

# BUILT TO LAST



**D**uration Filtration System reached 25 years in the field in 2017. To celebrate the milestone, the company has introduced a 25-year warranty on its filter elements.

Developed by John Hopkins Unlimited Inc., the Duration Filtration System is a solids filtration system with no disposable elements. Headquartered in San Antonio, Texas, USA, John Hopkins Unlimited manufactures the Duration Filtration System for global distribution. "In the beginning, we started with oil filtration for natural gas engines," said John Hopkins, president and founder of John Hopkins Unlimited Inc. "After years of real-world testing, we found that the make and model of the engine didn't matter. It works on high-speed and low-speed engines – Caterpillar, Clark, Cooper, Delaval, Jenbacher, Waukesha, and White Superior. We have installed the Duration System onto engines running in the field in all conditions, in all operating environments, and the same filter element works across the board. Our filtration technology has not changed since day one. The only thing that has changed since the first filter went into the field 25 years ago is that today we offer 2- and 3-stage

filtration systems. We have filtration systems running in engine oil, hot oil, amine, glycol, saltwater disposal, inlet gas, and water jacket applications. The Duration Filtration System can replace 75% of an end user's solids filtration needs, with no disposable elements whatsoever."

The Duration Filtration System is comprised of three components: a full-flow stainless steel bag-type filter element, a magnet, and a centrifuge. The 3-stage system incorporates each component and is typically used in engine applications. The 2-stage system uses only the filter element and magnet and is typically used in process applications such as inlet gas, amine, water jacket, glycol, and saltwater disposal. The housing for the filter element can be designed to meet all required ASME codes for the application into which the system is being installed.

The filter element is a bag-type filter made of 316L stainless steel. The filter element is designed to replace disposable filters such as cartridge filters, paper filters, sock-type filters, wire mesh systems, and others. Filtration properties are avail-



## DURATION FILTRATION SYSTEM ADDS 25-YEAR WARRANTY TO ITS FILTER ELEMENT

BY BRENT HAIGHT



Shown here in an inlet gas application, the Duration Filtration System is a solids filtration system with no disposable elements.

able from 10 microns to as large as needed and differential pressures as high as 250 DP.

“The advantage of bag-type filter elements versus a cartridge filter element is that the bag-type filter flows inside-out, containing all solid contaminants within the element itself. With cartridge filters, the flow is outside-in. When oil or process fluid is drained to remove the filter, contaminants that did not impregnate on the filter fall to the bottom of the filter housing,” said Hopkins. “The reality is, not everyone is as diligent as they should be when it comes to cleaning or purging the bottom of the housing before the new filter element is put in. When the unit is restarted, all the contaminants are immediately drawn back into the new filter element, shorting its lifespan. With the Duration Filtration System, the operator pulls the filter element and all the contaminants remain inside the filter element. No purging is required, no drums to haul filters in, and no draining filters before disposal and packing drums to dispose. The filter element is cleaned with a pressure washer and returned to service. There is nothing to dispose of.”

The magnet is a stainless steel tube magnet that pulls metal particles from the system, thereby extending the life of the filter element. “The biggest dump of metal is during startup of a new engine or rebuilt overhauled engine, when the rings and liners break in,” said Hopkins. “The metal from these components is very fine. With traditional filtration systems this metal collects onto the filter, shortening its lifespan. With the Duration System, the magnet collects these metallic particles, extending the operating life of the filter. With our system, the filter element and magnet are removed and cleaned using a pressure washer and returned to service. With a disposable filtration system, the operator incurs all the costs associated with purchasing, freight in, storing, removing, draining, and disposing of the filters.”

According to Hopkins, the magnet also serves as a troubleshooting tool. “The magnet can identify problems faster than oil analyses. There is always going to be some metal on the magnet due to normal wear, but a 1- or 2-in. metallic ‘hair ball’ means that something is not right,” said Hopkins. “By the time oil analysis comes back showing there is iron in the oil, for example, the unit may already have gone down. If the mechanic finds metal on the magnet during routine servicing, he can find out where it is coming from right away and potentially avoid unplanned downtime.”

The centrifuge is a side-stream filtration system designed to remove carbon, dirt, metal, and other solids elements to 0.005 microns. “Oil pressure drives the centrifuge, meaning no air, gas, or electricity is needed to power it,” said Hopkins. “The centrifuge is designed to extend engine life by removing solids — even the carbon from blow-by from the rings that end up solids — in the bottom of the oil pan and darkens your oil leading to the bearings, cams, rings, and valves.”

Each Duration Filtration System is designed to meet the requirements of the specific application. “Every location is its own beast,” said Hopkins. “We will design filter elements based on their needs for that particular application. We work with the customer, we analyze their product, and we find out what particulate size solids are in their systems. Once we know what particulate sizes we are dealing with, we design a system that meets their specific needs. And, they only purchase our system once.”

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The magnet is a stainless steel tube magnet that pulls metal particles from the system (left). The filter element is a bag-type filter made of 316L stainless steel (right).

According to Hopkins, the idea is to have one element for everything. “If an operator has 60 engines in a plant, they will each use the same Duration filter element regardless of the engine manufacturer. If they have any application and are running a 50-micron filtration, it’s also the same element. We make filtration simple by designing our filter elements to fit any of our housings. Spares are based on what is needed at the facility. They may only need four spares for 60 engines. When a mechanic comes in to do planned maintenance, they pull the filter element and put in the spare. They take the filter element they just pulled and clean it, and now that becomes the spare. It doesn’t matter if that element went to the engine or the amine or any other process, it is clean,” said Hopkins.

“We can make any staged systems – 200/100/50 microns, or any size – to give the operator flexibility,” said Hopkins. “For example, if an operator has a pig coming in, they may need to put in a 200-micron filter element to handle the sludge coming through the pipe before the sludge catcher or coalescing filters. This also extends the intervals of cleaning out the sludge catcher, which is downtime and costly to do, and extends the life of the coalescing filters. After the pig is out, they return to the 50-micron filter element. The 200-micron element is cleaned, returned to the shelf, and is ready to be used again when needed.

“Everyone is looking for ways to save money,” said Hopkins.

“This is an area where we can save them a lot of money. In a typical amine application, for example, just on an initial startup, an operator may go through US\$50,000 to US\$100,000 worth of disposable filters cleaning out the pipes from the associated welded material, dirt, and everything that will come through. With the Duration Filtration System, they’ve eliminated the cost for replacing the element. They’ve eliminated the freight cost. They’ve eliminated the disposal costs. One facility where we have installed the Duration Filtration System saw their filter costs for the year go to zero. Another facility with nearly the same horsepower had costs of US\$900,000 just in purchasing disposable filters. That amount does not include their disposal costs, their freight costs, and all the other expenditures associated with disposable filters.

“We are not asking anyone to change what they are already doing,” added Hopkins. “We are just supplying a non-disposable solids filter versus one that has to be thrown away. We have micron ratings for their specific needs. Our filtration system will match their existing maintenance schedules. The Duration Filtration System eliminates purchasing, time to drain, and disposal costs; it reduces storage requirements and saves companies a lot of money. They buy our system once and will never have to buy another filter element again. And, now we are backing that up with a 25-year warranty on our filter element.” 

The housing for the filter element can be designed to meet all required ASME codes for the application in which the system is being installed.

