



TECH UNIVERSAL (U.K.) LTD.

TECH UNIVERSAL UK LTD.

Tech Universal Data Sheets





Equipment Products Data Sheets

T-1. Curved Bar Screen ⇒ **DCM Model**

T-2. Automatic Vertical Screen

T-3. Pressure Sand Filter ⇒ **TFV Model**

T-4. Pressure Sand Filter ⇒ **TFH Model**

T-5. Rotating Scraper ⇒ **Full Bridge Type**

T-6. Brackish Water Reverse Osmosis Units

T-7. Seawater Reverse Osmosis Units

T-8. Odour Control System ⇒ **TSC Model**

T-9. Techsorb - Odour Control Unit

T10. Rotating Scraper ⇒ **Half Bridge Type**

T11. Softener



Equipment Products Data Sheets

T12. Deionizer

T13. Super Flux Filter

Note: Product Data Sheets are available upon request.



CURVED BAR SCREEN - DCM Model



Mechanical Construction

The DCM Curved Bar Screens consist essentially of:

- ⇒ non-deformable, in galvanized steel
- ⇒ one piece vessel
- ⇒ cleaning rake, with galvanized steel comb
- ⇒ oversized geared motor, waterproof
- ⇒ horizontal stop device of the arm

Working Principles:

A screen is a device with openings, generally of uniform size, that is used to retain the coarse solids found in wastewater. This equipment is fully automatic. It is controlled by a head loss sensor, or a timer. When the cleaning system is required, the geared motor is switched on, pulling the rake which was originally in a horizontal position. This position is obtained at the end of each cycle. Facilitating the flow of water between two cycles by electric switch.

An ejector arm makes easier the cleaning of the comb with each rotation and ejects refusal into a basket or conveyor supplied with the equipment. A torque switch enables the equipment to be stopped in the event of a blockage.

Typical Application:

To screen all domestic sewage or industrial effluent and can be adapted to any flow rate.

Technical Features:

Model	Admissible Flow (m ³ /hr)	Screen Width (mm)
DCM-5	0 TO 150	500
DCM-6	0 TO 150	600
DCM-7	0 TO 150	700
DCM-8	100 TO 300	800
DCM-9	100 TO 300	900
DCM-10	200 TO 800	1000
DCM-12	400 TO 800	1200
DCM-15	1000 TO 4000	1500
DCM-20	4000 TO 6000	2000
DCM-25	4000 TO 8000	2500

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AUTOMATIC VERTICAL SCREEN

Working Principles:

Tech Universal Automatic vertical bar screen are cable driven, equipped with a 350mm depth rake moving alternately up and down. The cycles are controlled by a daily programmable clock, or by level switch.

Specifications:

The trash rake works with a 0.75 to 1.0 kW geared motor. Furthermore, it is equipped with a cable slack detection device and effort control.

Operation:

- ⇒ On downward motion, the rake is maintained 200mm away from the scraping area and 300 mm from the screen.
- ⇒ In the lower position, the rake topples over and move up along the screen. Its comb goes through the screen rods.
- ⇒ In the higher position, a mechanical device scrapes the rake and ejects the waste either into a bin or a belt conveyor or a compactor (according to client request).



Design:

Tech Universal Screen are designed to work smoothly, following a regular cycle, to avoid any cause of malfunction of the mechanism.

Material of Construction:

All metallic components are sand blasted and then coated with a bi-layer paint made out of zinc dust and polyurethane that gives as exceptional hardness and the brilliance of glass vitrified steel.

