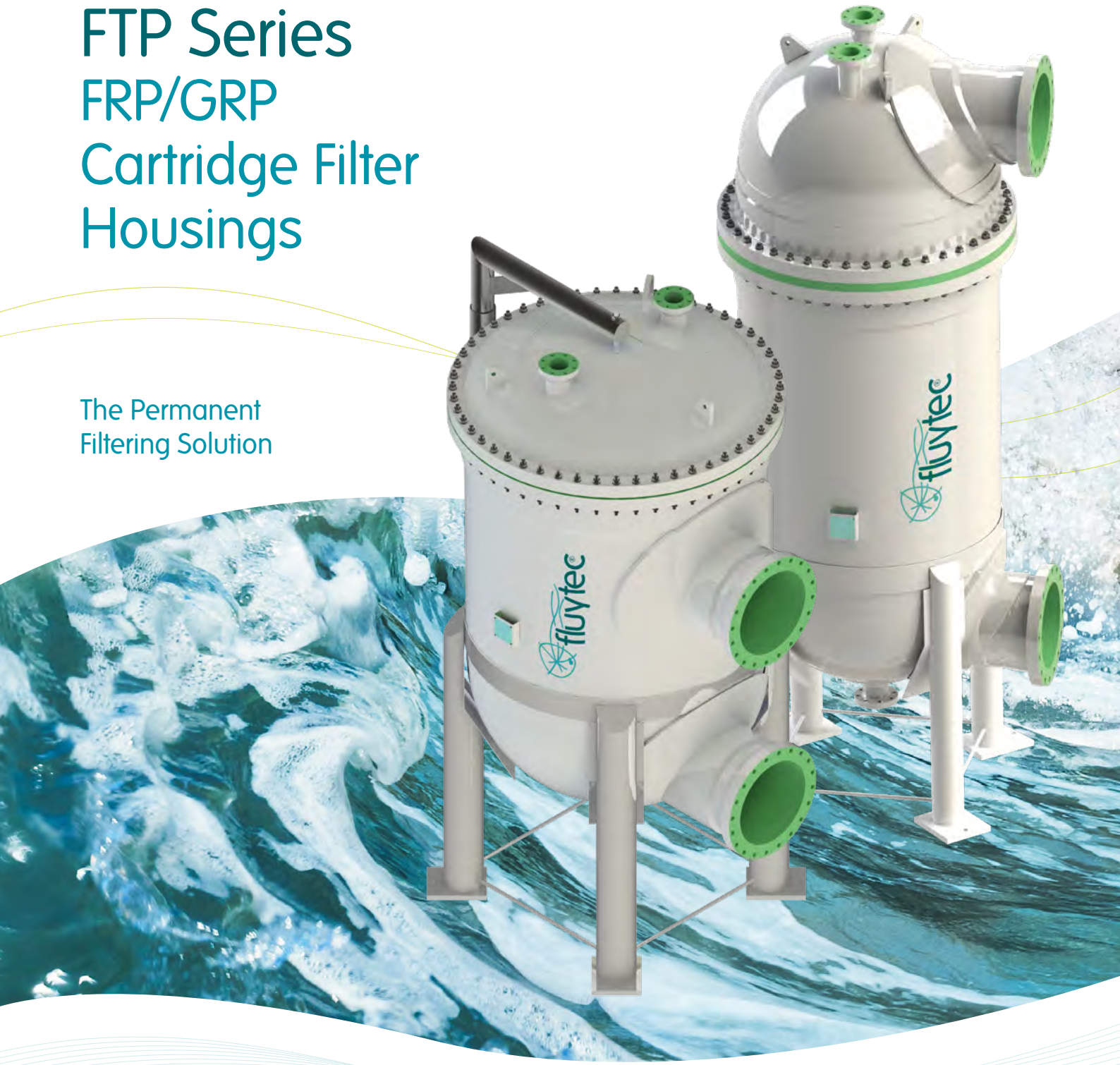
fluytec®

FRP/GRP

FTP Series
FRP/GRP Cartridge Filter Housings

The Permanent
Filtering Solution



Introduction

With **+30 Million m³/day** installed capacity and references with **+25 years** of operation, Fluytec's FTP series are the leading choice for medium and large systems.

