

UNITED INTERNATIONAL
HYDRO ENG. TECH



MECHANICAL HIGH-SPEED FILTER

United International Hydro Engineering Technologies (UIHET) provides total environmental and industrial solutions for better tomorrows. We owe these to future generations because we inherited a good environment from our past generations. **UIHET** with their technical and business partners and alliance strive to introduce proven and new technologies in the industrial and environmental fields, for the Future of the next generations. **UIHET** believes that new challenges cannot be solved with old techniques. This philosophy necessitate **UIHET** to be on the edge of the technology and invest in the continuous research and developments as the main success factor for our company. **UIHET** advanced line of industrial filtration systems includes a wide range of modern technologies to meet your process requirements. With precision engineering to meet rigid standards, **UIHET** provides high torque, long life, and reliable equipment. **UIHET** provides a complete line of water filtration systems and uses our years of experience to help design the right filtration system to meet your water quality requirements. This experience aids our customers in creating solutions for today's complex problems and challenges.

TECHNICAL DETAILS

Automatic High-Speed filter device is a kind of high capacity filter device that can be used for high-speed processing operations. It makes up for the shortcomings of the filters commonly used in the process, it greatly improves the filtration efficiency, and is a new type of filtration equipment with the main purpose of removing suspended solids and suspended matter in water.

Water filtration is a process for removing suspended solids from water using a physical process to screen or filter the particulate and letting the remaining clear water pass through. Industrial water filtration systems work through a variety of stages starting with removing the largest contaminants all the way down to sub-micro-levels. Industry best practices are to work in stages from a coarse screen to finer media in order to allow the water to continue to flow without rapidly blocking filtration.

Industrial water filtration is a necessary function to most every manufacturing organization, chemical, food, and pharmaceutical company. Impurities can throw off chemical processes, defile the quality of industrial processes, and may lead to downtime and equipment damage. We provides a complete line of water filtration systems and uses our years of experience to help design the right filtration system to meet your water quality requirements.





MECHANICAL HIGH-SPEED FILTER MAIN COMPONENTS

FILTER BODY – This component will house the filtration media and the stirring impeller, it is either stainless steel, FRP or epoxy coated steel. Metallic tanks can handle higher temperatures and pressure.

