

Filtration & Separation Solutions

**SEPARATOR
INTERNALS**

JCI Filtration & Separation Inc. | JCI Cyclonics Ltd. | JCI Sand Separators Ltd.

jci-group.com



JCI group of companies engineer and fabricate filtration and separation equipment for the process industries. Whether a new design, a replacement in-kind, or a retrofit, JCI has proven in-house expertise and fabrication capabilities to meet the most challenging applications.



Filtration & Separation Solutions

JCI offers almost all types of mechanical devices used in gas-liquids separation which reflects our practice of offering the best suited equipment for an application. In addition to conventional approaches, JCI makes use of proprietary and patented technologies. Our main building, over 54,000 square feet and located in Calgary, Alberta, houses our engineering group and is also home to a full sheet metal shop, a knitting bay equipped with in-house made knitting equipment, an ASME vessel shop, and a 5,000 square foot bay dedicated to research and development.

Innovative technology solutions for process industries

JCI products include:

- Knitted wire mesh mist eliminators and coalescers
- Conventional, hooked and pocketed vane packs
- Mist eliminator housings and supports
- Plate, pipe, vane and cyclonic inlet devices
- Baffles, weirs, wave and vortex breakers
- Oil treating internals including heater coils
- Element support plates and filter risers
- Gas Coalescer and Filter-Separator cartridges
- Cyclonic separation internals & vessel designs

Key strengths and areas of expertise:

- Troubleshooting
- Modeling and flow testing
- New builds or replacement-in-kind
- Weld-free retrofit approaches
- Compact designs for high pressure and high flow applications
- Expertise and proprietary approaches for difficult services:
 - » **Foaming**
 - » **Waxing (paraffins)**
 - » **Slugging**
 - » **Debottlenecking**

MESH PADS & VANE PACKS

Impingement separation technologies, namely knitted wire mesh mist eliminators and vane packs, are among the most common vapour-liquid separation technologies used throughout the process industries.

In addition to a wide range of mesh styles, JCI offers co-knits of virtually any metal alloy knitted together with various filaments, from fiberglass to polypropylene or various engineered polymers. Similarly, in addition to conventional vane packs with a range of profiles, innovative hooked and pocketed style vane packs are offered.

JCI carries a large stock of raw materials

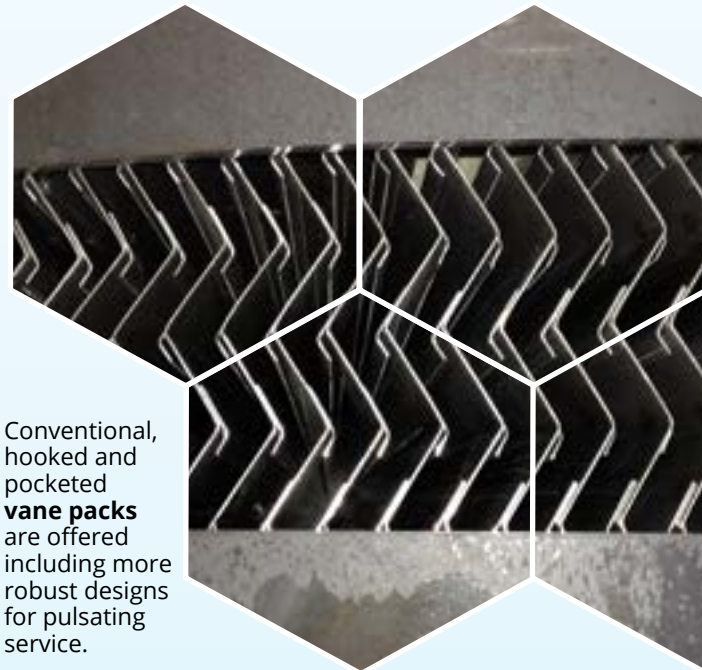
including exotic metals ranging from high nickel alloys to rarely used grades of stainless steel. This allows us to make quick deliveries for unplanned replacement-in-kind needs during plant shutdowns or to offer the best selection for difficult new builds.