Fluytec's FRP/GRP (**Fiberglass Reinforced Polyester**) Cartridge Filters are engineered to operate in heavy duty applications, providing superb filtration efficiency and durability.

Fluytec's continuous development allows introducing new features and functionalities to our products.





General description

The FTP series are available several custom made and standard designs that are worldwide recoginzed as the best-in-class:

a. **Single Flange (SFL) allows individual cartridge replacement inside the housing and**
b. **Sword System (B) allows for complete filtering package removal outside the housing.**

Fluytec FTP Housings are offered according to the most relevant International Codes: **Ad-Merkblatt** or **ASME X** for pressure vessels and are manufactured according to the **New European Directive of Pressure Vessels 2014/68/EU section 4.3.** Standard design pressures are 7 Barg / 10 Barg / 16 Barg, however, others are available upon request.

The material selection is based in the stringent operating conditions: corrosive fluids and atmospheres, outdoor installations and marine atmospheres, amongst others.

The hydraulic design minimizes turbulent regimes caused by high flow & pressure inlet currents, avoiding damage to internals / filtering media, enhancing filtration efficiency and minimizing pressure drop.





Standard materials

Housing: High Quality FRP/GRP Fiberglass Reinforced Polyester composite for unbeatable performance and durability.

Color: White RAL 9003 with ultraviolet (UV) protection for maximizing the design lifetime at outdoors installations*.

Internal:
- Chemical Barrier of Vinyl-Ester Resin.
- Super Smooth inner surface minimizes friction, achieving a very low pressure drop.

External:
- Priming with a two coats of epoxy primer.
- Final Painting with a two coats of aliphatic polyurethane painting - UV resistant.

Tubesheet and other internals: Composite / Plastic Materials

Legs: Painted CS with corrosion protection for a category C5 atmosphere and high durability (ISO 12944).

External bolts: SS 316 (A4 Quality)**.

Closure gaskets: Reinforced EPDM

*Custom color codes available upon request.
**Other materials available.



Advantages

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

1. FTP Single Flange (SFL)

FTP Single Flange Series (FTP SFL) is Fluytec's traditional double flange type (FTP FL) evolution to a more simple Housing with a unique flange in the upper part of the housing (the closure).

Mounting, dismounting and cartridge replacement operations will not require disassembling the piping as feed flange is located on the filter's shell (lateral inlet).

These housings can be equipped optionally with an accessory davit arm which will help when opening the upper lid.

FTP SFL models are available from 80 up to 360 cartridges.



ADVANTAGES

› NO NEED OF DISASSEMBLING THE PIPING FOR CARTRIDGE CHANGE OUTS

› CAN BE EQUIPPED WITH AN HYDRAULIC DAVIT ARM > NO NEED OF OVERHEAD CRANE







Cartridge installation

The Standard design is based in a Traditional System with DOE* elements "**spring & nipple**" fixing, which allows for an extremely rapid installation and removal of the cartridges. The careful design and distribution of the tightening rods ensure a perfect sealing of cartridges.

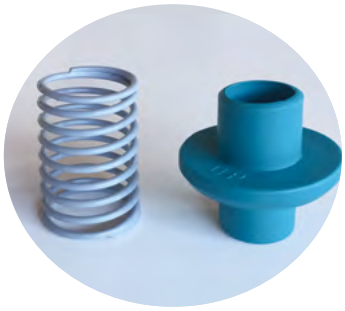
In order to assure reliable water tightness in the cartridge fixing, they are placed in the following way:

- In the lower part, the cartridge is settled in the false bottom plate, guided by a guide tube and a circular knife edge that remains incrusted in the cartridge.
- In the upper part a special piece, designed by Fluytec and called "nipple" is connected, assuring their water tightness with a plastic coated spring that presses that "nipple" against the closure plate.

*Other options available upon request.

