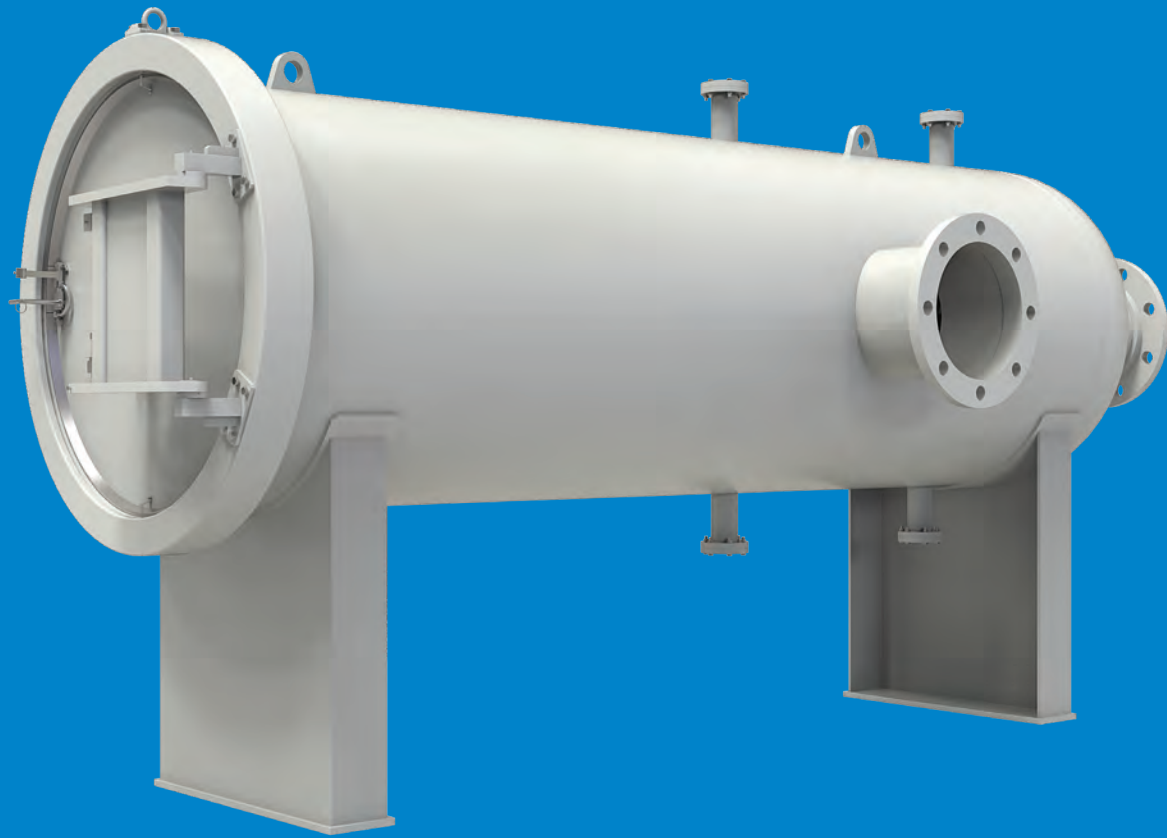


JONELL SYSTEMS™

HIGH FLOW TECHNOLOGY

LIQUID FILTRATION SOLUTIONS

Making the world safer, healthier and more productive.