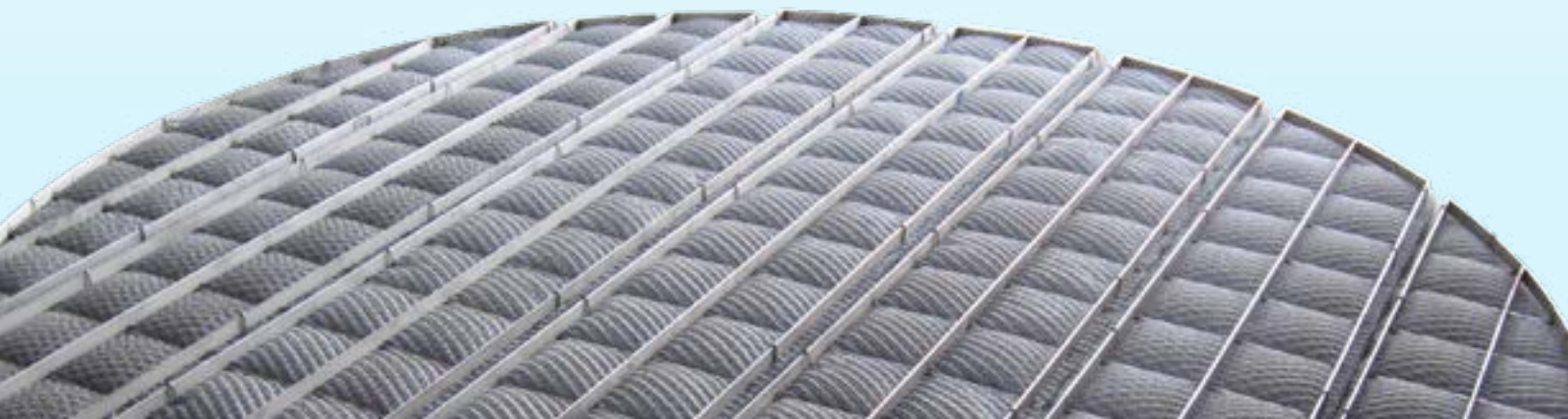
Bulk mesh is available in a range of widths from 2" to 33" crimped or uncrimped.



A standard mesh-vane assembly combining efficiency of mesh with the capacity of a vane pack.



Conventional, hooked and pocketed **vane packs** are offered including more robust designs for pulsating service.



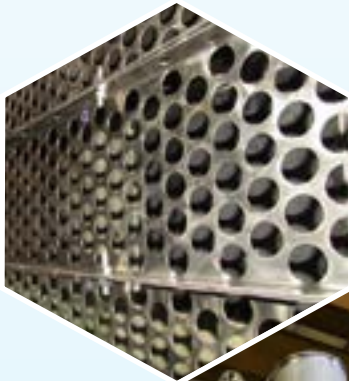
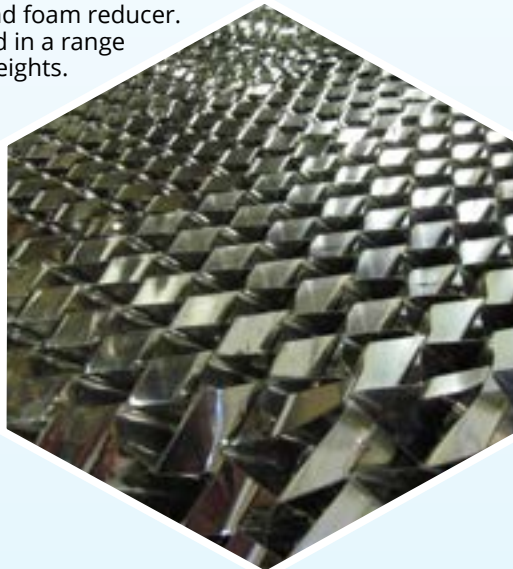
OTHER SEPARATOR INTERNALS

In addition to the mist eliminator, JCI offers virtually all internals for 2- and 3-phase separators, free water knock outs, degassers, flash drums, and conventional oil treaters. These include:

- Inlet devices (plate, dish, vane & cyclonic styles)
- Baffles, weirs, flow straighteners
- Mist eliminator supports (i.e., housings)
- Corrugated packing and supports
- Treater firetubes

Our technical staff will assist in the vessel design and layout and other important design considerations that directly impact separator performance.