Optional Material: 304 SS, 316 SS

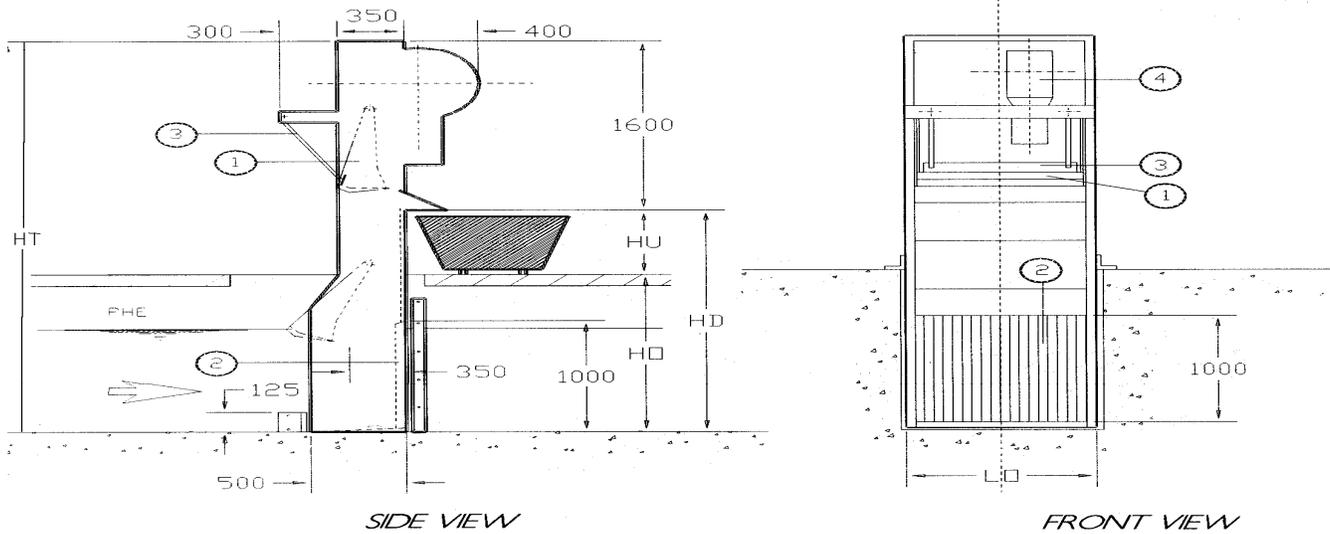
Technical Features:

Height	1—3.0m
Width	1—2.5m
Bar Thickness	10 mm
Bar Spacing	10—20 mm

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LEGEND:

1. RAKE
2. FIXED SCREEN
3. SCRAPPER
4. GEARED MOTOR

DIMENSION & INTERFACE:

- HO - Height of the work
 HD - Height under shedder
 HU - Useful height to tip out
 HT - Overall height
 LO - Width of the work

$$HD = HO + HU$$

$$HT = HO + HU + 1600$$

TECHNICAL FEATURES

- 1.) Height : 1—3.0m
- 2.) Width : 1—2.5m
- 3.) Bar Thickness : 10mm
- 4.) Bar Spacing : 10—20mm
- 5.) Simple design
- 6.) Suitable for both indoor & outdoor installation
- 7.) No moving parts located permanently underwater
- 8.) Jam proof rake assembly
- 9.) Removable bar rack
- 10.) Positive discharge of debris
- 11.) Suitable for continuous operation
- 12.) Excellent corrosion resistance
- 13.) Simple installation procedures

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Pressure Sand Filter - TFV Model

General:

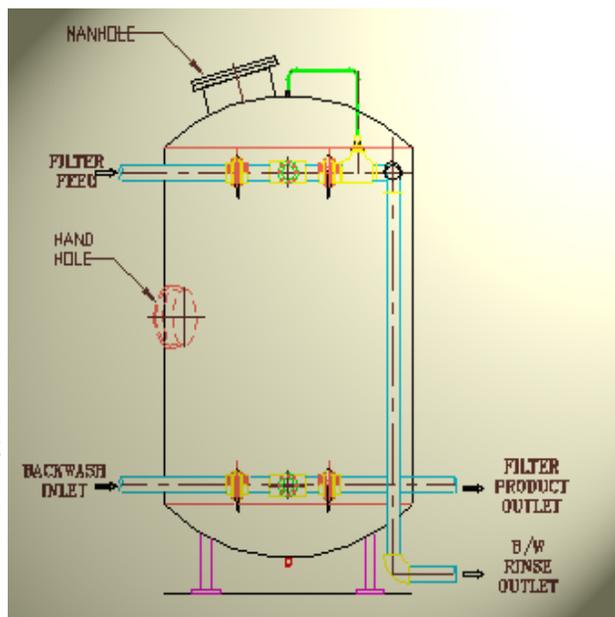
Tech Universal (UK) Ltd. supplies different types of filter used for industrial and potable water supply. The filters are being used in potable and advance wastewater treatment plant and other industries.

