

Separation Internals



Coalescing Plate Packs with Sand Jetting

Frames Internals are custom-built and specifically designed according to the specifications and performance requirements of each project. Using this information, Frames selects the optimum proprietary internals to meet the performance guarantee. As required, the process design can be supported by expert in-house Computational Fluid Dynamics (CFD) modeling.

Product Definition

Internals form the core of separator performance. Frames Separation Internals are typically differentiated as inlet devices, gas/liquid or liquid/liquid separation enhancers, as well as other or additional internals. Inlet devices for multi-phase separators are either vane-type inlet devices (FAVID) or cyclonic-type inlet devices (FACID). Coalescing plate packs for liquid/liquid and vane packs for demisting gas are examples of separation enhancers. Other or additional internals include sand removal internals (offline or online) and calming baffles.

Product Description

At Frames, our team of engineering experts focuses on giving our clients a competitive edge. With more than 30 years of experience in separation technology, we bring a world of practical knowledge to the design, construction and commissioning of high-efficiency systems that drive productivity.

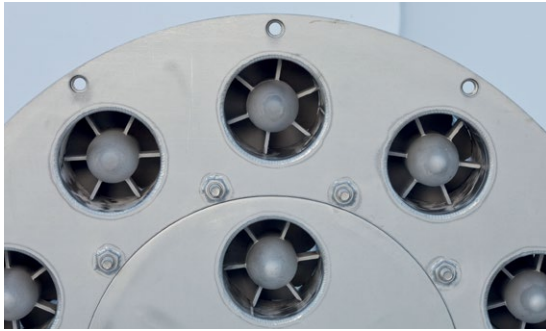
Separation Internals

Process Description

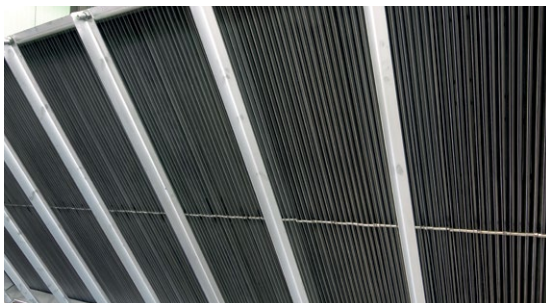
Frames supplies internals for a wide range of separators, scrubbers and electrostatic coalescers, both for newly built and modification projects. As separation internals are usually configured as removable items, Frames includes a detailed design of internal supports for easy installation. By selecting high-quality, certified materials, we can guarantee the quality and reliability of Frames products. Upon request, the mechanical design can also be fully verified by Finite Element Analysis (FEA).

Because Frames Internals are tailored to the requirements of each application, they can be easily installed in newly built vessels or in existing vessels that are undergoing modification. Upgrading and retrofitting of a vessel due to changing process conditions can be a significant cost saver compared to vessel replacement. By working with the existing clips, Frames will design and provide internals with a new support system that allows easy installation without the need for welding.

Frames in-house test facilities, field analysis of existing separators, and the use of Computational Fluid Dynamics (CFD) are primary tools used to optimize the design of Frames Internals.



Axial Cyclone



Vane Pack



Sand Handling



Treater Grid



Frames Advanced Cyclonic Inlet Device

Separation Internals

Project Management

At Frames, we know that precise project management is only the starting point for completing complex oil and gas projects. Our clients can rely on sharp thinking and a deep understanding of their operating conditions to find the best solution. Our quality management system focuses on a process of continuous improvement, and our team is always looking for new solutions that improve productivity, cut operating costs, and give our clients a competitive edge.

In a challenging industry, we understand that safety is a priority. We also know that in order to deliver maximum value to our clients we must complete each project on schedule, in spec and within budget.

At Frames, our close-knit team of engineering experts is open, honest, and focused on delivering you the best possible outcomes. We are passionate about the oil and gas industry, and have been a leading provider of safe, high-productivity systems for more than 30 years.