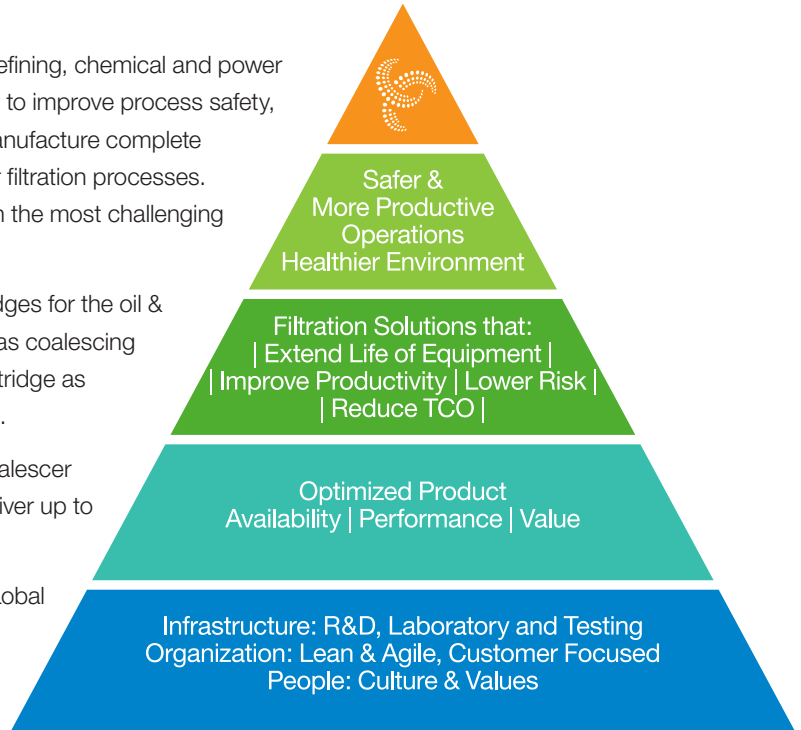
Jonell Systems Advantage

Jonell Systems, a Filtration Group brand, partners with oil, gas, refining, chemical and power companies worldwide to address end to end filtration challenges to improve process safety, reliability, productivity and ultimately business profitability. We manufacture complete systems, vessels and a wide range of cartridges to optimize your filtration processes. This coupled with our technical expertise, allows us to solve even the most challenging filtration applications.

Jonell Systems has a long history of developing innovative cartridges for the oil & gas industry including the two piece Twist-LOK™ cartridge for gas coalescing which allows customers to be able to change only half of the cartridge as needed thus reducing the total cost of ownership for the solution.

Jonell Systems also introduced SentinelTL™, a horizontal gas coalescer with 10X greater solid capacity, 35X greater liquid capacity to deliver up to 40% cost savings for customers.

The latest innovation is TRI-SHIELD, an engineered blend of Tri-Lobal and cylindrical fibers to deliver gas and liquid depth filtration cartridges, for gas and liquid applications, with larger effective surface area per media volume and less flow resistance.



MISSION

We are committed to a better tomorrow and our mission is to make the world safer, healthier and more productive. Our mission comes alive through the markets we serve, the solutions we provide and how we interact with our teams and customers.



We understand our customers rely on our knowledge, expertise and experience for innovative filtration solutions. Customers depend on us – we deliver. Our brands include:



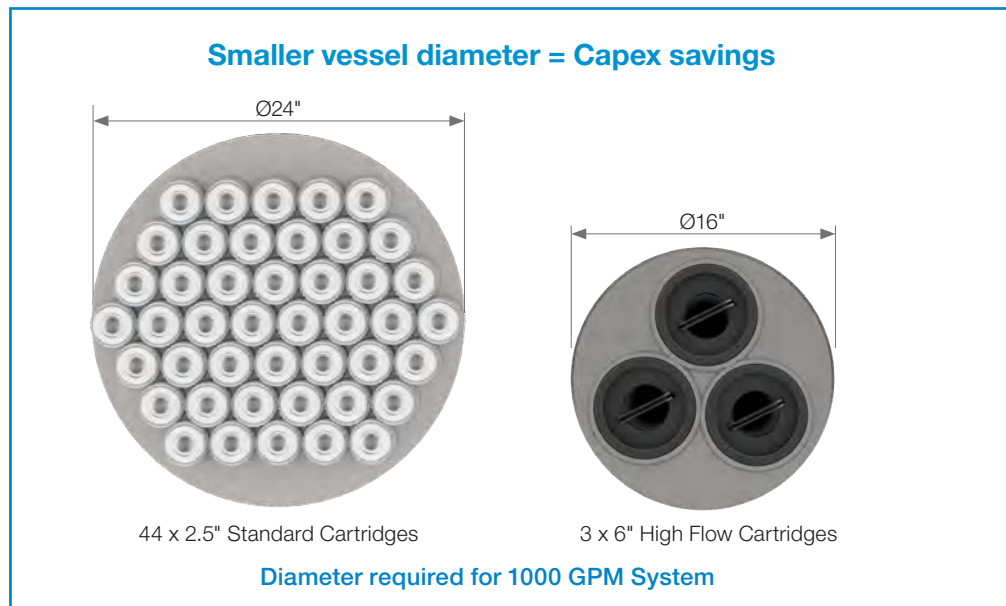
HIGH FLOW TECHNOLOGY SOLUTIONS

Introduction

As the oil and gas industry strives to increase productivity, safety, and economics in all equipment designs, filtration is no different. There is a pressing need to filter liquid feeds at high flow rates to keep pace with scaling processing capabilities and run feeds without slowing down the process. Filtration solutions are necessary to remove harmful contaminants that can foul and damage downstream equipment or produce off-spec products. Jonell Systems has proven, field-tested high flow filtration technology, designed to provide quality filtration at higher flow rates.