- The filters are economically fabricated using optimum design parameters in accordance with ASME/BS standards.
- Slow and rapid filtration rate is being implemented depending on the application.
- Filters are fully shop assembled and skid mounted
- Filters operation can be automatic and manual.
- Vertical filters are designed using capacity up to 92m³/hr.
- Air scouring is an option used depending on type of media and raw water and filter application.
- Filters with higher capacity will be custom built & design

Typical Application:

Tech Universal types of filters and their usage:

- 1) **Dual Media Sand Filter:/ Super Flux** This filter is used to remove turbidity and suspended solids from raw water. Media implemented is Silica Sand & Anthracite with standard filtration rate of 10-13m³/hr/m² and with Super Flux Filtration rate are 30-40-m³/hr/m²
- 2) **Iron/Manganese Removal Filter:** This filter is used to remove iron and manganese from the raw water with different feed water pH at standard filtration rate of 10-12m³/hr/m².
- 3) **Activated Carbon Filter:** This filter is specially designed for the absorption of soluble organic impurities found in water. Also to remove odour taste & colour.
- 4) **Tertiary Filtration:** It is used in wastewater treatment plant to reduce BOD and suspended solids down to 5-10 mg/lt.
- 5) **Polishing Filter :** It is used to reduce suspended solids to below 5 microns



Filter Selection Data:

MEDIA	REMOVAL Application
Silica Sand	Suspended Solids
Anthracite	Turbidity
Birm	Iron & Manganese
Manganese Dioxide	Iron & Manganese
Super Flux	BOD, SS, Organics, Colour
Activated Carbon	taste, odour, colour, chlorine, organics

Model	Diameter (mm)	Height (HOS) (mm)	Designed Pressure (bar)	Service Flow (m ³ /hr)
TFV-40	400	1500-2000	5	1.20-1.60
1500-2000 FV-75	750	1500-2000	5	4.40-5.70
TFV-105	1050	1500-2000	5	8.65-11.25
TFV-135	1350	1500-2000	5	14.30-18.60
TFV-165	1650	1500-2000	5	21.30-27.80
TFV-195	1950	1500-2000	5	29.80-38.80
TFV-225	2250	1500-2000	5	39.70-51.66
TFV-255	2550	1500-2000	5	51.00-66.00
TFV-270	2700	1500-2000	5	57.20-74.40
TFV-300	3000	1500-2000	5	70.00-91.80

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Pressure Sand Filter - TFH Model

General:

Tech Universal (UK) Ltd. supplies different types of filter used for industrial and potable water supply. The filter are being used in potable and advance wastewater treatment plant and other industries.

- The filters are economically fabricated using optimum design parameters in accordance with ASME or BS standards.
- Slow and rapid filtration rate is being implemented depending on the application.
- Filters are fully shop assembled and skid mounted
- Filters operation can be automatic and manual.
- Horizontal filters are designed using capacity up to 400m³/hr.
- Air scouring is an option used depending on type of media and raw water and filter application.



Filter Selection Data:

MEDIA	REMOVAL Application
Silica Sand	Suspended Solids
Anthracite	Turbidity
Birm	Iron & Manganese
Manganese Dioxide	Iron & Manganese
Super Flux	FE, MN, SS, BOD
Activated Carbon	taste, odour, colour, chlorine, organics

Typical Filter Nozzles Arrangement



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Typical Installation Arrangement



Typical Application:

The following are types of filters and their usage:

- 1) **Dual Media Sand Filter:** This filter is used to remove turbidity and suspended solids from raw water. Media implemented is Silica Sand & Anthracite with standard filtration rate of $10\text{m}^3/\text{hr}/\text{m}^2$
- 2) **Iron/Manganese Removal Filter:** This filter is used to remove iron and manganese from the raw water with different feed water pH at standard filtration rate of $10\text{-}12\text{m}^3/\text{hr}/\text{m}^2$.
- 3) **Activated Carbon Filter:** This filter is specially designed for the absorption of soluble organic impurities found in water.
- 4) **Tertiary Filtration:** It is used on wastewater treatment plant to reduce BOD and suspended solids down to $5\text{-}10\text{ mg}/\text{lt}$.
- 5) **Polishing Filter:** It is used to reduce suspended solid to below 5 microns

Technical Data:

Model	Diameter (mm)	Length (mm)	Designed Pressure (bar)	Service Flow (m^3/hr)
TFH-2004	2000	4000	5—10	80-104
TFH-2005	2000	5000	5—10	100-130
TFH-2006	2000	6000	5—10	120-256
TFH-2007	2000	7000	5—10	140-182
TFH-3005	3000	5000	5—10	150-195
TFH-3007	3000	7000	5—10	210-273
TFH-3008	3000	8000	5—10	240-312
TFH-3009	3000	9000	5—10	270-351
TFH-3011	3000	11000	5—10	330-429
TFH-4013	4000	13000	5—10	500-1500

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ROTATING SCRAPER - Full Bridge Type

Typical Application:

Full Bridge Rotating Scraper (Clarifier) is designed and used in all sedimentation tanks (primary & secondary sedimentation). In general manner it is mainly used to treat domestic and industrial effluent containing heavy wastes that could rapidly settle and that the slurry can be removed as it is formed.