Corrugated packing is used in liquid-liquid applications, as a mist eliminator, a wave breaker and foam reducer. It is offered in a range of crimp heights.



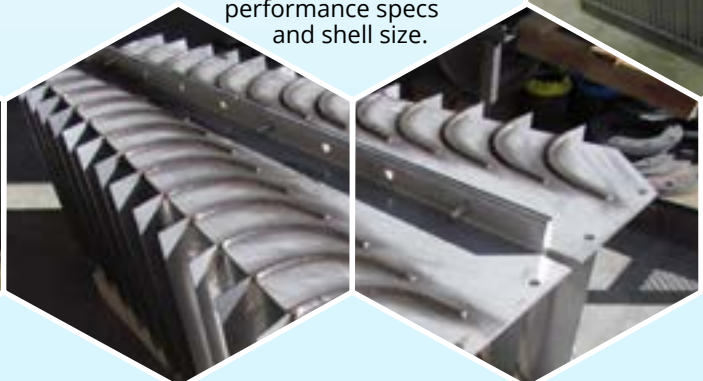
In retrofitting of existing vessels, all internals are introduced with no hot work to the vessel wall.

Our housings accommodate virtually any shape and configuration of mist eliminator.



Custom-sized gas-liquid separation devices. Accommodates slugging and built in our facility.

JCI builds vane style inlet devices to accommodate flow properties, performance specs and shell size.



CYCLONES

Cyclonic technology is most typically used in high flow rate or high operating pressure applications to accommodate the flow in a more compact design, or in systems which exhibit problems associated with foaming, slugging, or waxing.

In addition to cyclonic inlet and outlet devices which can be introduced into existing vessels, JCI also offers proprietary and patented separator vessel designs in which the internals are integral with the vessel shell.



JCI offers both patented and patent pending cyclonic designs specifically designed for high flow volume and waxing applications.

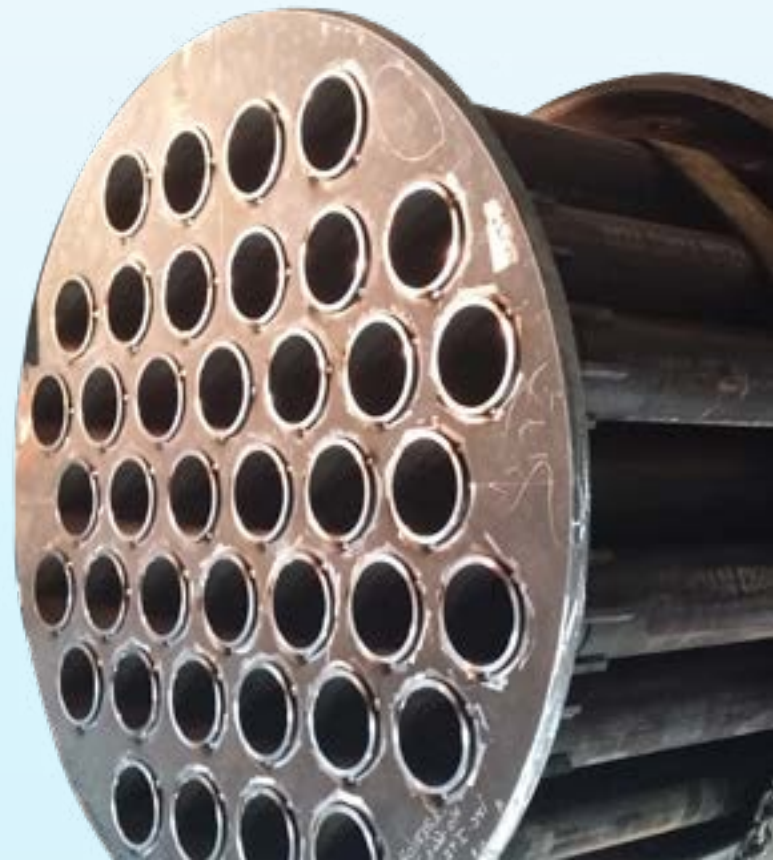
Inline horizontal recycling cyclonic separators are often used in pipeline applications in which large flow rates at higher pressures are common.



