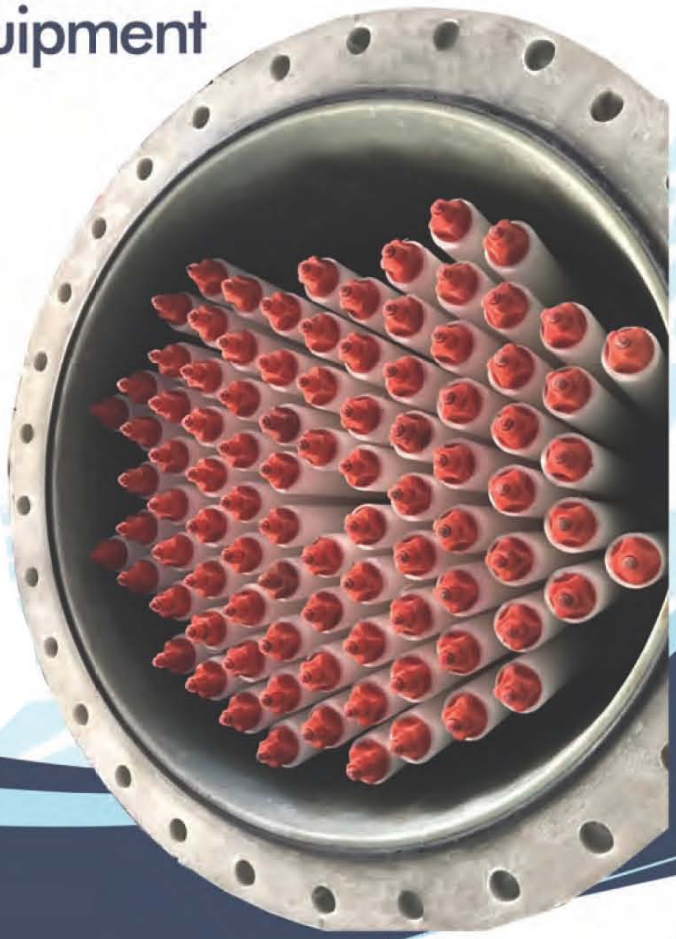
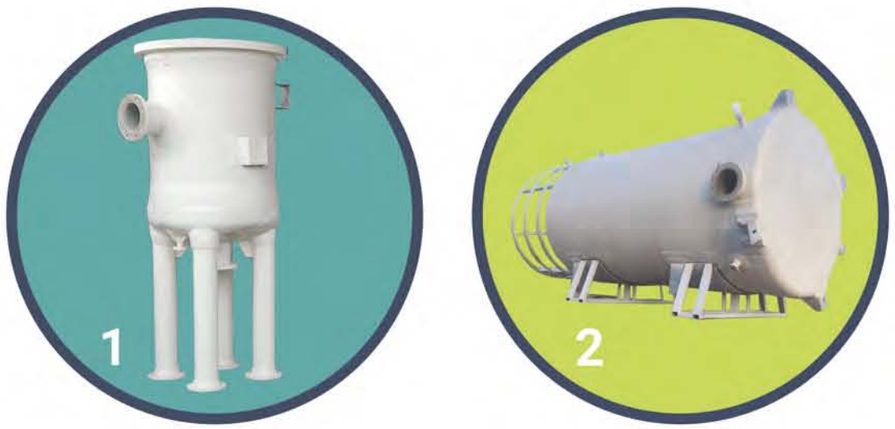
Arian Afzar Middle East Water Technology