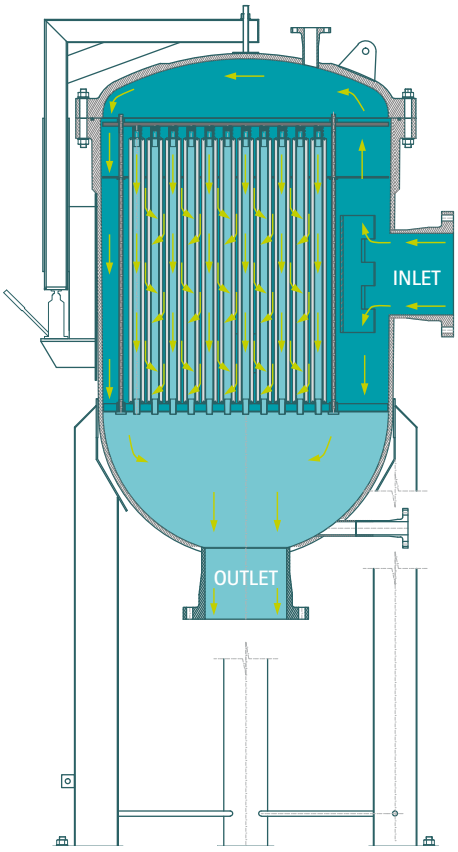
Options

- Possibility of equipping with a lifting Davit Arm.
- Possibility of equipping with side inlet and side outlet (0º / 180º / 90º).



Design Options

FTP SFL MODELS	Number of Cartridges	Maximum Flow	Cartridge Length	Design Pressure
FROM	80	Up to 240 m^3/h	30" 40" 50" 70"	Up to 16 Bar
UP TO	450	Up to 2,500 m^3/h		



FTP SFL Naming Codification

›››› NNN FTP-L SFL PNYY HTAL/VTAL

NNN › number of cartridges, (80–450) cartridges

L › the length of the cartridges, (30"-70" in multiples of 10")

SFL › cartridges connection system: SFL (single flange)

YY › design pressure rating (4-16 Bar)

Model Availability & Characteristics

MODEL	AVERAGE DESIGN FLOW RECOMMENDATION m³/hour	MAXIMUM DESIGN FLOW RECOMMENDATION m³/hour	NO. OF CARTRIDGES	LENGTH CARTRIDGES INCHES (mm)
80 FTP-4 SFL	208	320	80	40" (1,016)
80 FTP-5 SFL	260	400	80	50" (1,270)
90 FTP-4 SFL	234	360	90	40" (1,016)
90 FTP-5 SFL	293	450	90	50" (1,270)
100 FTP-4 SFL	260	400	100	40" (1,016)
100 FTP-5 SFL	325	500	100	50" (1,270)
120 FTP-4 SFL	312	480	120	40" (1,016)
120 FTP-5 SFL	390	600	120	50" (1,270)
135 FTP-4 SFL	351	540	135	40" (1,016)
135 FTP-5 SFL	439	675	135	50" (1,270)
145 FTP-4 SFL	377	580	145	40" (1,016)
145 FTP-5 SFL	472	725	145	50" (1,270)
180 FTP-4 SFL	468	720	180	40" (1,016)
180 FTP-5 SFL	585	900	180	50" (1,270)
215 FTP-4 SFL	559	860	215	40" (1,016)
215 FTP-5 SFL	699	1,075	215	50" (1,270)
240 FTP-4 SFL	624	960	240	40" (1,016)
240 FTP-5 SFL	780	1,200	240	50" (1,270)
280 FTP-4 SFL	728	1,120	280	40" (1,016)
280 FTP-5 SFL	910	1,400	280	50" (1,270)
330 FTP-4 SFL	858	1,320	330	40" (1,016)
330 FTP-5 SFL	1,073	1,650	330	50" (1,270)
360 FTP-4 SFL	936	1,440	360	40" (1,016)
360 FTP-5 SFL	1,170	1,800	360	50" (1,270)

Above chart only shows an approximate guideline. Does not necessarily represent exact models and/or data. Bigger equipment manufacturing is also available upon request, in a project by project basis.