JCI routinely introduces **cyclonic inlet devices** into existing separators in which foaming or waxing are present.



Cast-body type bundles of reverse flow tubes and fabricated, recycling-style tubes are often used to protect downstream gas coalescer cartridges or in a second stage downstream of filter-separator cartridges.



LIQUID-LIQUID COALESCERS

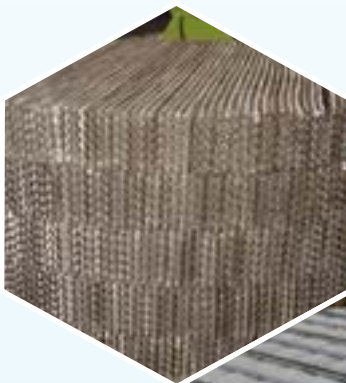
There are many ways to facilitate liquid-liquid separations. The purity of the downstream fluid and the nature of any contaminants often determine which technology is most suitable for a given system. Internals of varying open area and surface characteristics are selected to balance price and performance.

JCI offers the following technologies:

- Knitted wire mesh and co-knits with fiberglass and polypropylene
- Resin bonded wafer packs, steel wools pads, and excelsior packing
- Corrugated plate interceptors (CPI's) or corrugated packing
- Single cartridge or dual cartridge designs

Whether high flow rate or high removal efficiency, JCI has a full range of options available to bring about liquid-liquid separation.

Depending on vessel access and shell diameter, JCI can introduce entire CPI packs in a new build or retrofit.



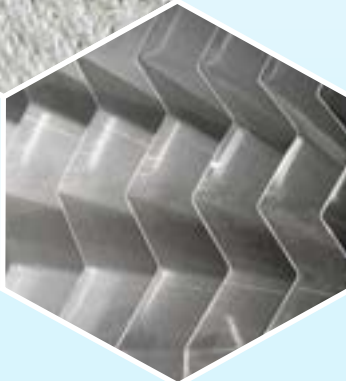
Corrugated packing is commonly used in high-flow rate liquid-liquid applications as well as 3-phase separators, free water knock outs, conventional oil treaters, and test separators.



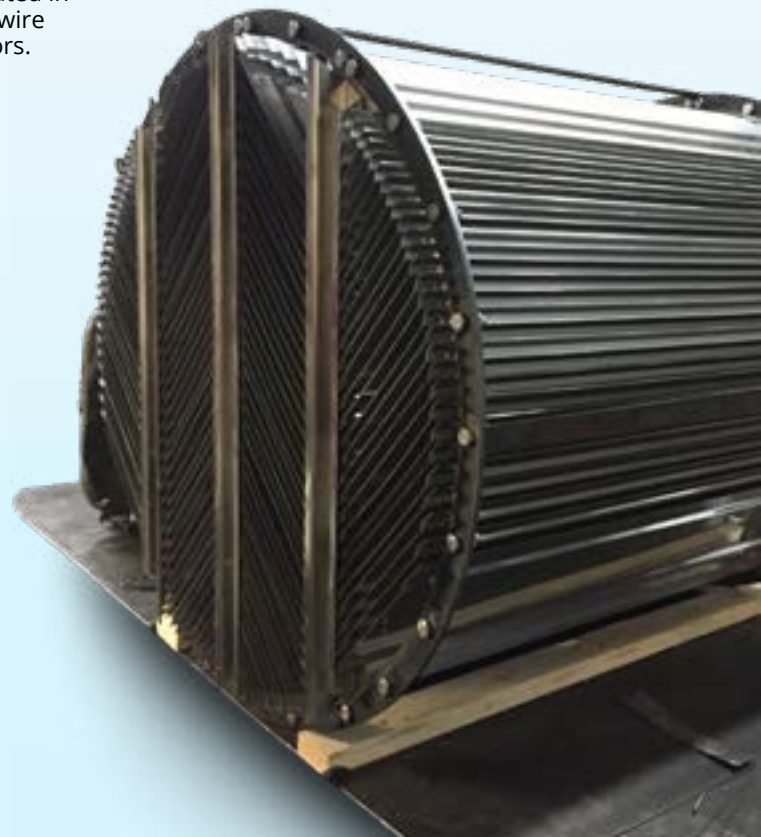
Stainless steel wool, knitted wire mesh, and co-knits of metals together with fiberglass or polymer filaments are fabricated in a similar fashion as wire mesh mist eliminators.