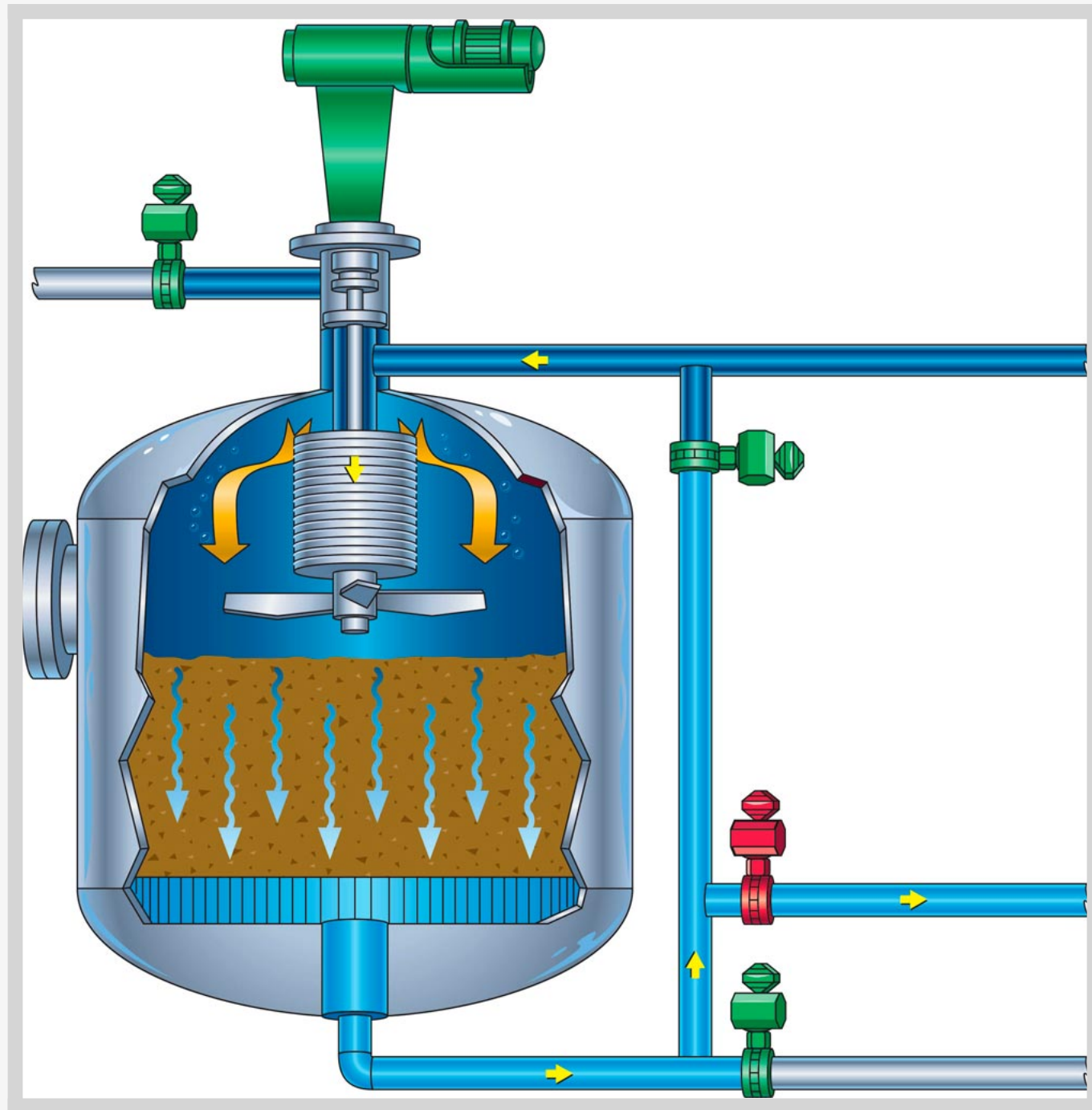
FILTER MEDIA – Cubed multi-angle floating filter blocks, the standard sizes is 5 mm X 5 mm 3 mm, it is made of PP or PE with porosity of 90-94%, the specific gravity between 0.85 and 0.95 and the specific surface area is 8000 m²/m³.

FILTER SCREEN – The main function of the filter screen is to prevent the media from lifting the filter in both phases (serves phase and backwash phase), it is generally made of stainless steel 304, stainless steel 316, or super duplex martial.