Equipment Scope & Specification:

DESCRIPTION	SPECIFICATION
Bottom Scraper	Mild Steel Epoxy coated or Aluminium
Diffusion Drum	FRP/Mild Steel/Aluminium
Toothed Outlet Weir	FRP/Aluminium/Mild Steel Galvanized
Walkway	Galvanized steel/ Aluminium
Surface Scum Skimming Blade	Mild Steel/Aluminium
Scum Boxes	Mild Steel
Scum Baffle	Mild Steel/FRP
Collecting Scum Basket	Mild Steel/Stainless Steel
Diffusion Drum	FRP/Galvanized Steel
Control Panel	IP55/IP66
Wheel	2 per carriage
Handrail	Mild Steel, Galvanized or Aluminum W/ Lower & Upper Bar
Outlet channel cleaning brush device	
Clarifier Tank	GLS / Concrete from 5 to 40m diameter

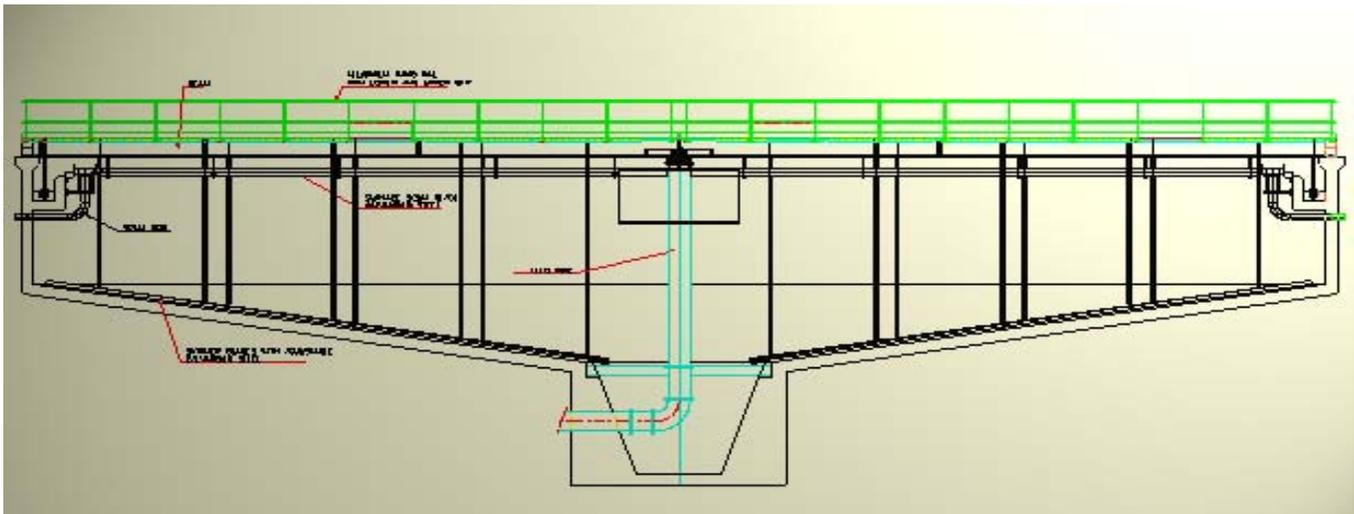
Mechanical Construction:

The bridge itself is made of a hollow section girder to which the protective guard rail is fixed. The bottom scraper, the central chamber and the surface scraper are fixed to the beam.

In the centre of the unit, the bridge rests on the pivot which consist of twin effect thrust roller bearing. To this in turn a ring connector is fixed, providing the electrical supply to the drive head.

The drive is insured by a geared motor properly sized to deliver the necessary torque. A peripheral saw toothed outlet weir enables to clear the clear water and a scum baffle traps the scum and helps the collection and discharge into the scum box.

All mild steel materials are galvanized & epoxy coated as standard production.