Shown here is a co-knit of **metal with fiberglass**. The metal knitted wire mesh acts as a skeleton to support the surface active filaments.



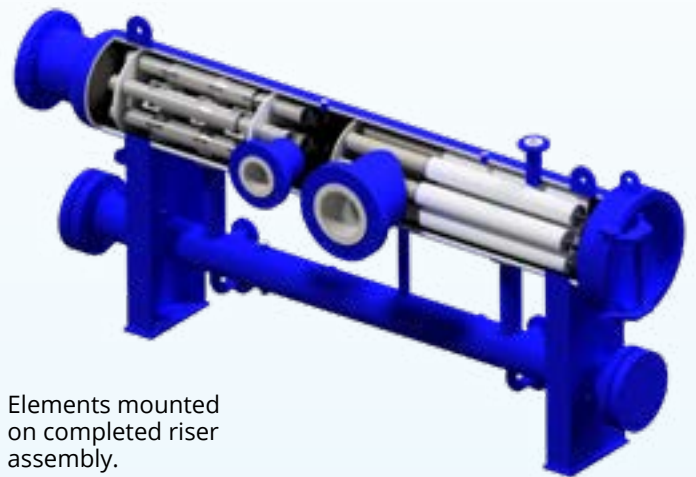
CPIs are built with a wide range of profiles and configurations to be installed by section or bricks through a manway.



FILTER SEPARATORS

Filter-Separators are a two-stage approach to handling high gas flow rates which carry appreciable liquids and solids. The first stage is equipped with highly efficient cartridges. There are many options available for the second stage - all fabricated by JCI - depending upon the nature of the liquid being removed and the shell diameter and length.

- Axial cyclonic elements
- Wire mesh mist eliminators
- Vane packs
- Mesh-vane assemblies



FIRST STAGE

Riser and element support plate assembly.



Elements mounted on completed riser assembly.

SECOND STAGE

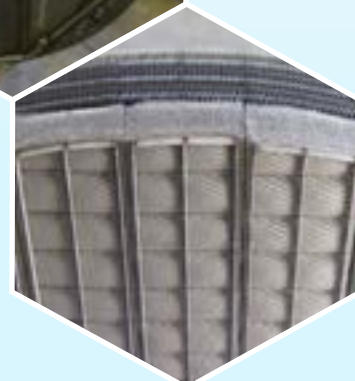
Cyclonics mounted between support plates, used often for shear sensitive liquids.



Double mesh configuration used in small diameter filter separators with available shell length.



Hooked or pocketed vane pack mounted in housing.



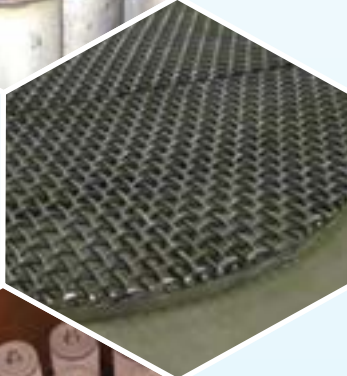
GAS COALESCERS

Gas coalescers are gas-liquid separators that provide excellent removal efficiency in the presence of modest liquid loading and lower amounts of solids. Often, performance is expressed in terms of parts-per-million of dispersed phase and an industry standard of removing droplets down to $0.3\ \mu\text{m}$ is readily achieved. JCI has adapted various cyclonic devices for installation in the gas coalescer vessel upstream of the gas coalescer cartridges. This approach allows for the removal of excessive liquids and associated solids thereby extending cartridge life.

