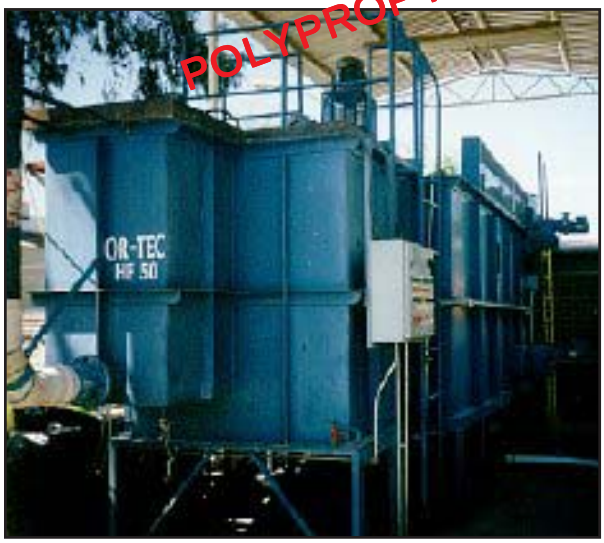
OR-TEC HF SERIES

FLOTATION SYSTEM

AVAILABLE IN STAINLESS STEEL or POLYPROPYLENE



NOT required with the HF Series Flotation System:

- **Air compressors**
- **Pressure vessels**
- **Complicated pressure and flow controls**

Leaving you with:

- **No blocking problems**
- **Streamlined running costs**
- **Reduced capital costs**
- **Maximized performance**
- **Low maintenance**

Weighed down with heavy oil and grease removal problems?
OR-TEC has a simple and extremely cost effective solution: Our HF Series Flotation System.

The HF Series is uniquely designed for the removal of fat, grease and suspended solids from food, industrial and municipal wastewater. It automatically isolates these materials from the liquid waste, making them suitable for separate disposal while increasing plant performance. The removal of these materials greatly decreases pollution loadings and makes the effluent suitable for disposal to public sewers. In addition, the high oxygen transfer rate facilitated by the special aerator provides for oxidation of sulfides.

OR-TEC HF Series models are available for flow rates up to 40 gals/min.
Higher flow rates units can also be provided.

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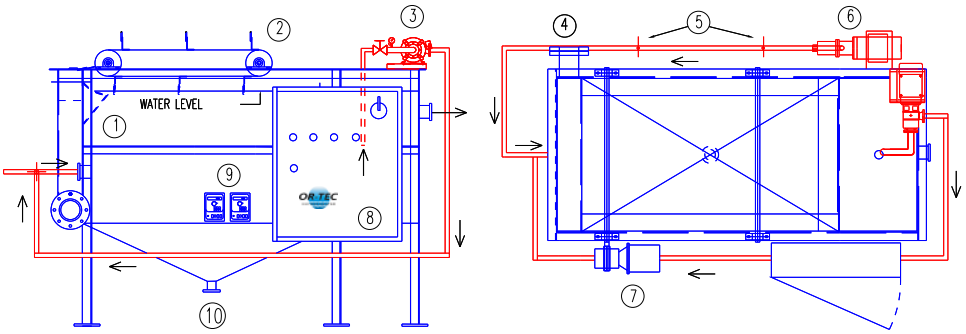
OR-TEC HF FLOTATION SERIES

Legend
1.Flotation Tank
2.Top Scraper System
3.Cavitation Pump
4.Skimmings Discharge
5.Chemical Injection Sites
6.Sludge Feed Pump
7.Top Scraper Gear Drive
8.Control Panel
9.Chemical Dosing System
10.Settled Sludge Discharge



Typical applications....

The HF Series Flotation System is designed for applications that require the removal of fat, grease and suspended solids from food, paint, aluminum, lead and other heavy metals from industrial and municipal wastewater. Note: Many other waste streams are also suitable for treatment. Please call for information.
With the OR-TEC Flotation System, these materials are automatically isolated from the liquid waste, making them suitable for separate disposal while increasing plant performance.

HF Flotation Models:

HF1	2 gpm
HF5	10 gpm
HF10	40 gpm

(Models for larger flows available)

Typical Removal Rates without Chemicals:

BOD	10% - 15% reduction
SS	30% - 40% reduction
O&G	80% - 90% reduction

Typical Removal Rates with Chemicals:

BOD	50% - 80% reduction
SS	50% - 80% reduction
O&G	80% - 90% reduction

Process Description....

The Flotation System will include the following items:

- **Flocculation System** (For chemical/effluent mixing, coagulation and flocculation)
- **Aeration Zone** (for aerating, mixing and fusing the air bubbles to the flocculation waste stream)
- **Flotation Zone** (to ensure sufficient retention to allow for separation and flotation of solid material from the waste stream)
- **Solids Discharge Scrapers**(to direct the skimmings to the auger discharge)
- **Discharge weir and channel** (for final effluent)

Chemical addition starts with coagulation dosing at the discharge of the sludge feed pumps. As waste enters the flocculation system additional chemical dosing occurs, creating the flocculation necessary for flotation. The flocculation system can be fitted with a variable speed flocculator to insure mixing of waste flow and chemicals.

A cavitation aeration pump draws creates “white water” which is water saturated with very fine fine micro bubbles. These white water air bubbles attach themselves to solid particles and float with the solids particles to the surface of the aeration tank.

The effluent overflows a weir into the flocculation tank where the floated solids remain on the surface and the clarified effluent is discharged via a submerged pipe. Floated solids are periodically removed by a scraping mechanism which moves along the surface of the liquid and deposits the solids into the discharge auger. This scraper is controlled by a timer mechanism that can be set to provide the most suitable scraping frequency. Effluent in the aeration tank is recycled continuously back to the aeration tank by means of the aerator action along open pipes.

Solids removed by the scraper mechanism are transferred to an auger which in turn deposits the solids into a suitable container for disposal. Settled solids are removed through a washout valve or by the action of a bottom scraper(or auger) along the floor of the flotation zone. The sludge is transferred to a hopper on the bottom of the tank.

Treated effluent flows from the flotation zone via pipes to a weir chamber. The weir chamber minimizes the no-flow to maximize flow level in the flotation zone. This ensures that the top scrapers are effective at all times. From the weir chamber, the flow will discharge to the outlet chamber and, from there, to the city sewer.