- Average Design Flow calculated for a flow rate of aprox. 0.65 m³/h per every 10" of cartridge.
- Recommended operating flow rate (conservative) of ≈0.65 m³/h per every 10" of cartridge length.
- Maximum recommended Flow rates depending on cartridges' length:
  - 40" length elements: up to 1.00 m³/h per every 10" of cartridge length (4 m³/h per cartridge element).
  - 50" length elements: up to ≈ 0.95 m³/h per every 10" of cartridge length (4.75 m³/h per cartridge element).

>> Please contact Fluytec for TAILOR MADE Options <<





2. FTP Sword System (B)



FTP B Series are Cartridge Filter Housings with extractable **Sword system package and Single body flange** designed for handling large flows.

These filter housings consist on a main body with a unique flange with the inlet connection on the bottom of the body and the outlet in the top lid. The filtering elements (Cartridges) hang from the false bottom plate (located on the main flange of the equipment).

The cartridge replacement is carried out outside of the filter and, having a spare Filtering Extractable Package, the replacement can be instantaneous. In order to extract the filter package it will be necessary to have an overhead crane.

FTP B Models are available from 80 up to 470 cartridges.

ADVANTAGES

› VERY QUICK CARTRIDGE CHANGE OUTS > MINIMIZES DOWNTIME

› MINIMUM FOOTPRINT MAXIMIZING FILTRATION SURFACE



Cartridge installation

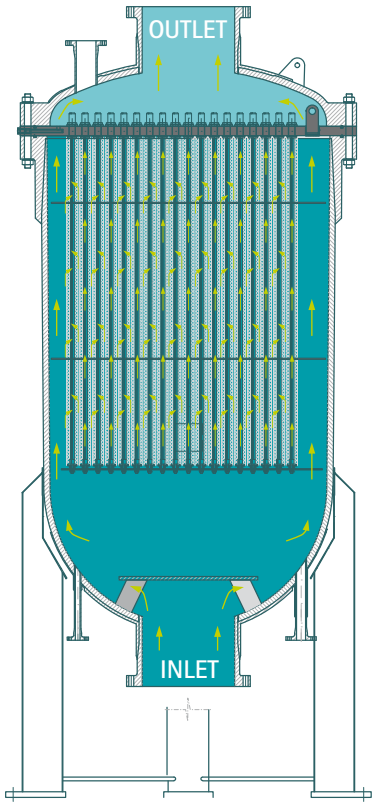
The FTP B Series are available for DOE cartridge elements, which are individually mounted on "Swords" (pressed using an internal rod and a nut, both with knife edges). In this case, the Swords are fixed to the top tubesheet, hanging from it.

Additionally, and with the purpose of providing the necessary rigidity to prevent cartridges damage due to internal vibration, the complete set of Swords is fixed on the lower end with a plastic grating.

All these elements, including the false bottom plate constitute the "Extractable Filtering Package". An extra Filtering Package can be supplied optionally so as to speed up the cartridge change process.

Options

- Possibility of equipping with an extra Filtering Package.
- Possibility of equipping with side inlet and side outlet (0º / 180º / 90º).



Design Options

FTP B MODELS	Number of Cartridges	Maximum Flow	Cartridge Length	Design Pressure
FROM	80	Up to 240 m^3/h	40" 50" 70"	Up to 16 Bar
UP TO	650	Up to 3,500 m^3/h		

FTP B Naming Codification

›››› **NNN FTP-L B PNYY HTAL/VTAL**

NNN › number of cartridges, (80 – 650) cartridges

L › the length of the cartridges, (40"-70" in multiples of 10")

B › cartridges connection system: B (Sword System)

YY › design pressure rating (4-16 Bar)