High flow vessels are designed in both vertical and horizontal configurations. Horizontal configurations allow for easier, more accessible change outs and safer operations whereas the vertical configuration has a smaller footprint. Built to ASME Section VIII Div. 1 Code, the application will determine the design.

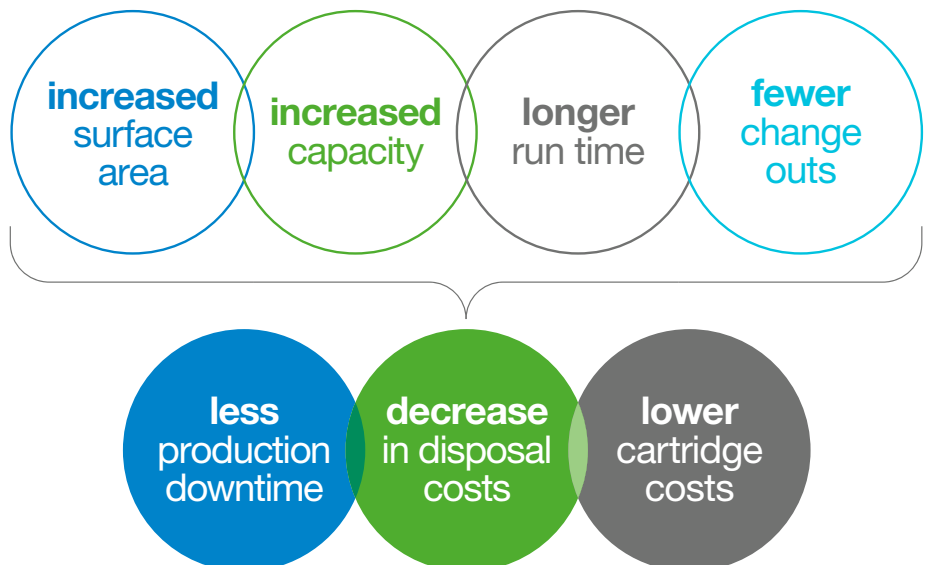
High flow cartridges are offered with a standard pleat configuration as well as a W-pleat configuration for increased filtration surface area. Increased surface area and larger throughput creates smaller housing footprints utilizing fewer cartridges. Utilizing a toolless O-ring design ensures a fast, hassle free, positive seal during each changeout. One six-inch diameter cartridge (60" and 80" long) can handle up to 500 gpm based on 1 cP viscosity.



Jonell Systems' media has been engineered for high efficiency removal of contaminants and superior dirt loading capabilities. Our media and hardware options allow us to manufacture solutions for a wide range of applications.

High Flow Filtration Systems are designed to:

- Improve Product Quality
- Increase Production Yields
- Extend Life of Filtration System
- Reduce Labor Requirements and Costs
- Protect Downstream Equipment
- Reduce Maintenance Costs