JCI fabricates element support plates, risers, and stilling screens and the complete gas coalescer vessel.



JCI has its own standard cartridge risers and fabricates risers to meet most any specification or size.



Stilling screens and other devices are used in applications in which the inlet flow approaches liquid levels.



Gas coalescer cartridges are available in a number of micron ratings and sizes.

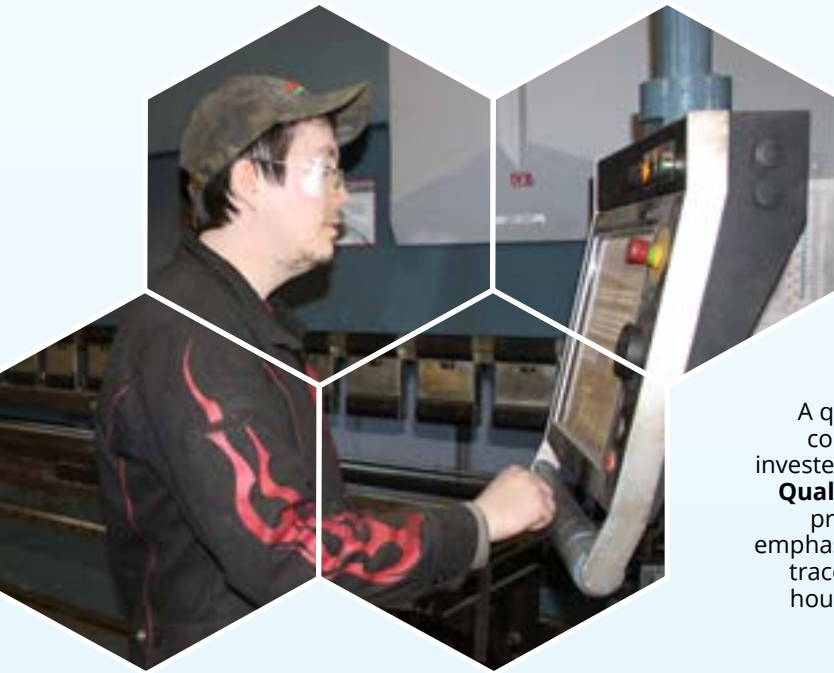


JCI opened in 2005 and began with the engineering and fabrication of separators and internals—namely wire mesh mist eliminators and vane packs. To these initial products we have grown to offer a range of products and engineering expertise in filtration and separation applications throughout the gas processing and compression, pipeline and refining industries.

We are proud to have grown our own in-house research and testing facilities and manufacturing capabilities. Combining our own field observations

with lab testing and experimentation, we continue to develop new and novel approaches to gas-liquids separation.

While our reputation today is for retrofitting existing vessels or tackling foaming or waxing applications, our company has grown so that our technical competence is matched with our own shop capabilities to respond to rushed replacement-in-kind work. Contact JCI with any separation needs.



To support its sales and engineering groups, JCI has grown a complete CNC sheet metal shop to fabricate vessel internals.

A quality oriented company, JCI has invested in a rigorous **Quality Assurance** program with an emphasis on material traceability and in-house PMI testing.



JCI has built its own knitting machines in-house and is one of the **largest knitters of wire mesh in North America.**



With a complete staff of engineers and technicians, JCI has industry expertise to support each of its products.



RESEARCH AND DEVELOPMENT

Our ability to create innovative solutions that add value and strengthen our client's competitive position is critical to our continued success. Qualitative and quantitative analysis of empirical evidence generated in our lab drives JCI's engineering design and optimization of our products.

Visit us at the 2018 OTC in Houston (April 29th to May 3rd)
and the 2018 Global Petroleum Show in Calgary, Alberta (June 12th -14th).



**GLOBAL
PETROLEUM
SHOW**

Ask us about our new and patented internals for removing wax from
natural gas. See us referenced in the 2017 Edition 14 Section 7 GPSA.



JCI Filtration & Separation Inc.

2929 - 15 Street, NE
Calgary, AB T2E 7L8

403-313-1559 | jci-group.com