Model Availabilty & Characteristics

Model	Average Design Flow Recommendation m³/hour	Maximum Design Flow Recommendation m³/hour	No. Of Cartridges	Length cartridges inches (mm)
120 FTP-4 B	312	480	120	40" (1,016)
120 FTP-5 B	390	600	120	50" (1,270)
120 FTP-7 B	546	840	120	70" (1,778)
150 FTP-4 B	390	600	150	40" (1,016)
150 FTP-5 B	488	750	150	50" (1,270)
150 FTP-7 B	683	1,050	150	70" (1,778)
180 FTP-4 B	468	720	180	40" (1,016)
180 FTP-5 B	585	900	180	50" (1,270)
180 FTP-7 B	819	1,260	180	70" (1,778)
240 FTP-4 B	624	960	240	40" (1,016)
240 FTP-5 B	780	1,200	240	50" (1,270)
240 FTP-7 B	1,092	1,680	240	70" (1,778)
270 FTP-4 B	702	1,080	270	40" (1,016)
270 FTP-5 B	878	1,350	270	50" (1,270)
270 FTP-7 B	1,229	1,890	270	70" (1,778)
310 FTP-4 B	806	1,240	310	40" (1,016)
310 FTP-5 B	1,008	1,550	310	50" (1,270)
310 FTP-7 B	1410	2,170	310	70" (1,778)
360 FTP-4 B	936	1,440	360	40" (1,016)
360 FTP-5 B	1,170	1,800	360	50" (1,270)
360 FTP-7 B	1,638	2,520	360	70" (1,778)
410 FTP-4 B	1,066	1,640	410	40" (1,016)
410 FTP-5 B	1,333	2,050	410	50" (1,270)
410 FTP-7 B	1,866	2,870	410	70" (1,778)
470 FTP-4 B	1,222	1,880	470	40" (1,016)
470 FTP-5 B	1,258	2,350	470	50" (1,270)
470 FTP-7 B	2,139	3,290	470	70" (1,778)

Above chart only shows an approximate guideline. Does not necessarily represent exact models and/or data. Bigger equipment manufacturing is also available upon request, in a project by project basis.

- Average Design Flow calculated for a flow rate of aprox. 0.65 m³/h per every 10" of cartridge.
- Recommended operating flow rate (conservative) of ≈ 0.65 m³/h per every 10" of cartridge length.
- Maximum recommended Flow rates depending on cartridges' length:
  - 40" length elements: up to 1.00 m³/h per every 10" of cartridge length (4 m³/h per cartridge element).
  - 50" length elements: up to ≈ 0.95 m³/h per every 10" of cartridge length (4.75 m³/h per cartridge element).
  - 70" length elements: up to ≈ 0.80 m³/h per every 10" of cartridge length (5.6 m³/h per cartridge element).