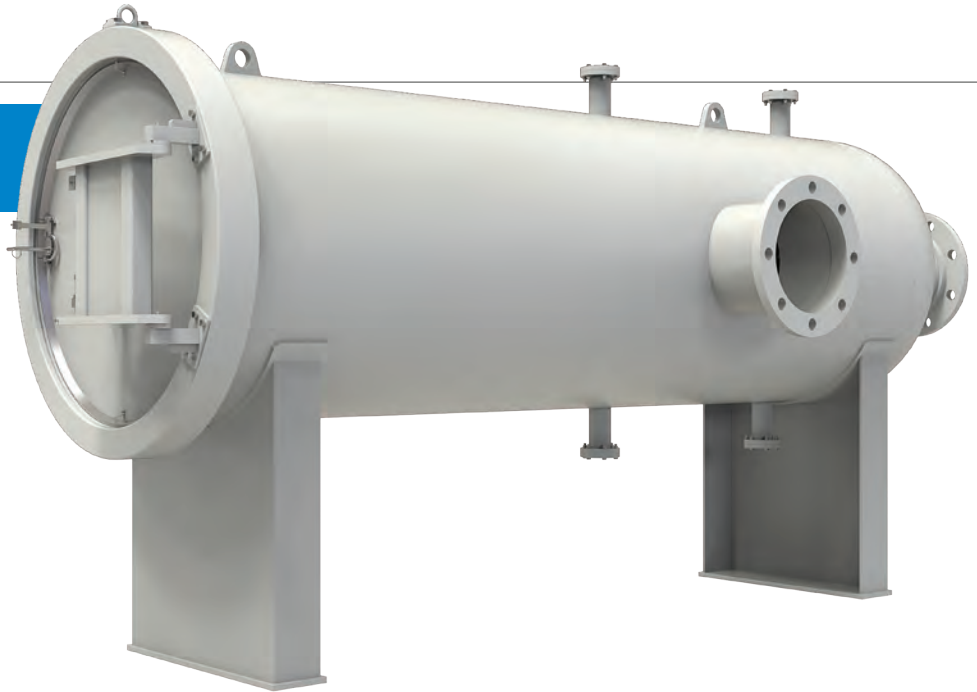
CONFIGURATIONS

Outside to Inside Flow Path

Vessel: **M SERIES**
Cartridges: **JHFO**

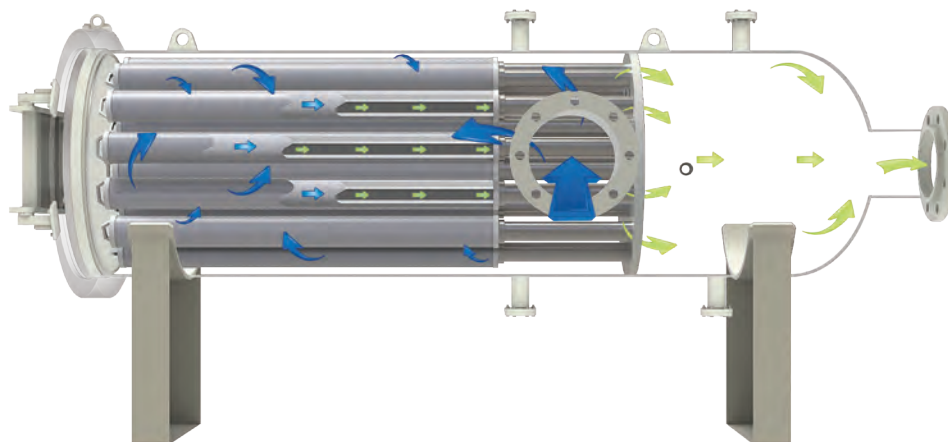
Jonell Systems M series multi-cartridge housing utilizes a full length riser post to properly align cartridges during installation and ensure a positive seal.

Safety is at the forefront in the M Series design. With cartridges located at the front face of the vessel it provides convenient, operator friendly, and most importantly safe access by eliminating confined space entry concerns.



FEATURES	BENEFITS	ADVANTAGES
Large diameter and optimal pleat density	Greater than 95% increase in surface area*	Higher processing capability with up to 5X greater flow
Out-to-in flow with more open pleat pack	Optimal flow profile & high effective surface area	High Dirt Loading
Smaller diameter vessel*	Smaller footprint	Lower capital cost
Increased surface area of cartridge	Lower flux rates	Longer run times, fewer changeouts, less maintenance costs
Double O-ring Seal	Positive seal with no bypass	High product quality

*Compared to similar flow rate utilizing standard 2.5" cartridges using liquid @ 1cP.



Inside to Outside Flow Path

Vessel: **HF SERIES**
 Cartridges: **JHF**

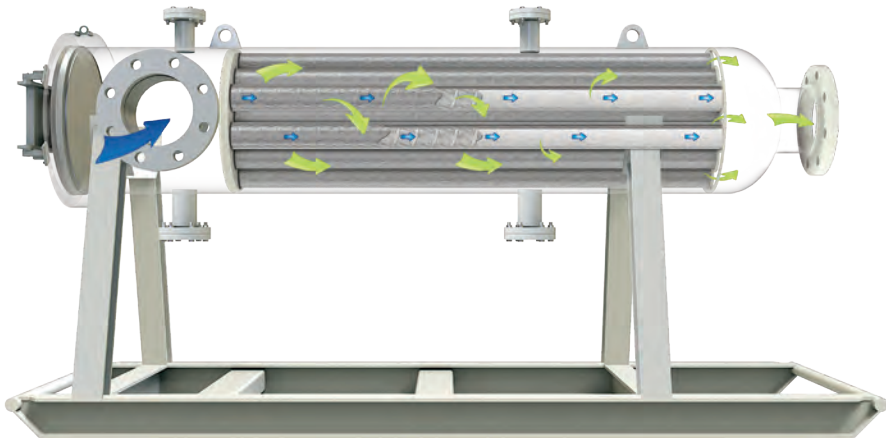
HF high flow single and multiple cartridge filter housings have been designed specifically for high throughput and reduced CAPEX. Housings can be constructed in either a horizontal or vertical orientation depending on the availability of space.

The standard horizontal configuration of this housing minimizes pressure drop and makes cartridge change-out much easier than standard designs.