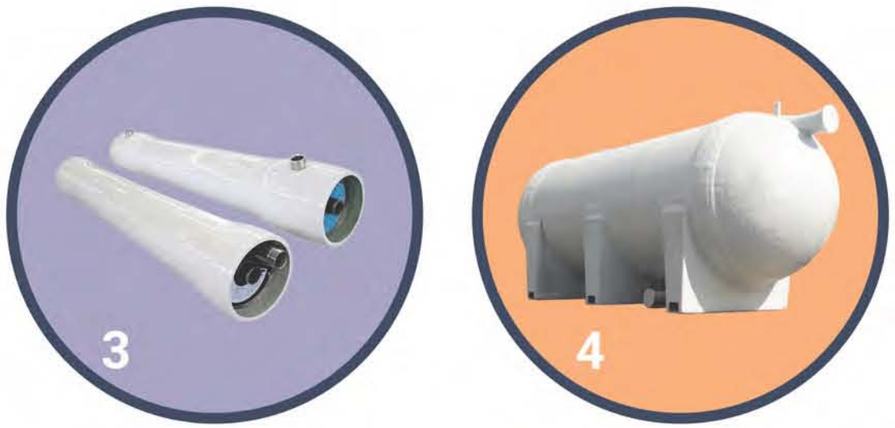
Provider of water industry equipment and technology



OUR PRODUCTS

1. Cartridge Filter Housings
2. CIP Tanks
3. RO Pressure Vessels
4. Sand Filters





Cartridge Filter Housings

Glass Fiber Reinforced Plastics(GRP)

OVERVIEW

FRP/GRP (Fiberglass Reinforced Plastic) Cartridge filter housings are engineered to operate in heavy duty applications, providing superb filtration efficiency and durability.
OTEC`s continuous development allows introdusing new features & functionalities to our products

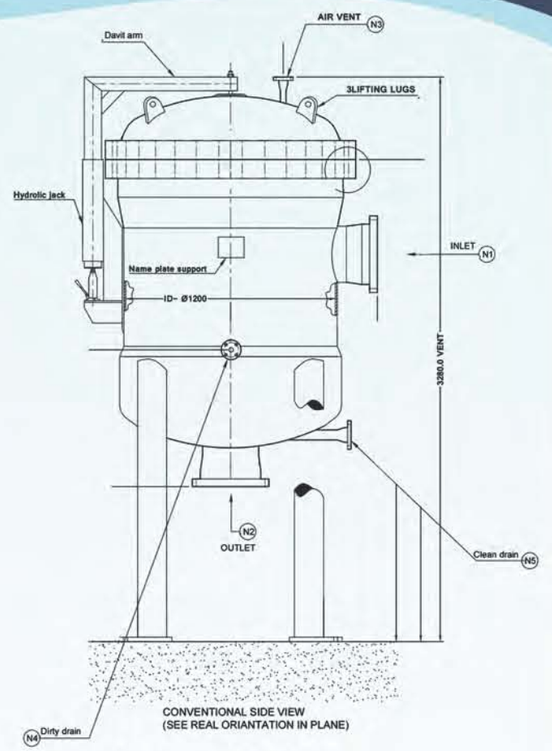
Flow Rates
245-3200 m3/h

N°elements
90-410

Cartridge Flow
Outside- Inside

Housing Layout
Vertical

Design Pressure
116 Psi(8 Bar)



ADVANTAGES

- Excellent filtration efficiency
- Perfect corrosion resistance behavior
- Reduced maintenance during its life span
- Versatility in design options

STANDARD MATERIALS

Housing
FRP/GRP Fiberglass Reinforced Plastics

Internal
- Chemical barrier of vinyl-ester resin
- Super smooth inner surface minimizes friction, achiveing a very low pressure drop

External
- Priming with two coats of epoxy primer
- Final painting with two coats of polyurethane painting - UV resistant