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ROTATING SCRAPER



OUTLET CHANNEL CLEANING BRUSH DEVICE

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Brackish Water Reverse Osmosis Units



STANDARD FEATURES FOR R.O.

DESCRIPTION	SPECIFICATION
FEEDWATER INLET	3-WAY MOTORISED VALVE PVC
LOW PRESSURE SHUT-OFF	AUTOMATIC WITH TIME DELAY & MANUAL RESET
HIGH PRESSURE SHUT-OFF	AUTOMATIC WITH TIME DELAY & MANUAL RESET
FLOWMETERS	PERMEATE AND CONCENTRATE
PRESSURE GAUGES	PRE-FILTER IN/OUT,PUMP DISCHARGE,ARRAY#1 FEED CONCENTRATE & PERMEATE
PUMP RELIEF VALVE	316SS, 18-28 bar
CONCENTRATE CONTROL VALVE	GLOVE VALVE, 3.0" SS 18-28 bar

DESCRIPTION	SPECIFICATION
ELECTRICAL ENCLOSURE	NEMA-12, FLUSH MOUNT
CLEANING PORT	
SAMPLING VALVE	
EMERGENCY STOP CONTROL PANEL DISCONNECT LATCH	
SEDIMENT PRE-FILTER (Cartridge Filter!)	5 MICRON PLATED, 10" x 2.75"
AUTOMATIC PERMEATE FLUSH	AUTOMATIC ON SHUT DOWN

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PROCESS:

The raw water is drawn from raw water tank using filter feed pumps to feed the water into the dual media sand filter. Before the filters, the raw water is injected with Sodium Hypochlorite to kill any bacteria present in the water before entering the Reverse Osmosis Unit.

Also, the water is being injected with the following chemicals:

- 1) Sodium Metabisulphate
- 2) Sulphuric acid
- 3) Anti-scalant

Sodium Metabisulphite is a dechlorination process to get rid of all traces of chlorine in the water to protect the membrane fibres.

The water is then pressurised by the high-pressure pump up to 16-28 bar depending on design conditions going into the membranes, where water is then separated into permeate (product) and the reject (waste) streams.

The product water from all membranes is collected in one manifold and then pumped to the product water tank. Before entering the product water tank, the water is being pH corrected (adjusted) and sterilised using the Chlorination system.

Tech Universal (UK) Ltd., uses automatic flushing system, which is in an integral part of the R.O. Unit design to prolong the life of the membranes

Warranty Salinity

Tech Universal, Brackish Reverse Osmosis units can desalt water with maximum Salinity of 6000 PPM (mg/Lt)

Materials of Construction:

DESCRIPTION	SPECIFICATION
FRAME	WELDED MILD STEEL, 2 COATED ACRYLIC
ELECTRICAL ENCLOSURE	COATED ACRYLIC
PRE-FILTER (CARTRIDGE FILTER HOUSING)	304SS,DYKAR COATED/GRP
INLET (LOW PRESSURE) PIPING	PVC, SCHEDULE 80
INLET SHUT-OFF VALVE	PVC
LOW PRESSURE SWITCH PROBE	STAINLESS STEEL
HIGH PRESSURE PUMP	304/316L STAINLESS STEEL
HIGH PRESSURE SWITCH PROBE	STAINLESS STEEL
HIGH PRESSURE PIPING	304/316L STAINLESS STEEL
PRESSURE VESSEL	FIBERGLASS/RTR/GRP
CONCENTRATE CONTROL VALVE	304/316L STAINLESS STEEL
PRESSURE GAUGE	LIQUID-FILLED, SS304/316L INTERNAL
AUTOMATIC FLUSH VALVE	304/316L STAINLESS STEEL
FLOWMETER	PVDF SENSOR, PVC FITTINGS

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Standard Performance and Technical Data:

R.O. Unit Model No.	Product Flow		Operating Pressure (PSI)	No. of Membranes	High Pressure Pump Motor Rating	Designed Recovery Percentage
	GPD	m ³ /day				
Tech - BO15	1500	5.5	180	1	-	-
Tech - BO30	3000	11	180	2	-	-
Tech - BO45	4500	16.5	200	3	-	-
Tech - BO60	6000	22	200	4	-	-
Tech - BO90	9000	33	180	6	-	-
Tech - BO120	12000	44	180	8	-	-
Tech - BO150	15000	55	200	10	-	-
Tech - BO180	18000	65	200	12	-	-
Tech - BO230	23000	88	190	16	7.5	-
Tech - BO290	29000	110	190	20	7.5	-
Tech - BO380	38000	143	210	26	10	-
Tech - BO440	44000	165	210	30	10	-
Tech - B600	60.000	225	10	-	15	65
Tech - BO730	73.000	275	12	-	15	65
Tech - BO1000	100.000	375	16	-	20	70
Tech - BO1260	126.000	475	20	-	20	70
Tech - BO1530	153.000	575	24	-	20	70
Tech - BO1800	180.000	675	28	-	30	75
Tech - BO2050	205.000	775	32	-	30	75
Tech - BO2320	232.000	875	36	-	40	75
Tech - BO2650	265.000	1000	42	-	40	75
Tech - BO3050	305.000	1150	48	-	40	75
Tech - BO3250	325.000	1225	54	-	50	75
Tech - BO3800	380.000	1425	60	-	50	75
Tech - BO4000	400.000	1500	66	-	60	75

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Data : Tech 6-3/3



SEAWATER REVERSE OSMOSIS UNITS

GENERAL:

Tech Universal Seawater Reverse Osmosis system design incorporates the updated membrane technology of spiral wound (thin film composite) membranes and hollow-fine fibre type membrane, where salt rejection reaches 99.8%.

RO Capacity:

Tech Universal package RO Units ranges between 5-200 m³/hr

Above 2000 m³/hr units are custom design built to client specification.

PROCESS:

The raw water is drawn from raw water tank using filter feed pumps to feed the water into the dual media sand filter. Before the filters, the raw water is injected with Sodium Hypochlorite to kill any bacteria present in the water before entering the Reverse Osmosis Unit.

Also, the water is being injected with the following chemicals:

- 1) Sodium Metabisulphate
- 2) Sulphuric acid
- 3) Anti-scalant

Sodium Metabisulphite is a dechlorination process to get rid of all traces of chlorine in the water to protect the membrane fibres.

The water is then pressurised by the high-pressure pump up to 26-28 bar depending on design conditions going into the membranes, where water is then separated into permeate (product) and the reject (waste) streams.

The product water from all membranes is collected in one manifold and then pumped to the product water tank. Before entering the product water tank, the water is being pH corrected (adjusted) and sterilised using the Chlorination system.

Tech Universal (UK) Ltd., uses automatic flushing system, which is in an integral part of the R.O. Unit design to prolong the life of the membranes

Warranty Salinity

Tech Universal, Brackish Reverse Osmosis units can desalt water with maximum Salinity of 6000 PPM (mg/Lt)





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OPTIONAL ITEMS:

- ⇒ pH Chemical Dosing system
- ⇒ Anti-scalant chemical dosing system
- ⇒ Oxygen Redox Potential System (ORP) for chlorine control
- ⇒ pH control system
- ⇒ Acid chemical dosing system
- ⇒ TDS meter
- ⇒ 0—1200 psi pressure gauge
- ⇒ Digital flow meter
- ⇒ Cartridge filter housing

Materials of Construction:

DESCRIPTION	SPECIFICATION
FRAME	WELDED MILD STEEL, 2 COATED ACRYLIC
ELECTRICAL ENCLOSURE	304SS, 2 COATED ACRYLIC
PRE-FILTER	304SS, DYKAR COATED
INLET (LOW PRESSURE) PIPING	PVC, SCHEDULE 80
INLET SHUT-OFF VALVE	PVC
LOW PRESSURE SWITCH PROBE	STAINLESS STEEL
PUMP	316/2101/904L STAINLESS STEEL
ENERGY RECOVERY □ TURBINE (optional)	904/316L/2205 DUPLEX □ STAINLESS STEEL
HIGH PRESSURE SWITCH PROBE	STAINLESS STEEL
HIGH PRESSURE PIPING	904L STAINLESS STEEL
PRESSURE VESSEL	FIBERGLASS
CONCENTRATE CONTROL VALVE	316 STAINLESS STEEL
PRESSURE GAUGE	LIQUID-FILLED, SS316 INTERNAL
AUTOMATIC FLUSH VALVE	316 STAINLESS STEEL
FLOWMETER	PVDF SENSOR, PVC FITTINGS