>> Please contact Fluytec for TAILOR MADE Options <<



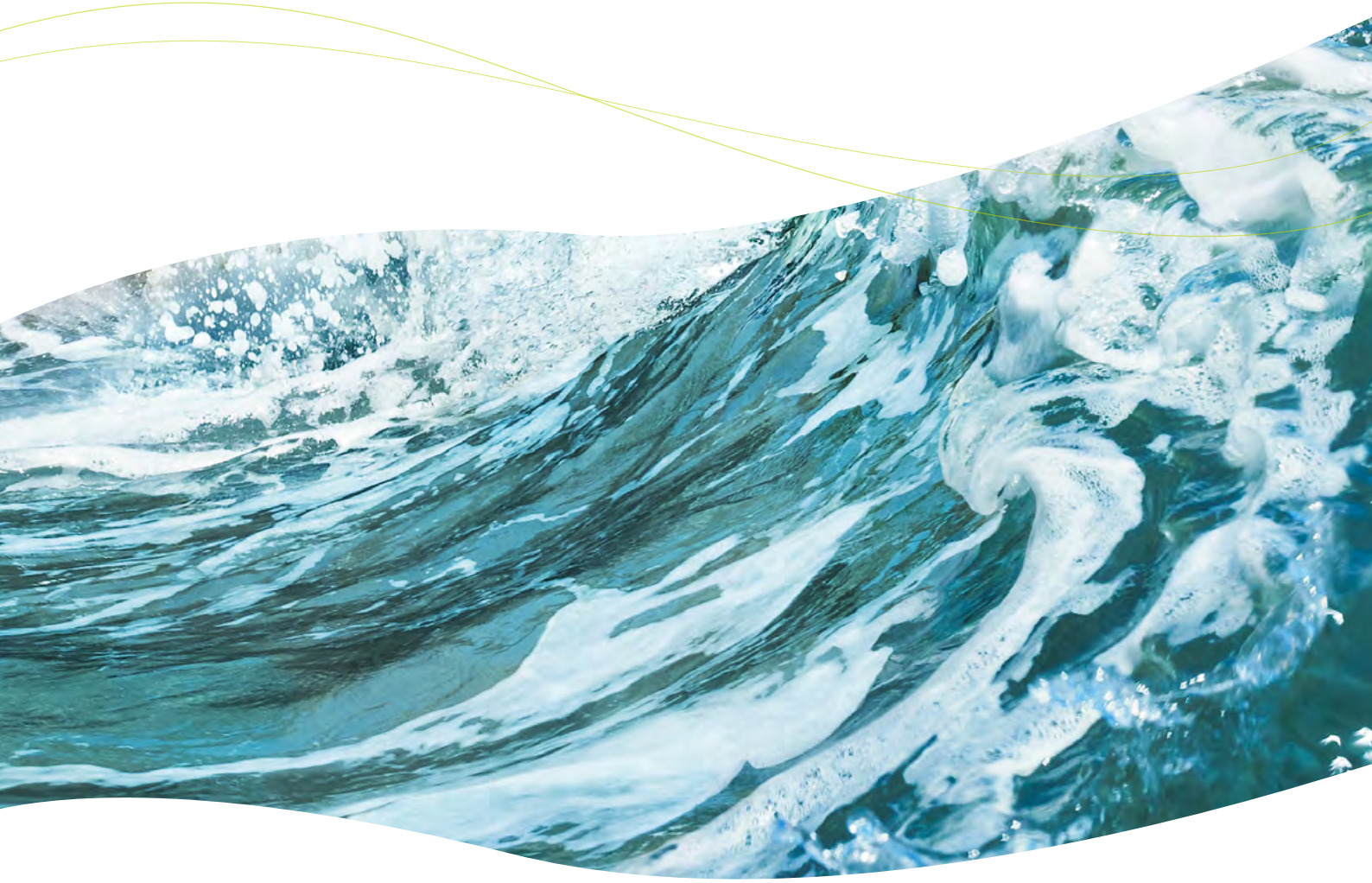






Some Fluytec FRP/GRP FTP Series Projects installed globally

PROJECT NAME	CAPACITY	LOCATION
JIDP Jurong Island Desalination Plant	137.000 m³/d	Singapore
Jubail II Phase I SWRO	400.000 m³/d	KSA
Al Khobar II SWRO	600.000 m³/d	KSA
Shoaiba V SWRO	600.000 m³/d	KSA
New Mansoura SWRO	100.000 m³/d	Egypt
Formosa Petrochemical SWRO	105.000 m³/d	Taiwan
Minera Spence SWRO	86.400 m³/d	Chile
QB2 Quebrada Blanca Phase II	102.360 m³/d	Chile
Jaffna SWRO	24.000 m³/d	Sri Lanka
East Bay WTP Phase I	50.000 m³/d	Philippines
Djerba SWRO	50.000 m³/d	Tunisia
Jamnagar SWRO Phase 2	24.000 m³/d	India
Chandra Asri SWRO	10.000 m³/d	Indonesia
El Tor SWRO	60.000 m³/d	Egypt
El Galalah SWRO	150.000 m³/d	Egypt
SOHAR SWRO	250.000 m³/d	Oman
Al Jubail SWRO	100.000 m³/d	KSA
Trinidad y Tobago SWRO Exp. II	181.800 m³/d	Trinidad & Tobago
Sal & San Vicente SWRO	10.000 m³/d	Cape Vert
Majis RO	20.000 m³/d	Oman
Agadir SWRO	100.000 m³/d	Morocco
IWPP Facility D (Qatar) UMM AL HALOUL CCC	590.000 m³/d	Qatar
Hassi Messaud SWRO	24.000 m³/d	Algeria
El Yosr II	80.000 m³/d	Egypt
Jeddah North SWRO	15.000 m³/d	KSA
Newman WTP	16.500 m³/d	Australia
Angamos SWRO	5.000 m³/d	Chile
Remelah SWRO	28.000 m³/d	Egypt
IWWPP Rabigh, Phase 2	120.000 m³/d	Rabigh KSA
Galilah SWRO Proyect	CIP Filters	UAE
Punjlloyd Polysilicon Plant	12.000 m³/d	Qatar
Jeddah South Port SWRO	15.000 m³/d	KSA
SWRO Desalcott Extension	181.000 m³/d	Trinidad & Tobago
Mopco Proyect	8.200 m³/d	Egypt
King Abdullah University	10.200 m³/d	KSA
SWRO Muscat	3.000 m³/d	Oman
SWRO Puerto del Rosario Extension	14.000 m³/d	Fuerteventura SPAIN
Curaçao Phase 6 SWRO	10.500 m³/d	Netherlands Antilles
Qurayyah IPP CCGT Power Plant	11.520 m³/d	KSA