Tubesheet and other internals
Composite/Plastic materials

SPECIFICATION

Side inlet type higher flow filter housing

Cartridges Qty.x Length	Flow at 3gpm 0,68 m3/h Per 10"	Flow at 4gpm 0,91 m3/h Per 10"	Flow at 5gpm 1,12 m3/h Per 10"	A (inch/mm)	B (inch/mm)	C (inch/mm)	D (inch/mm)	E (inch/mm)
90 x 40	1080/245	1440/328	1800/403	72/1822	27/685	31/800	110/2791	25/640
118 x 40	1416/321	1888/430	2360/529	73/1843	27/685	35/900	115/2911	28/700
150 x 40	1800/408	2400/546	3000/672	78/1987	31/799	39/1000	122/3099	30/750
180 x 40	2160/490	2880/655	3600/806	81/2065	31/799	43/1100	126/3203	33/850
215 x 40	2580/585	3440/783	4300/963	83/2112	35/900	47/1200	129/3275	34/875
260 x 40	3120/707	4160/946	5200/1165	83/2112	35/900	51/1300	129/3286	36/925
295 x 40	3540/802	4720/1074	5900/1322	93/2354	40/1008	55/1400	150/3804	43/1100
335 x 40	4020/911	5360/1219	6700/1501	93/2364	40/1008	59/1500	150/3800	45/1150
410 x 40	4920/1115	6560/1492	8200/1837	119/3024	44/1111	63/1600	185/4696	45/1150

TECHNICAL SPECIFICATION

Media

Accepts multiple 30",40",50"or 60" cartridges

Design Pressure

116 Psi(8 Bar)

Max Temperature

55°C (131° F)

Additional Features

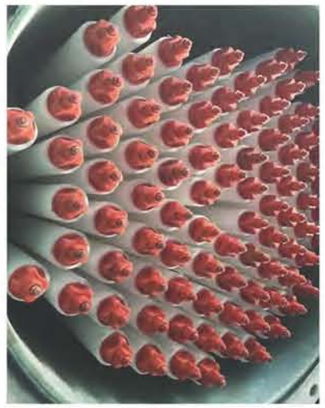
Vessel material has a longer life expectancy when dealing with corrosive liquids, such as sea water and brackish water

FRP COMPARED TO ALTERNATE MATERIALS

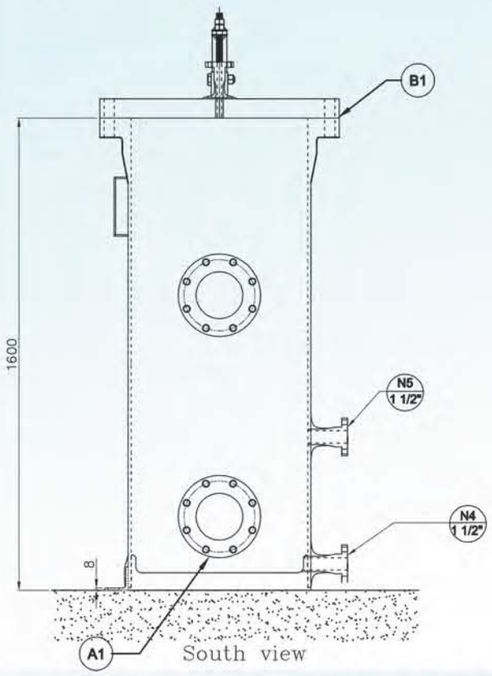
vs SS316 : FRP has a higher resistance to sea water

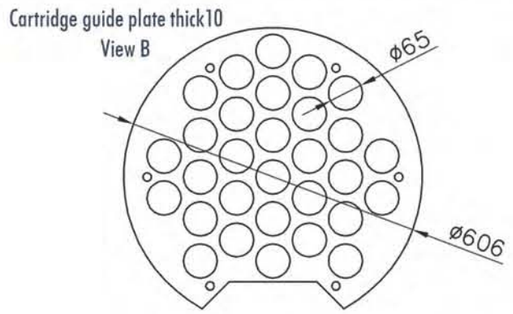
vs Lined Vessels : No risk of damaging lining with an FRP Vessel