DESCRIPTION	SPECIFICATION
FEEDWATER INLET	3-WAY MOTORISED VALVE PVC
LOW PRESSURE SHUT-OFF	AUTOMATIC WITH TIME DELAY & MANUAL RESET
HIGH PRESSURE SHUT-OFF	AUTOMATIC WITH TIME DELAY & MANUAL RESET
FLOWMETERS	PERMEATE AND CONCENTRATE
PRESSURE GAUGES	PRE-FILTER IN/OUT, PUMP DISCHARGE, ARRAY#1 FEED CONCENTRATE & PERMEATE
PUMP RELIEF VALVE	316SS, 1200psi
CONCENTRATE CONTROL VALVE	GLOVE VALVE, 3.0" SS 1000 psi

STANDARD FEATURES FOR R.O. Units

DESCRIPTION	SPECIFICATION
ELECTRICAL ENCLOSURE	NEMA-12, FLUSH MOUNT
CLEANING PORT	
SAMPLING VALVE	
EMERGENCY STOP CONTROL PANEL DISCONNECT LATCH	
SEDIMENT PRE-FILTER (Cartridge Filter)	5 MICRON PLATED, 10" x 2.75"
AUTOMATIC PERMEATE FLUSH	AUTOMATIC ON SHUT DOWN

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Data : Tech 7-2/2



ODOUR CONTROL SYSTEM - TSC Model



General:

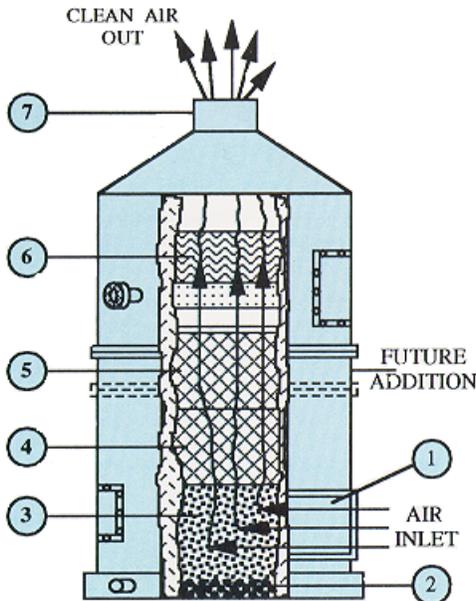
Odour nuisance is no longer acceptable to the general public and increasing pressure is being placed on management to control site odours. Although malodours do not cause physical harm, they effect human well being and quality of life.

Odour nuisance is no longer a problem as Tech Universal technology for odour control are the update for the environment control.

Sewage odours consist of a complex of hydrogen sulphide mercaptan and organic compounds. Some of more offensive odours are listed below.

ODOURANTS	THRESHOLD (PPH)
Hydrogen Sulphide	0.47
Indole	1.0
Skatole	1.2
Methyl Mercaptan	1.10
Methyl Amine	21.0

For the last decade Tech Universal has been actively involved in the application of the Odour Control System using activated carbon process and wet scrubbers.



Principles of Operation:

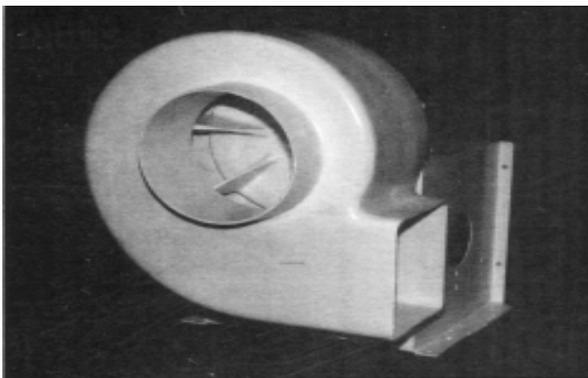
- 1) **INLET:** Contaminated air is gathered by an exhaust system and drawn into the scrubber at the air inlet.
- 2) **SUMP:** Expansion of the contaminated airstream into the scrubber results in a sudden slowing down of the air flow. The large particles drop into the sump. It enters horizontally and then turns upward through the unit to the clean air outlet.
- 3) **INLET CHAMBER:** As the contaminated air stream approaches the scrub bed it is sprayed by solution of sodium hydroxide.
- 4) **SCRUB BED:** The air stream passes through the scrub bed filled with Poly-Pak and changes direction many times. The fumes are impinged on the large surface area of the wetted packing and washed into the sump or greatly diluted.
- 5) **SPRAY CHAMBER:** A fine mist spray is produced by a series of removable nozzles in the chamber. The contaminated air in contact with the mist of fresh water and absorbed gases are washed back through the scrub bed into the sump.
- 6) **EXTRACTION CHAMBER:** The air-mist extractor removes the residual moisture from the air stream by many directional air changes and impingement on the large surface area.
- 7) **OUTLET:** Cleaned air leaves through the scrubber outlet.

