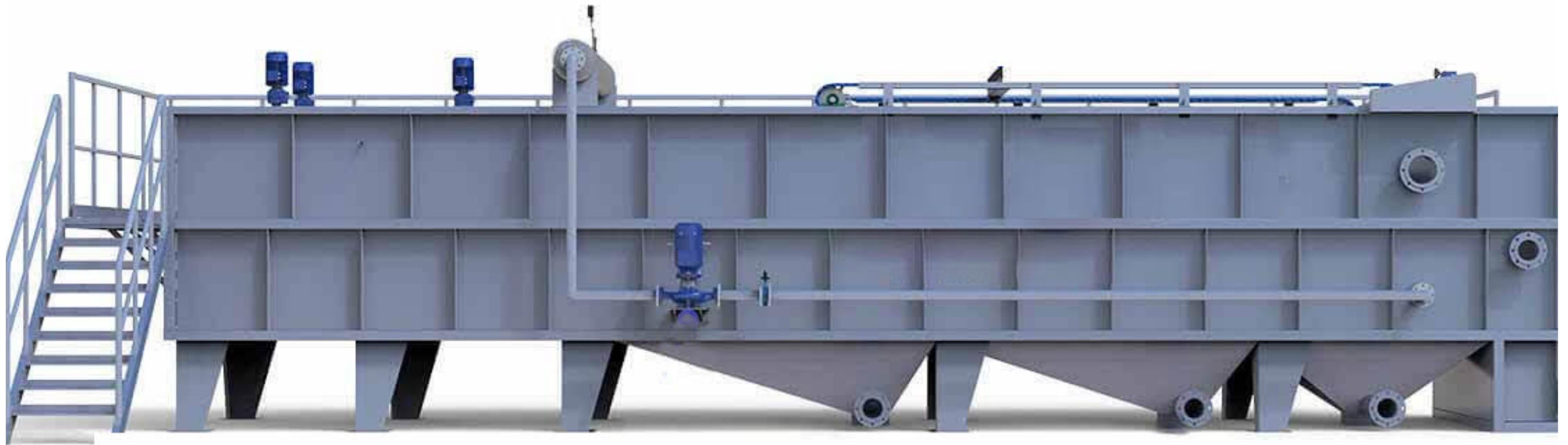


United International
HYDRO ENGINEERING TECHNOLOGIES



GENERAL DESCRIPTION

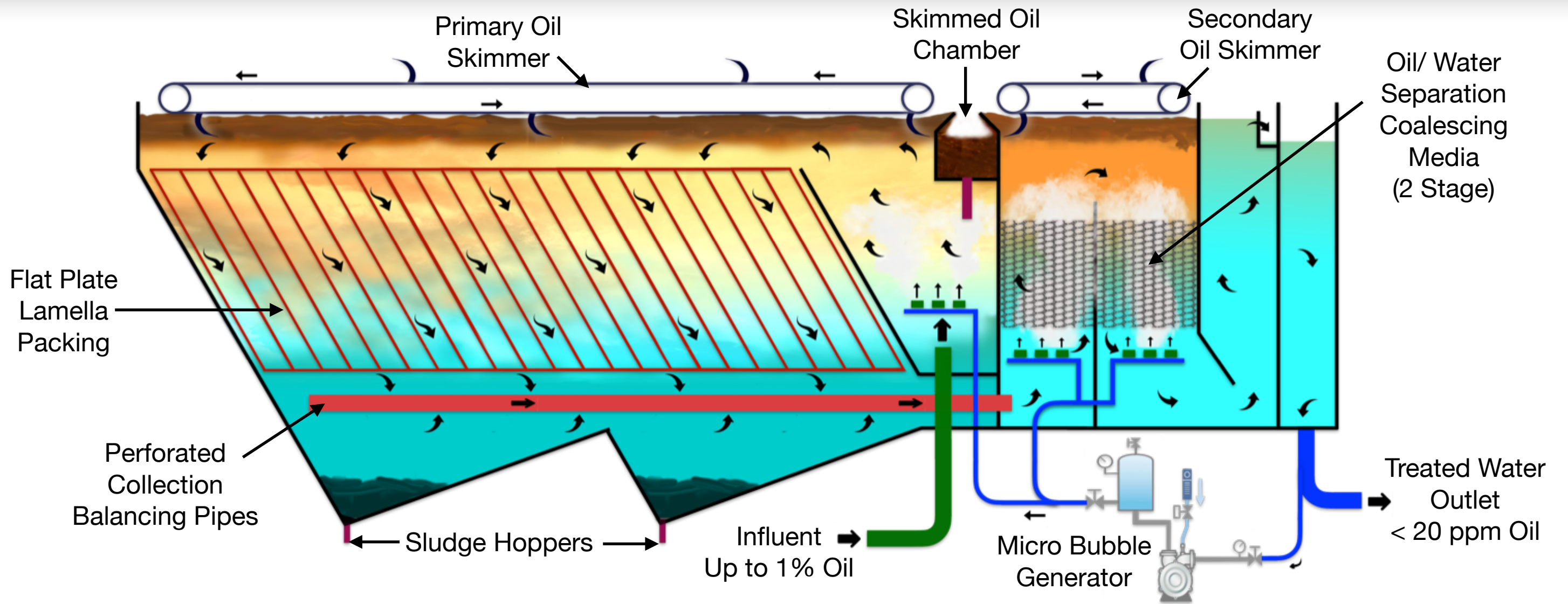
United International Hydro Engineering Technologies (UIHET) is a leading source for the Dissolved Air Flotation (DAF) design, engineering, and customized services. A well-designed, properly functioning Separator is a tremendous piece of wastewater process equipment for treated sewage effluent and the produced water. DAF System can be sized for great volumes and retention time. We offer an extensive range of standard sizes and capacities with complete accessory packages, including chain and flight scraper system, C-pipe oil Skimmer with drive mechanism, leak and level sensors, alarm/ control panels, influent, effluent and oil pump systems.