vs Duplex Steel : FRP is a much more cost effective option

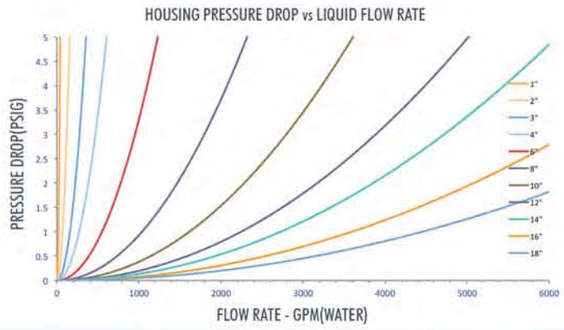


DRAWINGS





FLOW CHART



"High Flow" Cartridge Filter Housings

Accomodating 20",40"and 60" High Flow Filters

Feature	Unit	Specification		
		20" Filter	40" Filter	60" Filter
Nominal Length	mm	792	1,300	1,808
Nominal Diameter	mm	245		
No. of Cartridges per Vessel	-	1		
Standard Inlet Connection Diameter/Type	inch	3.0 VIC*		
Standard outlet Connection Diameter/Type	inch	3.0 VIC*		
Weight	kg	24	27	30.5

Feature	Unit	Specification		
		20" Filter	40" Filter	60" Filter
Capacity	M3/h	15 - 25	30 - 50	50 - 70
Design Pressuref	bar	≤ 10		
Design Temperature	C	66		
Minimum Temperature	C	-10		
pH Range	-	3 - 11		

Clean In Place(CIP) Tanks

Glass Fiber Reinforced Plastics (GRP)

IMPORTANT FEATURES

- Can be manufactured to ASME RTP-1 spec.
- Constructed of long-lasting fiberglass
- Manufactured to requirement of ASTM D 3299, D 4097 and EN 13121 standards
- Manufactured to meet customer`s needs with accessories that meet specific requirements including PS15-69
- Can be manufactured to meet NSF Standard 61 requirements (potable water tanks)
- Designed for all seismic zones
- Available in single-wall and double-wall models
- Available in horizontal and vertical models
- Easy to ship and install

BENEFITS

- Products are engineered & manufactured to be long-lasting
- With characteristics of corrosion-resistance and durability
- Cost effective solutions for a wide variety of storage and production applications
- Unlike polyethylene products, they easily lend themselves to a wide range of fitting configurations
- Unlike steel products,they are easy to ship and easy to install because they are lightweight yet structurally strong

TYPICAL ABOVEGROUND APPLICATIONS

- Chemical Storage
- Waste Water Treatment
- Ultra-pure Water Storage
- CIP Cleaning Solutions
- Reverse Osmosis Packages
- Fire-Protection Water

Models

Single Wall / Double Wall

Diameter

Up to 10 m

Capacities

160 m3

Construction Material

Fiberglass

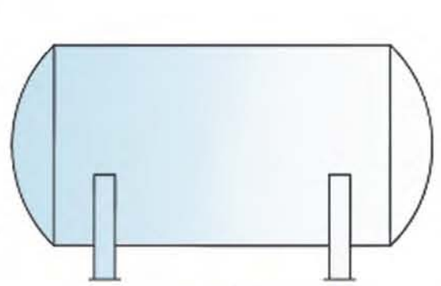
H.B. Composites tanks can be designed & manufactured with the following options:

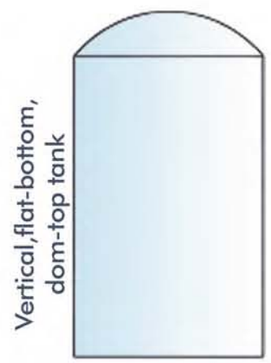
- Vertical or horizantal models
- Open, flat or dome tops
- Flat-bottom, dish-bottom or sloped-bottom
- Leg-supported,skirt-supported or saddle-supported
- Single-wall or double-wall models