SWRO Mantoverde	CIP Filters	Chile
IDAM Santa Bárbara Extension	6.000 m³/d	Curaçao
SWRO Harley	40.000 m³/d	USA
BWRO Ouargla	40.000 m³/d	Algeria
SWRO Marsa Matrouth	24.000 m³/d	Egypt
SWRO Tenerife Oeste	14.000 m³/d	Spain
West Damietta Power Station	10.000 m³/d	Egypt
SWRO Perth II, fase 2	153.000 m³/d	Binningup, AUSTRALIA
SWRO Qingdao	CIP filters	China
SWRO Vasilikos	CIP filters	Cyprus
ASRY SWRO	7.000 m³/d	Bahrein
UDEM Ténès	200.000 m³/d	Algeria
SWRO Mossel Bay	15.000 m³/d	South Africa
IDAM Sagunto	23.000 m³/d	Valencia SPAIN
Perth I SWRO	153.000 m³/d	Australia
SWRO Al Dur	214.000 m³/d	Bahrain
SWRO Point Fortin	22.000 m³/d	Trinidad & Tobago
Dortiol WTP	65.000 m³/d	Dörtyol, TURKEY
SWRO Al Fattah	75.000 m³/d	Jubail City, KSA
Sawaco (North, South, Crop)	30.500 m³/d	Jeddah,KSA
Emal SWRO	20.000 m³/d	UAE
SWRO Bahía de Alcudia	16.500 m³/d	Mallorca, SPAIN
SWRO Águilas Guadalentín	200.000 m³/d	Murcia, SPAIN
Depurbaix BWRO	57.000 m³/d	Barcelona, SPAIN
Abrera WTP	220.000 m³/d	Spain
Shuqaiq II IWPP	240.000 m³/d	KSA
IWPP Rabigh	220.000 m³/d	KSA
SWRO Hamma	200.000 m³/d	Algeria
SWRO Trinidad y Tobago	130.000 m³/d	Trinidad & Tobago
SWRO Bahía de Palma	68.000 m³ /d	Mallorca, SPAIN
Playa de San Agustín	34.500 m³ /d	Gran Canaria, SPAIN
Las Palmas III	33.600 m³/d	Gran Canaria, SPAIN
SWRO Puerto del Rosario	48.000 m³/d	Fuerteventura, SPAIN
SWRO Adeje Arona	32.400 m³/d	Tenerife SPAIN



fluytec® +45 YEARS

Subject to change without notice.

Other products in this range:

- FTI Series Cartridge Filters (SS, CS)
- FTPV Series Cartridge Filters (PVC)
- ...



CERTIFIED LR ISO 9001-14001 UKAS MANAGEMENT SYSTEMS 001

Fluytec Solutions Worldwide

Visit our Website for more information

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