FUNCTION

DAF systems are designed to remove total suspended solids (TSS), biochemical oxygen demand (BOD), fats, oils and greases (FOG) from the produced water stream. It is a proven and effective physical/ chemical technology for treating a variety of industrial and municipal process. DAF systems are commonly used to meet a variety of treatment goals.

PROCESS DESCRIPTION & WORK PRINCIPLE



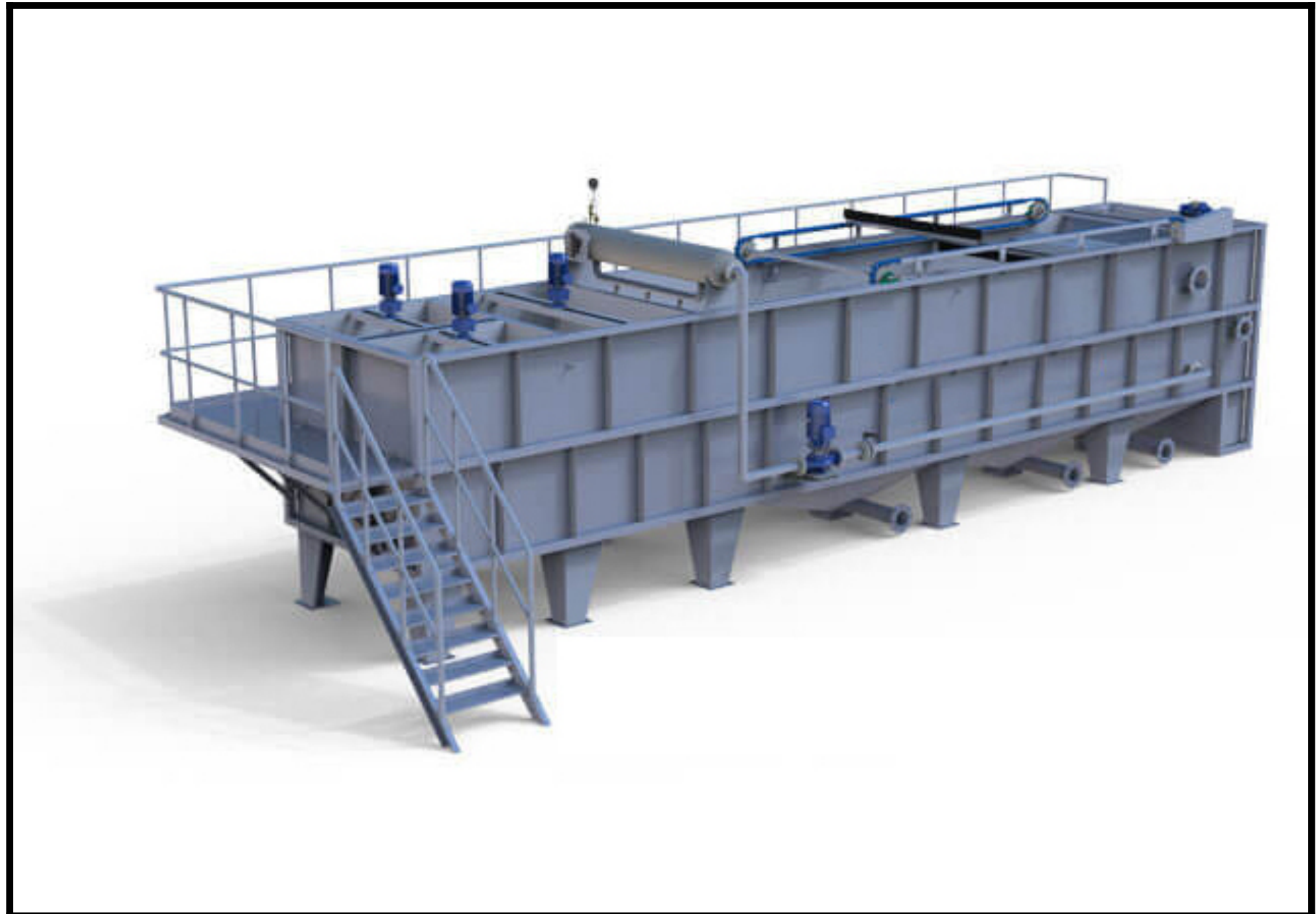
The produced water stream enters the Dissolved Air Flotation Systems (DAF) from the inlet compartment in the middle through a perforated pipe that distributes the influent water equally. The raw water is mixed with the nano/micro-bubbles stream generated by the shear pump, the dissolved air-in-water solution is produced by withdrawing ambient air into a recycle stream of clarified DAF effluent. These micro bubbles attach to any particles in the water causing their density to become less than that of water. The particles then rapidly float to the surface for collection and removal and form a floating bed of material that is removed by a surface skimmer leaving the clarified water behind. After that, water will move gravitationally to two stages of lamella clarifiers, where it will block the oils and fats and prevent them from passing from the top to the bottom, on the other hand, flat plate lamella packings separate settleable solids and oils. Basically, all solids and oils that settle in a given time will be separated easily and economically within the lamella separator.