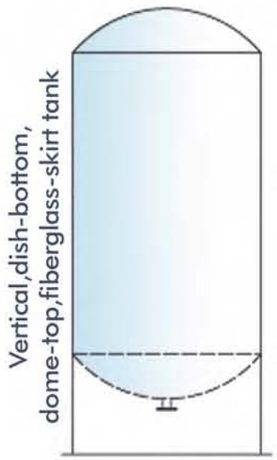
OUR CUSTOMERS

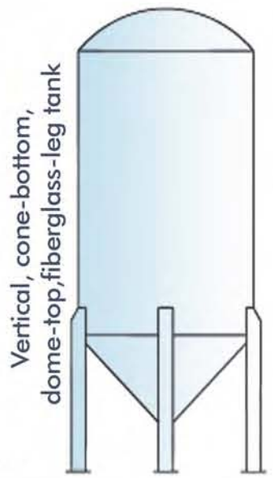
Our products are widely used by municipalities and manufacturers because of their ability to handle corrosive chemicals.For instance, wastewater treatment facilities use aboveground fiberglass storage tanks and piping because they safety contain and transport harsh chemicals such as sodium hypochlorite, alum and ferric chloride. In addition,they are used to ventilate wastewater treatment facilities. Food maunfacturers faver fiberglass products because they keep their products free from contamination.

TYPICAL MODELS









RO Pressure Vessels

Glass Fiber Reinforced Plastics (GRP)

DESCRIPTION

Reverse Osmosis system relies on pressure to achieve the purpose of purification or concentration, while the membrane housing is the vessel that bears this kind of pressure. In a reverse osmosis system, the higher the concentration of raw water, the greater the pressure that needs to be applied.
FRP membrane housings can be used in more types of water treatment systems.

QUALITY ASSURANCE

- Cyclic quality test in 100,000 cycles
- Qualitative hydrostatic test at 6 times the working pressure
- Pressure test on all production vessels at 1.1 times the working pressure according to ASME Section X
- Standard materials approved to use for drinking water

Filament Winding

Produced vessels can be provided in two forms, **Sideport and Endport**, with diameters of 4 and 8 inches

SPECIFICATION

Design and Qualification Code	Based on ASME Section X
Diameter of the FRP Distributors/Collector	4" & 8"
FRP Material	Fiberglass + Epoxy Resin
Diameter of ports	1 1/2" & 2"
Ports Material	Super Stainless 6Mo,Super Duplex
Design Pressure	Up to 1200 psi(82 bar)
Operating Temperature	5-50°C (41-122°F)
Hydrostatic Test	1.1x design pressure

MODEL NUMBER	MAX OPERATING PRESSURE	MAX OPERATING TEMPERATURE	QUALIFICATION PRESSURE	FACTORY TEST PRESSURE	ELEMENT LENGTH
OTC-150	150 PSI	65°C	900 PSI	165 PSI	1-7
OTC-300	300 PSI	65°C	1800 PSI	330 PSI	1-7
OTC-450	450 PSI	65°C	2700 PSI	495 PSI	1-7
OTC-600	600 PSI	65°C	3600 PSI	660 PSI	1-7
OTC-1000	1000 PSI	65°C	6000 PSI	1100 PSI	1-7
OTC-1200	1200 PSI	65°C	7200 PSI	1320 PSI	1-7

Applications:

- Seawater Desalination
- Petrochemical Plants
- Power Generation Plants
- Oil and Gas Industries
- Brackish Water
- Power Plants
- Refineries

3 8" FRP MEMBRANE HOUSING

- Composite construction for best chemical compatibility & corrosion resistance
- Smooth inner wall, unique mirror finish ID
- Beautiful & attractive appearance
- Length from 1 element to 7 elements
- Adapters, interconnectors & mounting clamps available
- Inlet & outlet, size & quantity can be selected

