

WEMCO ISF

Hydraulically induced gas flotation system

APPLICATIONS

- Oilfield produced waters
- Refinery wastewaters
- Petrochemical wastewaters

ADVANTAGES

- Compact, lightweight horizontal or vertical installation
- Minimal footprint
- No internal moving parts and low maintenance
- Minimal power requirements and minimal controls
- Modular design, easy expansion, and reduced installation costs
- Motion-insensitive UNICEL Vertical IGF* induced-gas flotation unit ideal for floating production systems
- Use of process or inherent feed pressure
- No environmental pollution
- Contained hazardous or toxic gases
- Ability of construction to ASME code for pressurized operation

The WEMCO® ISF hydraulically induced gas flotation system is a leading technology for environmentally safe treatment of secondary produced waters. The system is a simple, hydraulically operated gas flotation machine that delivers efficient oil-water separation with complete process containment. Effective oil recovery and water treatment are achieved simply and economically, and the completely enclosed flotation process helps protect operator and environmental safety. Units are available in either the standard horizontal four-cell unit or the UNICEL Vertical IGF unit design, which is well suited for locations where space restrictions require a small footprint.

Operating principle and key features

Streamlined for simple, efficient operation and maintenance, each WEMCO ISF system consists of a cylindrical vessel partitioned into several major components—floating, degassing, optional skim storage compartments, a recirculation pump and piping, and a liquid level control system. All equipment is skid mounted for rapid installation and startup.

The WEMCO ISF system is an induced gas flotation system through which a high-velocity stream of recycled clarified water enters the cells containing influent water through eductor nozzles in the bottom of the vessel. This induces a recirculating flow of air or gas from the vessel freeboard into the process water, and a unique eductor arrangement uniformly distributes small gas bubbles throughout the cell volume. These bubbles lift contaminants to the liquid surface, forming a froth layer that is then skimmed from the liquid surface by a simple collection trough. Gas and a small volume of treated water are continuously recycled from the degassing chamber into the treatment cells. The skim cycles are automatically initiated by a timer. The cycle interval, duration, and level setpoints are all user selectable and can be changed without interrupting operation or entering the vessel. The power requirements of the WEMCO ISF system are very low; a simple recirculating pump provides gas induction and mixing in the flotation cells.



The Schlumberger WEMCO ISF unit is a compact, lightweight solution for removing oil and suspended solids from produced water and wastewater.

Aftermarket support

Schlumberger provides site support using a team of experienced service and project representatives. With strategically located hubs across the globe, this network provides turnkey expertise and support for customers for the duration of a project—from commissioning to operation.

Performance

At many installations, the WEMCO ISF system achieves effluent oil concentration in the range of 5–10 ppm. Our ISF cells are designed to provide 90% or greater oil removal and 80% or greater removal of nonoil solids at full design capacity. In contrast, conventional hydraulic flotation systems typically experience performance degradation at only 40% of design capacity.

Product range

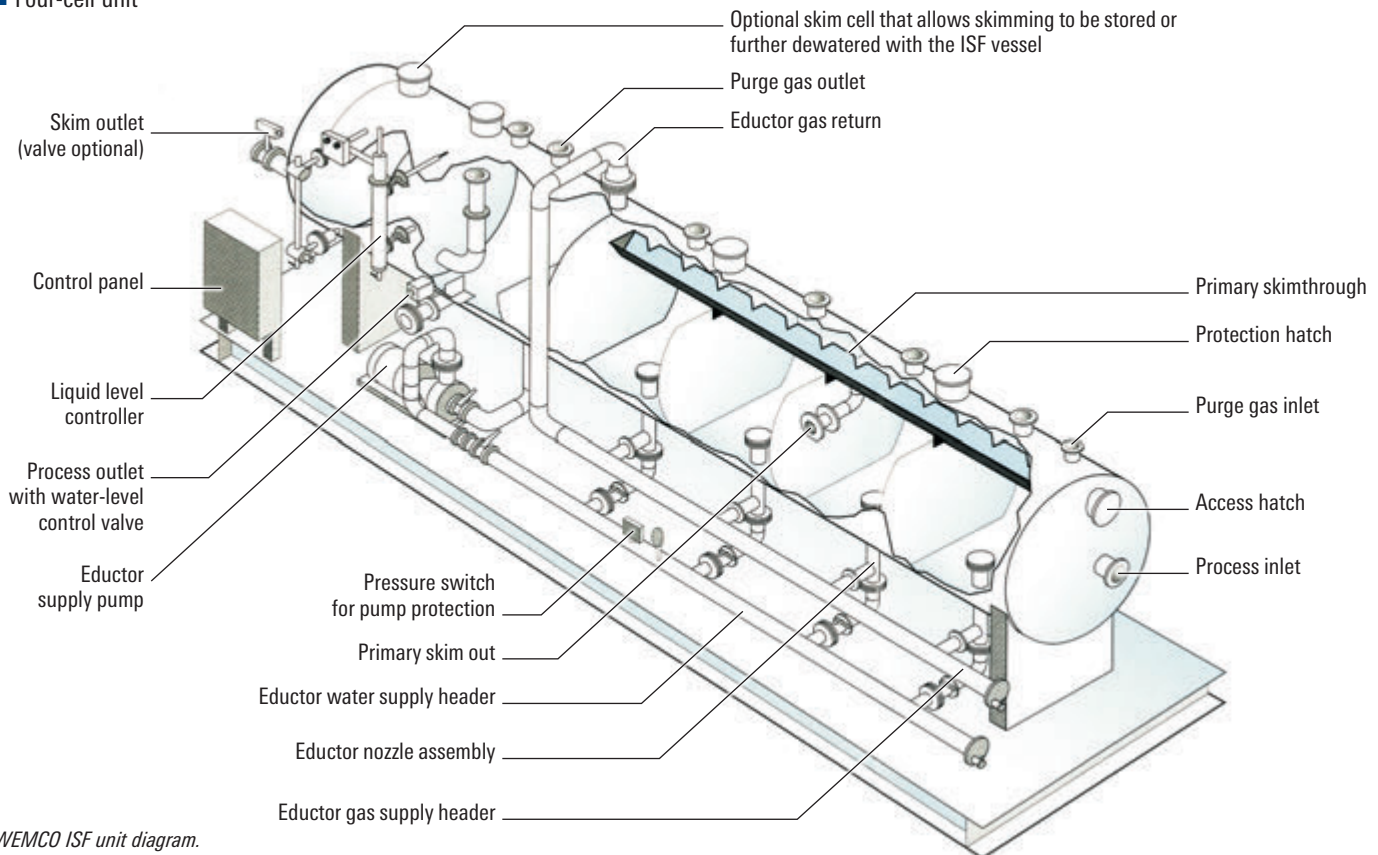
- Individual units for flow rates from 380 m³/d to 20,670 m³/d [2,400 bbl/d to 130,000 bbl/d]
- Separation efficiency up to 95%

Options and types

- UNICEL Vertical IG: unit
- Four-cell unit



Typical UNICEL Vertical IGF unit.



WEMCO ISF unit diagram.

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