Technical Details

- **Sturdy design**
- **Detailed design of internal supports**
- **Use of high-quality certified materials**
- **Controlled and automated fabrication process**
- **Easily retrofitted into existing units without welding**
- **Design verification by CFD and FEA**

Added Value Frames

- **More than 30 years of experience in separator technology**
- **Robust and reliable units that drive separator productivity**
- **Fully integrates into your production system for continuous, trouble-free operation**
- **Cost-effectively refurbish existing separators to take advantage of the latest technology gains**
- **Options for Computational Fluid Dynamics (CFD) and Finite Element Analysis (FEA)**

References (selection)

- **Badra Oil Field - Gazprom, Iraq**
- **Rumaila Field - BP Iraq N.V., Iraq**
- **Norg-Zuid, onshore - NAM, The Netherlands**
- **Shaybah - Saudi Aramco, Saudi Arabia**
- **Okoloma Gas Plant - Shell, Nigeria**
- **Kharir Field - Total E&P, Yemen**
- **Wafra Field / MGC Revamp - WJO, Kuwait**
- **Gathering Centers - KOC, Kuwait**
- **SARB Field Development Project - ADMA OPCO, United Arab Emirates**
- **PB Litoral A Platform - PEMEX, Mexico**
- **Al Shaheen Block 5 - Maersk Oil Qatar, Qatar**
- **West Nile Delta Project - BP, Egypt**
- **Replicantes FPSO (P-66 / P-71) - Petrobras, Brazil**
- **P-74 FPSO - Petrobras, Brazil**
- **P-76 FPSO - Petrobras, Brazil**
- **P-75 - P-77 FPSO - Petrobras, Brazil**
- **'N Goma FPSO - SBM, Angola**
- **Kuito FPSO - Chevron, Angola**

Contact

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Frames Family Tree



Onshore

Offshore

Floaters

Oil & Water



- Multiphase Separation**
 - Production Separators (High & Low Pressure)
 - Test Separator
 - Degasser & Knock-Out Drum
 - Water Oil Separator (WOSEP)
- Compact Inline Separation**
 - SwirlSep
- Electrostatic Coalescers**
 - Dehydrator
 - Desalter
- Produced Water Treatment**
 - Deoiling & Desanding Hydrocyclones
 - Gas Flootation
 - Media Filtration
 - Solids Removal & Cleaning
 - Stripping
- Separation Internals**
- Heat Exchangers**

Gas



- Gas Separation**
 - Demisting
 - Scrubbers
 - Filters
 - SwirlSep
- Heat Exchangers**
 - Shell & Tube Heat Exchangers
- Air-Cooled Coolers**
- Gas Sweetening (H₂S & CO₂)**
 - Amines
 - Thiopaq O&G
 - Solid Bed Scavenger
 - Membrane
 - Molecular Sieve
- Gas Dehydration**
 - Glycol (TEG)
 - Molecular Sieve
- Dew Point Control**
 - Low Temperature Separation (LTS)
 - Solid Desiccant
- Hydrate Inhibition**
 - MEG/DEG Recovery
 - Methanol Recovery
 - MEG/DEG Desalination
- Light Hydrocarbon Recovery**
 - Condensate Stabilization
 - Fractionation
- Fuel Gas Treatment**

Flow Control & Safeguarding



- Hydraulic Systems**
 - Wellhead Control
 - Subsea Hydraulic Power Units
 - Hydraulic Power Units
 - IWOCs (Intervention Workover Control Systems)
 - TUTU (Topside Umbilical Termination Unit)
 - Cargo Ballasting Systems
- Safety Instrumented Systems**
 - High Integrity Protection Systems (HIPS)
- Chemical Injection**
 - Chemical & Methanol Injection Systems
 - Chemical Distribution Systems
 - Seawater Electrochlorination Systems
- Valve Automation Center**
 - Actuators and Actuated Valve Packages
 - Control Systems
- Automation**
 - Buoy Control
 - Tank Farm Control & Safeguarding

Services



- Asset Life Cycle Management**
- Maintenance & Field Services**
- Commissioning**
- Spare Parts**
- Operator Training**
- Engineering Studies**
 - Conceptual
 - FEED and Basic

Integrated Solutions



- Total Plant Solutions**
- Industrial CO₂**
- Modules**
- Early Production Facilities**
- Wellsite Packages**
- Biogas**