TECHNICAL SPECIFICATION

Material

Fiberglass and epoxy

Working Pressure

150-1200 PSI

Connection

End port,side port optional

Operating pH Range

3-11

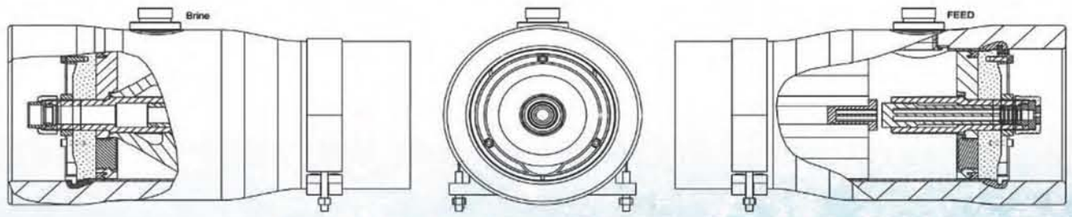
Cleaning pH Range

2-12(<30 min)

DESIGN FEATURES

- Improved head sealing
- Integrally wound locking groove
- Mirror finish ID easy & quick loading & unloading of membranes
- Quick lock head retention system for quick access to membranes
- Compatible for using in all water type applications
- Available in ASME certified & CE marked models
- Available in ASME code compliant and non-coded models

DRAWING



Sand Filters

Glass Fiber Reinforced Plastics (GRP)

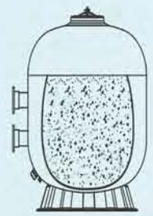
BENEFITS

- Optimal for fluids in extreme environmental conditions
- High durability and quality, low thermal conductivity
- Produced by durable, non-corrosive fiberglass and resin
- Available with laterals or nozzle plate system for air scouring capabilities
- Standard compliance : EN-13121, ASME Section X
- Optional accessories includes sight glass, manhole, union drain, and air purge

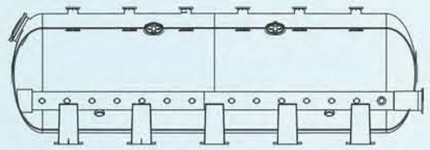
OTEC TANKS

Due to tank`s low weight and high corrosion resistance, they are widely used to store corrosive materials.
OTEC tanks weigh on average one third of the weight of equivalent steel tanks & at the same time offer a strength of three to six times their strength.

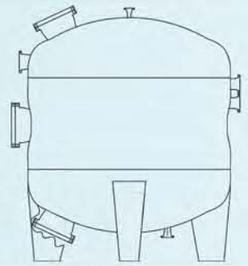
STANDARD MODELS



Vertical Series

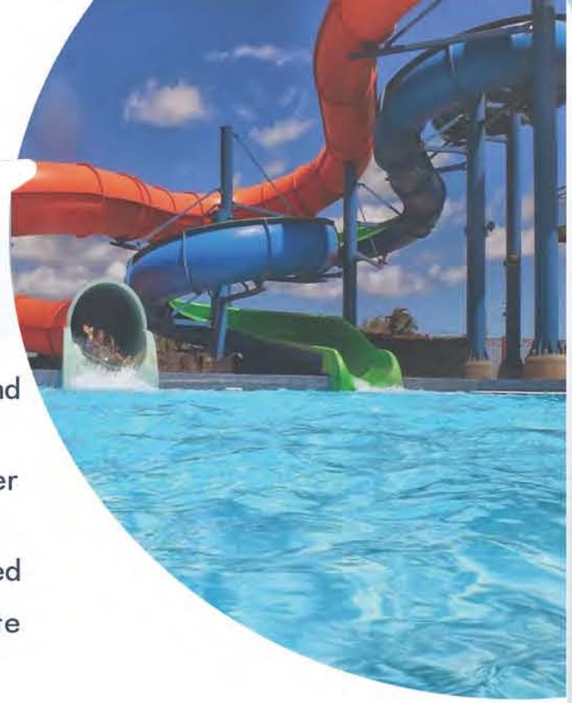


Horizantal Series



Large Size Vertical Series

4 PRODUCT FEATURES



- Multi-construction layers: non-corrosive and chemical protective
- UV resistant, suitable for operation under prolonged sunlight
- High filtration standard with deep sand bed
- Available with laterals or nozzle plate system for air scouring capabilities

