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ACTIVE CARBON FILTER

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ACTIVE CARBON FILTER

General Description and Intended Use

Active carbon filters are used to filter the wastewater and to improve it in terms of organic materials, free chlorine, taste, odor and color. It is generally used as the last unit when used together with wastewater treatment plants. It is used for color removal in wastewater treatment plants, additionally, it provides COD (chemical oxygen demand) removal. Active carbon filters are generally used with a grit filter in front of them to provide better protection for the medium.

Working Principle Of Equipment

There are mineral deposits sorted as varied layers in the active carbon filters. Mineral deposit is graded from rough grain size to fine grain size from filter base to top side. Active carbon deposit is spread on mineral deposit consisting of sand and gravel mixture in regard to grain size. Active carbon deposit is at the top. Wastewater to be filtered enters into system so as to be homogeneously distributed from top layer of the filter to whole mineral deposit. Wastewater passing through the mineral deposit contacts with active carbon medium in a suitable section, and pollution is removed by means of absorption during this contact. Filtered wastewater leaves the system from the bottom of the filter. Mushroom type nozzle system is used at the bottom part of the filters, at the undermost part of the mineral deposit.

The filter begins to get clogged due to suspended solid materials and other particles to be kept by the filter after a specific operation time, and an additional pressure loss occurs in the system. Therefore, active carbon filters, just like grit filters, are subject to backwash and rinsing in a regular period.

During backwash procedure, wastewater is supplied to the filter from bottom exact opposite to normal working position and is enabled to pass through mineral deposit as a During this backwash procedure, suspended solid materials and other particles kept in the mineral deposit are discharged from the backwash line of the filter. After backwash procedure, filters start to operate in service position again.

During rinsing procedure, clean water is supplied to the filter in the normal operation position and is enabled to pass through mineral deposit. So that, suspended solid materials and other particles kept in the mineral deposit are discharged from the backwash line of the filter. After rinsing procedure, filters start to operate in service position again.

TECHNICAL SPECIFICATIONS

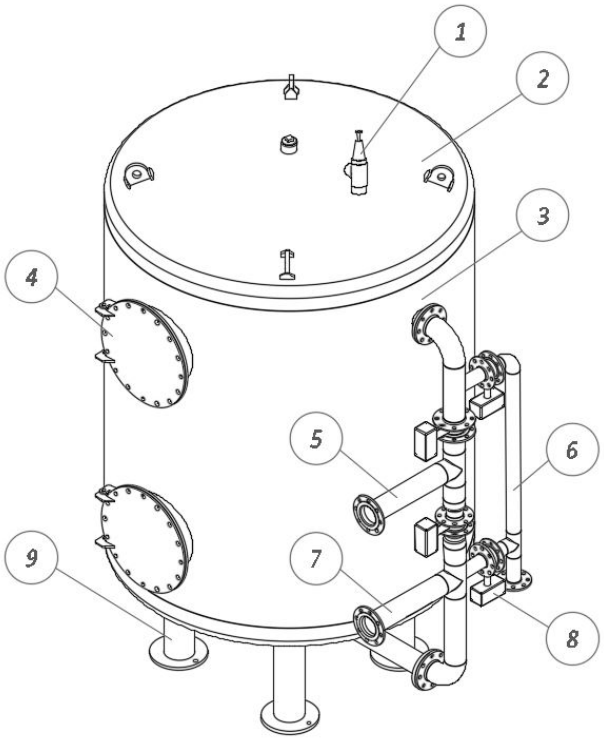
- Even though it varies in accordance with pollution loads and process selection, active carbon filters are generally manufactured in a way to have 10-20 m/h section speed.
- The speed providing maximum efficiency is selected according to contact period, and the manufacture is carried out accordingly.
- Active carbon is selected as suitable to the parameters targeted to remove the pollution.
- Strength calculations are done while sizing of the system is being conducted and thickness of metal sheets are selected accordingly.
- Each filter is definitely tested under 1.5 times of design pressure after manufacture.
- Robotic welding is used during manufacturing.
- Mirror and mineral deposit placed at the base of the active carbon filter tank are designed as to carry wastewater load. Filter mirror is supported by means of coupling it to the special design filter lugs. Load of the mirror is shared by lugs.
- It is equipped with mushroom-type diffusers on the mirror.
- A suitable number of diffuser is used in the system by calculating all operation conditions.
- The camber wall thickness is always selected more than side wall thickness.
- Special-design distribution structure is used for a homogeneous distribution in the section where wastewater enters the filter.
- Lateral upper distribution structure is used in the case that it is requested in accordance with process selection
- Manholes are used at the suitable points. Manhole points are selected so as to facilitate interference and maintenance procedures.
- While clarifying manhole directions, pre-piping directions and other details, the design is made special to the area where the filter to be used in each project.