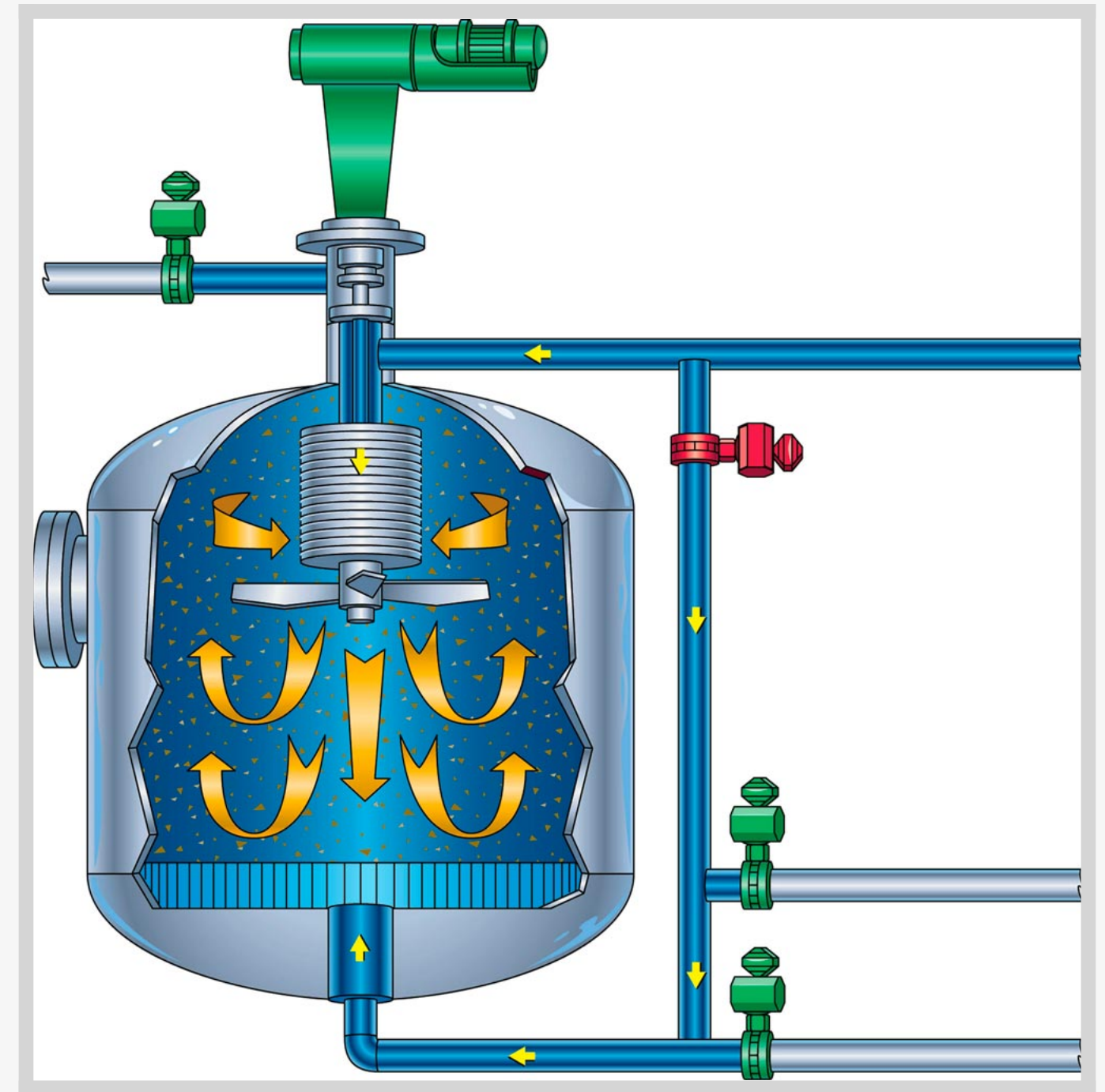
STIRRING IMPELLER – Stirring impeller duty to rotate in the backwash phase, this will move and rise the filter media (or “fluidized”) to loosen the filter media and release trapped dirt which is removed in the backwash flow.

INLET AND OUTLET PIPES – Face piping will connect all valves that control the different cycles. It could be schedule 80 PVC Carbon Steel or stainless steel depending on the application.

Valves – The valves open and close according to the different cycles. They could be automatic electric or pneumatic valves for automatic water filters, or manual valves for manual filters.



IN SERVES SITUATION



BACKWASH SITUATION

Notes:

- The valves open and close according to the different cycles. They could be automatic electric or pneumatic valves for automatic water filters, or manual valves for manual filters.
- Mechanical High-Speed Filter suitable for all kinds of filters flow direction (up-flow or down-flow) and stirring impeller location (top or bottom of the filter)

HOW IT WORKS?

The influent pumped into the Mechanical High-Speed Filter, distributed over inlet filter screen, and then pressurized inside tank to pass through the filter media, and finally collected by outlet for discharge. During the cleaning cycle, called “backwash”, the stirring impeller starts rotating, this will move and rise the filter media (or “fluidized”) to loosen the filter media and release trapped dirt which is removed in the backwash flow. After the backwash cycle, the filter media is allowed to settle before the filter is returned to service. A rinsing cycle is used following the settling to assure the filtration media has sufficiently re-stratified and that any loose dirt is removed from the under-drain/ collectors. These backwash assemblies are proven to be the best technology available for fluidizing the filter media and allow the manufacture of large flow vertical units. Even better, no chemicals, surfactants, or air sparging cycles are required for the backwash.