Customized max size & performance:

152 psi/ 10.5bar	650 m3/h	27 m2	3 m	11/5 m
Max Pressure	Max Flow Rate	Max Filteration Area	Max Diameter	Max Length

OTEC CUSTOM-BUILT SERVICES

OTEC offers custom-built service from system design, dimensions, working pressure,connections, to internal & external finishing to meet a customer`s requirements

Filtration System

laterals / nozzles

Design Filtration Velocity

50 m3/h/m2

Max Operating Pressure

150psi(10.5bar)

Max Temperature

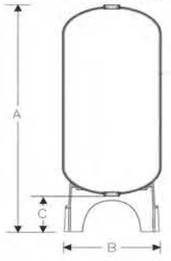
49°C (120°F)

Construction Material

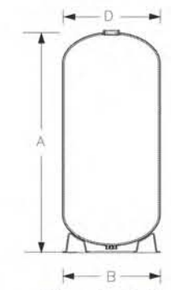
GRP

SPECIFICATION

Tank Size	Volume		Weight (Kg)	Base	Dimensions (mm)			
	L	Cu. Ft.	Empty		A	B	C	D
30 × 72	697	24.63	90.50	Standard	1836	786		780
			90.25	Tripod	2139	770	335	780
30 × 72	674	23.82	94.40	Standard	1892	786		779
			100.10	Tripod	2199	770	280	779
36 × 72	1011	35.72	122.80	Standard	1856	936		938
			123.00	Tripod	2147	932	342	938
36 × 72	970	34.28	124.40	Standard	1916	936		931
			132.60	Tripod	2213	932	287	931
42 × 72	1494	52.79	215.00	Tripod	2360	1038	288	1089
48 × 72	1895	66.00	247.00	Tripod	2360	1172	295	1233
63 × 67	2451	96.61	306.00	Tripod	2025	1560	305	1625
63 × 86	3306	116.82	360.00	Tripod	2453	1560	305	1625



Tripod Base



Standard Base

Filtration System

laterals

Design Filtration Velocity

20/30/40 m3/h/m2

Max Operating Pressure

116psi(8 bar)

Max Temperature

49°C (120°F)

Construction Material

GRP

Long Service Life
High Filteration Surface

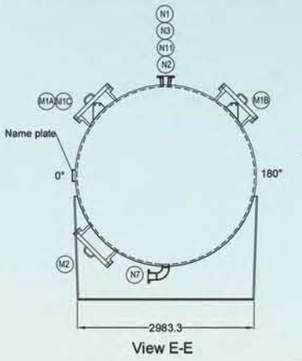
Application Suggestion

- Large scale water desalination plants
- Aquatic park and aquarium
- Commercial pool

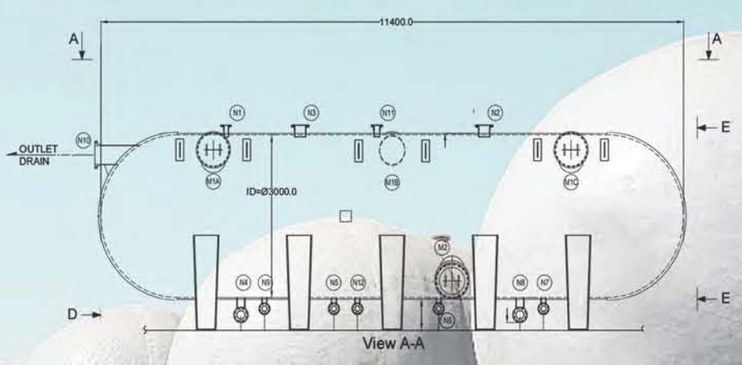
Product Features

- Multi-construction layers:non-corrosive & chemical protective
- UV resistant, suitable for operation under prolonged sunlight
- Enhances filteration performance
- Service manhole for easy maintenace
- Equipped with manometer for easy reading of the working pressure of both inlet & outlet