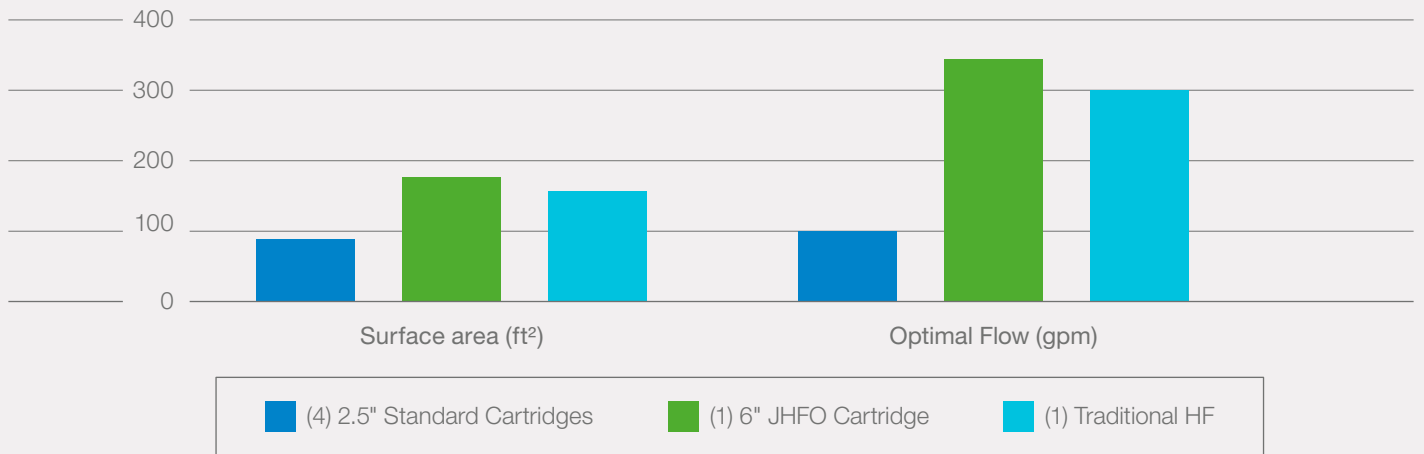
FEATURES	BENEFITS	ADVANTAGES
Large diameter cartridge	Up to 70% increase in surface area*	Higher processing capability with up to 3X greater flow
In-to-out flow	Contaminant contained within the cartridge	Ability to recover catalyst (and other particulates) to reuse if needed
Smaller diameter vessel*	Smaller footprint	Lower capital cost
Increased surface area of cartridge	Lower flux rates	Longer run times, fewer changeouts, less maintenance costs
Single O-ring Seal	Positive seal with no bypass	High product quality

*Compared to similar flow rate utilizing standard 2.5" cartridges using liquid @ 1cP.



TECHNICAL DETAILS

Side by Side Comparison



Solution Details

PRODUCT	CRITERIA	DETAILS
VESSEL	Material of Construction*	Standard: ASME Sec VIII Div. I ANSI: 150#, 300#, 600#, 900# Carbon Steel Options: Stainless Steel 304, 316 Super Duplex Monel
	Closures	Standard: Quick opening Quick Opening Styles: Swing bolt, Internal Door vault, Screw Type, Double and Single Yoke Option: Blind Flange.
CARTRIDGE	Media Options	Polypropylene Micro-Fiberglass Polyester Nylon Cellulose Cotton Nomex High Temperature Grade blend TRI-SHIELD
	Cartridge lengths*	Standard lengths are: 10" 20" 40" 60" 80"
	Nominal OD	6"
	Micron ratings	0.5 to 100
	Recommended initial dP	0.5 to 2.0 psid
	Operating Temperature	Designed for up to 450F continuous operating temperatures



* Other configurations available upon request.



We take our responsibility in partnering our customers seriously

That is why the services we provide are at the forefront of everything we do. With our engineering, field, and lab services, Jonell Systems is involved with our customers every step of the way. Our lean manufacturing sites are designed to deliver on any customization requests for housings or cartridges needed to address specific contaminant removal challenges.



Engineering Services

- Process Design Consultation/Optimization
- Existing Vessel Evaluation
- Feed Study
- New Vessel Design



Field Services

- Element Change Out Assistance
- Process Observation / Optimization
- Field Support for Lab Services On-Site Training
- Trouble Shooting



Lab Services

- Dissection & Particle Distribution Analysis
- Quality Assurance
- Compatibility & Efficiency Testing
- Contaminant Characterization
- Fluid Quantification
- Vessel Re-purposing



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