Industrial water filters are used to remove harmful impurities, such as contaminants, pollutants, particles, sediments, bacteria, parasites, viruses, fungi, and the taste of chlorine from the water we drink, use for cleaning purposes in the municipal and industrial projects. These water filters can be used in an array of industries such as, medical, pharmaceutical, food, agriculture, biotechnological, wastewater facilities, and aquariums.





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MECHANICAL HIGH-SPEED FILTER DESIGN

We develop an understanding of your applications in order to determine the correct level of filtration. Our experience in a very broad range of industries enables us to help troubleshoot existing problems or design a completely new filtration system solution that can be more efficient and economical than your current equipment. We offer a complete range of industrial water filtration systems, media, filters, and service for most every type of filtration system.

MECHANICAL HIGH-SPEED FILTER SIZING & SPECIFICATION

Model	UIH-010	UIH-020	UIH-040	UIH-080	UIH-120	UIH-200
Capacity (m3/h)	20	40	70	140	210	350
Agitator Power (Kw)	1.5	3.7	5.5	11.0	18.5	30.0
Diameter (mm)	600	850	1,150	1,600	2,000	3,000
Height (mm)	2,600	2,705	3,035	3,320	3,725	4,200
Weight (Kg)	680	935	1,550	2,650	4,250	6,000
Inlet/ Outlet	DN65	DN80	DN100	DN150	DN200	DN250
Power	3 Phase, 220V/380V, 50 Hz/ 60 Hz					
Valves	Electrical Valves					



COMPARISON WITH SEVERAL LARGE FILTER POOL

Parameter	Ordinary V Type	High Efficiency Fiber Filter	D Type Filter Pool	Fiber Wheel	Shutter Filter	High-Speed Filter
Filtration rate (m/h)	7-15	18-20	20-26	9-12	6-10	40-70
Filter layer thickness (m)	1.2-1.5	0.8-1.2	0.8-1.2	— —	1.5	1
Filter rate (μm)	15	10	5	10	15	1
Backwash time and recycle	20 min (24h)	15-20min (24h)	15-20 min (8-24h)	1-2min (1-2h)	20min (36h)	8min (24h)
Backwash water account for daily water%	5-6	2-5	5-9	5-7	5-6	0.5 Raw water cleaning
SS removal rate%	70-90	80-90	90-95	90-95	70-80	> 98
Covers area of (50,000 tons)	200m ²	165m ²	100m ²	80m ²	240m ²	75m ²



APPLICATIONS

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|---|---|
| <ul style="list-style-type: none">• Sewage treatment plant depth treatment• Gray water & swimming pool water treatment• River water, lake water and rain water treatment• Water works filtration treatment | <ul style="list-style-type: none">• Aquaculture water purification treatment• Industrial wastewater recycling filtration treatment• Cooling circulating water treatment |
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FEATURES & BENEFITS

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- **The filter block has fluidity:** Granular filter block, suitable for all kinds of filters (up-flow, down-flow, etc.)
 - **Stir and backwash to save time and water:** Compared with the backwash method, the backwash water consumption is only 1/20, which can minimize the waste Water volume, shorten backwash time (backwash time: 8-9 min/ cycle day.)
 - **Deep filtration works well:** The three-dimensional pore filter block forms a 1000 mm filter layer to achieve the effect of deep filtration. The filtration duration is relative to the volume of the filter block, which has the best filtration performance.
 - **Filter block has three-dimensional pores:** It can reduce pressure loss and save energy, and its biggest feature is the ultra-high filtration speed. (for LV: 40-70 m³/ m². Hours, sand filter: 10-15 m³/ m².)
 - **Compact Structure:** No additional back-flush pump or storage equipment required, small space, light weight. (compared with sand filter: body volume 1/8, diameter 2/5, floor area 1/4).
 - **Low Energy Consumption:** Low investment, and environmental protection.
 - **Low Failure Rate:** as well as low cost of maintenance.
 - **Flexible Operation:** The quality of final product won't be much changed when the capacity changes.