PROCESS DESCRIPTION & WORK PRINCIPLE

The produced water will flow between lamella plates from the top to the bottom of the tank. Small particles and oils adhere to the plates and gather to form larger and larger particles until their weight and concentration between the plates increases to a certain extent. The collected oil droplets will float to the top of the water where the chain skimmer will take the floating oil and scum to the skimmed oil channel.

The solids fall to the plate surface, where they slide by gravity down to the sludge collection hoppers, and the treated water will pass to the perforated pipe under the lamella packing.

The perforated pipe will balance the flow through the lamella and deliver water to the second refining stage of the Oil/Water Separation Coalescing Media Compartment, this media provides a suitable surface for oil droplets to meet and grow, or coalesce, into larger droplets. As oil droplets grow in size the buoyancy of the droplets increases. In this stage, the system will ensure that no oil droplets are longer in the water stream. The second stage contains another micro bubble diffusers to assist the oil flotation through the coalescing packing.



PROCESS DESCRIPTION & WORK PRINCIPLE



Clarified effluent from a DAF unit is pumped by the DAF pump under high pressure. Air is introduced into the pump suction by an educator loop. The air is sheared into small bubbles by the pump and then dissolved into the water by the high pressure. However, most DAF systems account for some sedimentation and settled sludge removal. Variations in capacity, arrangement, dimensions, and pipe penetration locations can be made to fit your specific requirements. These DAF Systems are designed to accept gravity flow, the volume allows for a longer retention time for sand, grit, free oil, and grease to separate from the water due to their differences in specific gravity.

OIL AND GREASE REMOVAL QUALITY

We offer our clients an optimum quality DAF systems for Oil and Grease Removal which is processed at our end without using chemicals, our system based on the advanced processing techniques in accordance with the set municipal and industry standards. Owing to its high effectiveness and optimum purity, our DAF systems are widely demanded among our valuable clients. Further, to ensure the best quality, the provided remover is stringently tested by our skilled quality controllers on various quality parameters. Dissolved air flotation (DAF) is a water clarification process that uses micro-bubbles to remove oils and grease.

TYPICAL PERFORMANCE

OIL INLET	OIL 1ST STAGE	OIL 2ND STAGE
UP TO 10,000 PPM	< 50 PPM	< 20 PPM
TSS INLET	TSS 1ST STAGE	TSS 2ND STAGE
UP TO 2,000 PPM	< 30 PPM	< 10 PPM



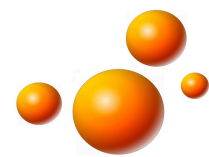
CHAIN SKIMMER SYSTEM

UIHET chain Skimmer system is reliable and user-friendly solution for rectangular settling basins. They can be used in various applications, such as, water and wastewater treatment, API oil-water separation, and storm water treatment. **UIHET** chain scrapers can be built one on top of the other in 2 – 3 layers, and are applicable for rectangular basins up to 100m long and 12m wide. **UIHET** chain scrapers are available in two/three-shaft (bottom or surface) or 4-shaft (bottom and surface) configurations, depending on the clarifier type.



WHY CHOOSE UIHET DAF SYSTEM?

- Offers proven performance with years of expected service
- Longer Lifespan
- Easier Maintenance and Parts Replacement
- Reliable and cost-effective
- Especially effective in removing oil and grease, total petroleum hydrocarbons, and dissolved hydrocarbons from the produced water
- Customizable dimension and nozzles sizes/ numbers to suit the client specific needs
- Consistently removes large quantities of non-emulsified organic contaminants to non-detectable levels or levels meeting regulatory codes
- Quality drive and pump components for long-term reliability
- Complete, skid-mounted design for quick, easy installation
- Rugged 304/316 SS tank design that will not flex and is corrosion resistant



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