DRAWINGS



View E-E



View A-A

Applications Suggestions

- Water treatment facilities
- Aquarium
- Large scale waterland

Custom-Built Available

Horizontal sand filter provides a larger filtration area for installation space optimization. OTEC manufacture horizontal sand filter up to 3 meters in diameter & 12 meters in length. OTEC is also able to build to individual project requirements. Dimensions can be modified according to project specifications.

3
Max Diameter

12
Max Length

SIRAF Pressure Sand Filter Tanks (Total No. of 6)

Destination : Siraf desalination plant (50,000 CMD SWRO)

Owner : Boushehr water and sewage Co.

Contractor : South Raadab engineering Co.

Product Offered : Glass Reinforced Vinylester (GRV)

3 m Diameter

11.4m Length

7.5bar Test Pressure

50° c Temperature

KOUHESTAK - KS-02- Sand Filter Tanks (Total No. of 8+5)

Destination : Kuhestak SWRO desalination plant

Owner : Hormozgan water and sewage Co.

Contractor : Tana Energy Co.

Product Offered : Glass Reinforced Vinylester (GRV)

3 m Diameter

9 m Length

5bar Test Pressure

50° c Temperature

TECHNICAL SPECIFICATION

Filtration System

laterals or Plate

Design Filtration Velocity

20/30/40 m3/h/m2

Max Operating Pressure

116psi(8 bar)

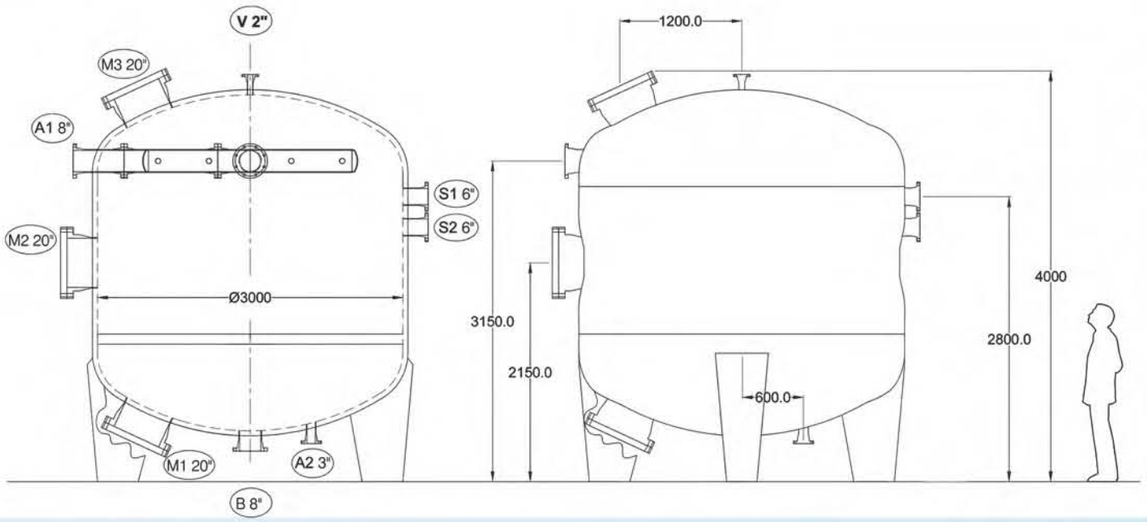
Max Temperature

49° C (120° F)

Construction Material

GRP

DRAWINGS



Vertical Series

Horizontal Series

Large Size Vertical Series

TEAM OF PROFESIONALS

TEAM OF PROFESIONALS

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