- Deposit height is manufactured as maximum 60%-70% of filter side wall height by considering expansion of mineral deposit during backwash procedure.
- Butterfly valves with electrical or pneumatic actuators are generally preferred for pre-piping of the system.
- Filter systems are supplied with PLC controlled electrical panels. Electrical system is designed to provide the most easy operation conditions.
- It can be operated as time, flow rate and pressure controlled according to process selection.
- In addition, a more effective backwash procedure can be provided by supplying air with the aim of a blower to the filter during backwash in accordance with process selection.
- While building system automation, effects of possible water-hammer are foreseen and all valves prevent the effect of the water-hammer.
- Pre-piping system is equipped with manometer through which pressure difference can be monitored, and with valves providing sampling from filter inlet and outlet at any time.
- Safety valve should be used to prevent any damage to the filter in case of any overpressure in the system.
- As a standard, double side manhole cover is used to provide easier and safer filling mineral replacement procedure.

Advantages

- Easy Transportation and Mounting,
- Low Operation and Maintenance Costs,
- Long Operation Life,
- Easy Intervention,
- Possibility to Control and Follow the System Operation over SCADA,
- Simple and Operable Process,
- High Filtration Performance.

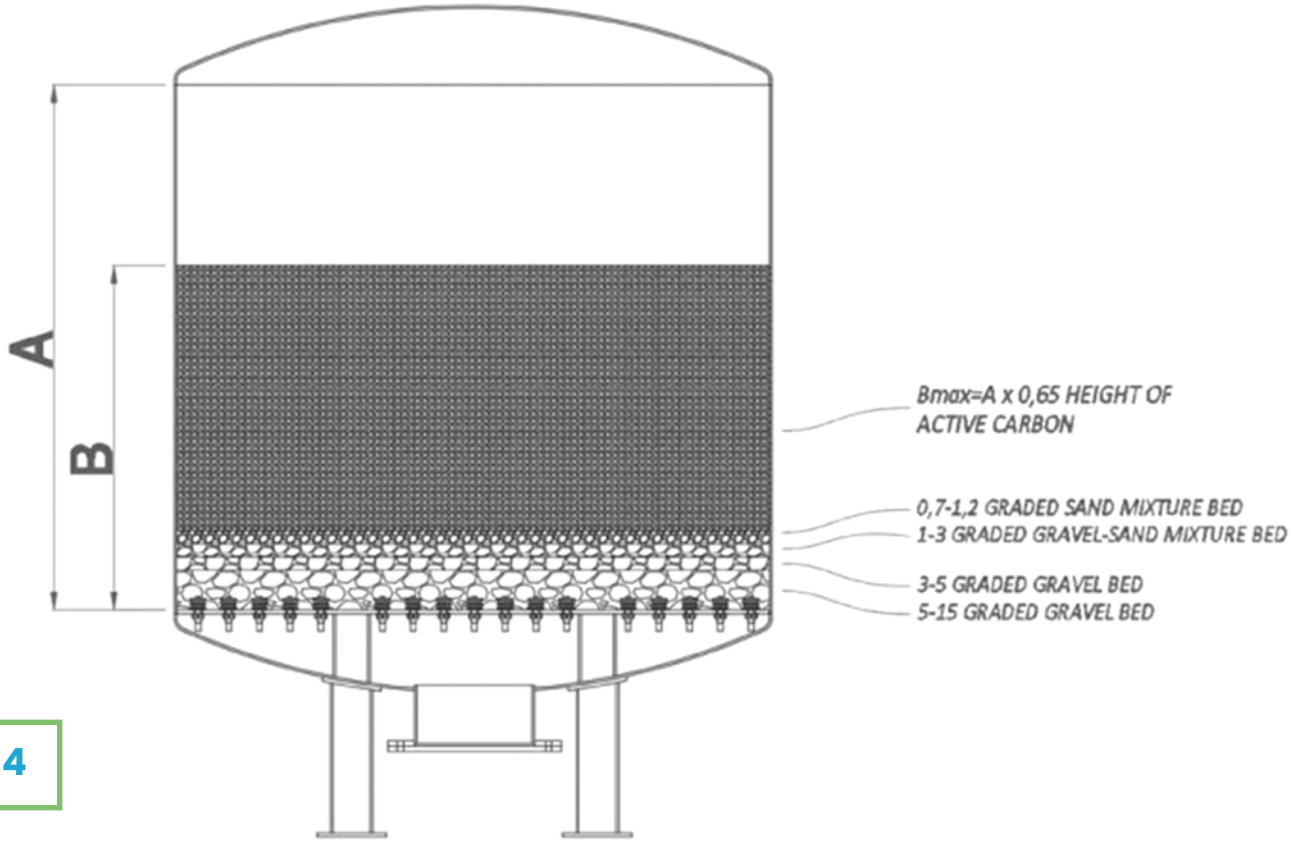
No	Part Name
1	Relief Valve
2	Camber
3	Side Wall
4	Manhole
5	Wastewater Inlet Line
6	Backwash and Rinsing Outlet Line
7	Filtered Water Outlet Line
8	Check Valves
9	Lugs

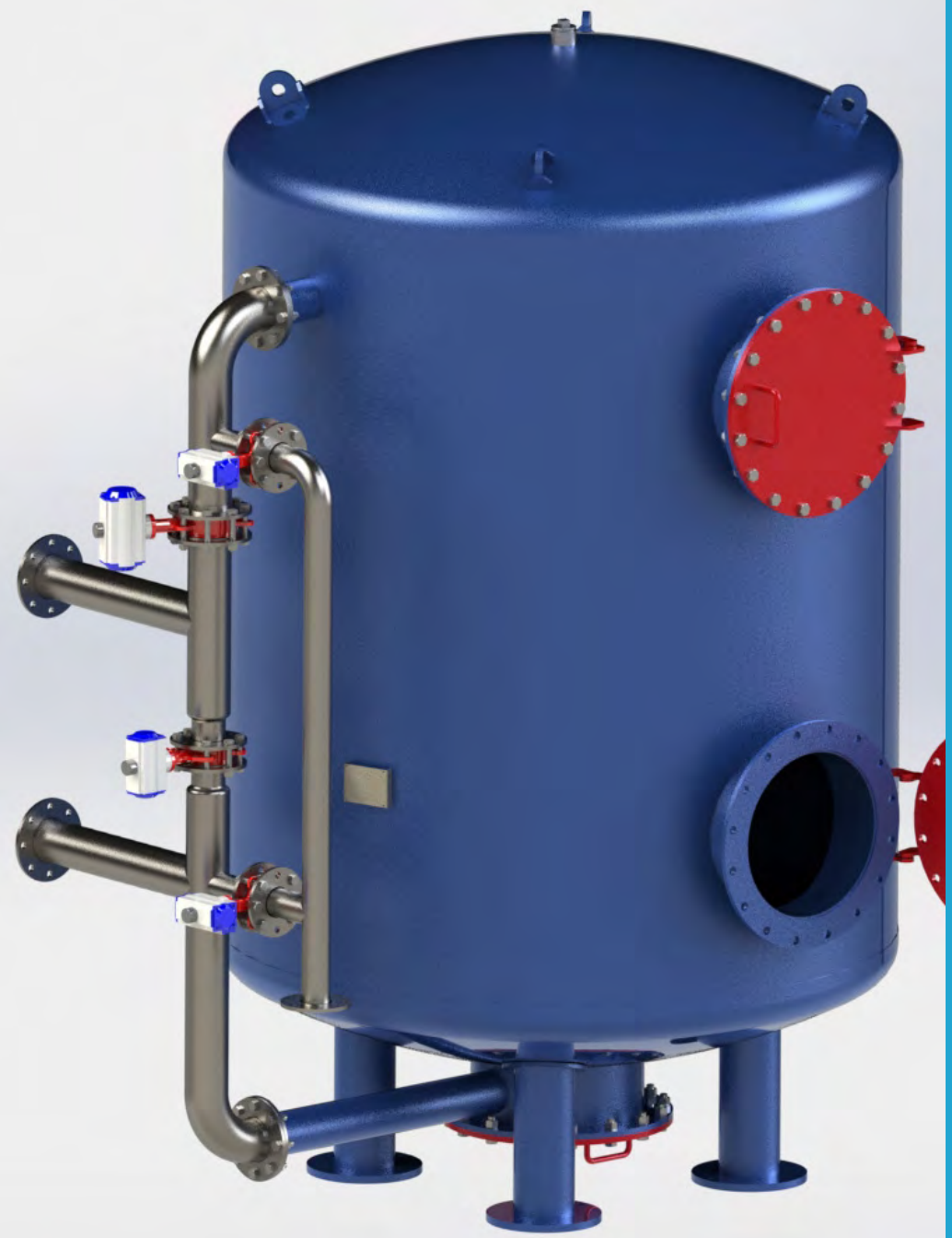


Material Details

- Tank: They can be manufactured as S235JR (St52) + Epoxy Paint, S235JR + Hot Dipping Galvanized Coating, DIN 1.4301 (AISI 304) or DIN 1.4401 (AISI 316).
- Pre-Piping: They can be manufactured as DIN 1.4301 (AISI 304), DIN 1.4401 (AISI 316) or PVC.

"Different materials can be preferred in accordance with the request of the customer."





Accessories

- Safety Valve
- Sampling Plug
- Stainless Steel Upper Distribution Structure
- Inlet and Outlet Line Manometer
- Pre-Piping
- Stainless Flap Check Valves with Pneumatic Actuators
- Discharge Valve
- Lateral Distribution Structure*
- Mirror + Nozzle Type Upper Distribution Structure*
- Pipe + Nozzle Type Upper Distribution Structure*
- Inner Paint in Accordance with Food Codex*
- Filling Mineral suitable for Potable Water*
- Sight Glass*
- Venturi Flow Rate Control*
- Pulse Outlet Flow Meter*
- Electromagnetic Flow meter*
- Check Valves with Electrical Actuator*

* Optional accessories are defined.

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