ACTIVATED CARBON FILTER

MODEL	Minimum Capacity (m ³ /hr)	Maximum Capacity (m ³ /hr)	Tank Diameter (mm)	Tank Height (mm)	Carbon (kg)
TSC-1600D	4000	6000	1600	4300	2040
TSC-2000D	5000	10000	2000	4900	3060
TSC-2500D	10000	15000	2500	5300	4895
TSC-3000D	15000	22000	3000	5500	6936
TSC-3500D	22000	30000	3500	5900	9384

TECHNICAL FEATURES:

- ⇒ High efficiency performance
- ⇒ Low operation cost
- ⇒ Compact
- ⇒ Easy maintenance
- ⇒ Easy installation
- ⇒ Environmental friendly
- ⇒ Meets or exceed air pollution code parameters
- ⇒ Efficiency up to 99% (depends on conditions & contaminants) of 5 microns



FRP CENTRIFUGAL FANS

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PROCESS DESCRIPTION:

In order to avoid odour emission from a building pumping station, it is necessary to change the air 5 to 25 times depending on the amount and the type of odours. The volume of the air is being sucked by the centrifugal fan which feeds the filters. If the air contains more than 10ppm under dynamic conditions, we recommend to have a wet scrubbers as a pre-treatment before the activated carbon filter to remove the majority of H₂S, this will give a substantially longer carbon bed life.

The centrifugal fan will create an underpressure in the building which will prevent leakage of odourous air to the outside.

The volume of air is first sucked through a wet scrubber and then pushed to the polishing filter unit. The wet scrubber will work as a chemical absorber where the H₂S is removed down to 10-25ppm when coming in contact with the diluted sodium hydroxide solution where the following removal efficiencies are obtained.

For 25ppm H₂S upto 86% removal
For 100ppm H₂S upto 92% removal
For 250ppm H₂S upto 98% removal

All remaining H₂S as well as other gases such as mercaptans etc. will be absorbed by the activated carbon.

The H₂S product levels will also reach 0.5-5ppm by applying special design when requested by client.

APPLICATIONS:

- a) Waste Water Treatment
 - Sewage pumping station
 - Sewage sludge handling
 - Composting odour treatment
 - Septic systems
- b) Brewing Industry
 - Effluent treatment
 - Yeast drying exhaust
- c) Chemical & Food
 - Toxic gas removal
 - Volatile organic compounds (voc)
- d) Plating, pickling, stripping, anodizing, etching, chemical milling and in-plant ventilation.

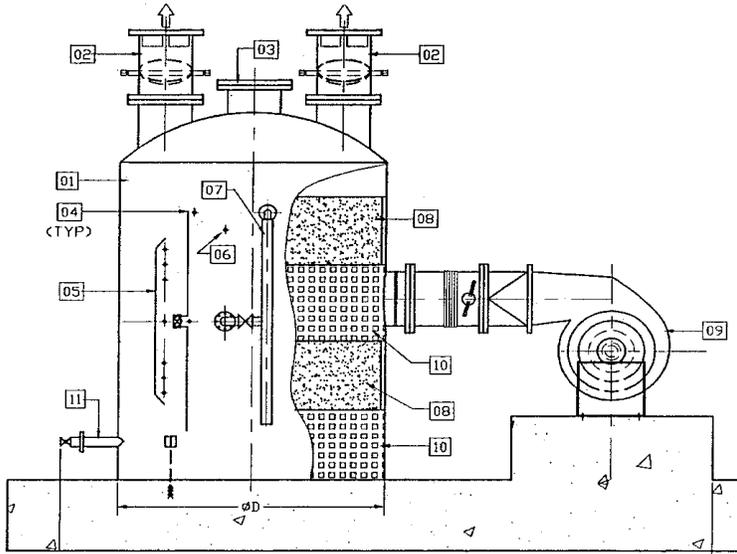
MATERIAL OF CONSTRUCTION:

Standard construction is PVC or Fiberglass to assure maximum chemical resistance and long trouble free service. The strength and lightweight keep installation cost at a minimum, optional material is polypropylene or steel.





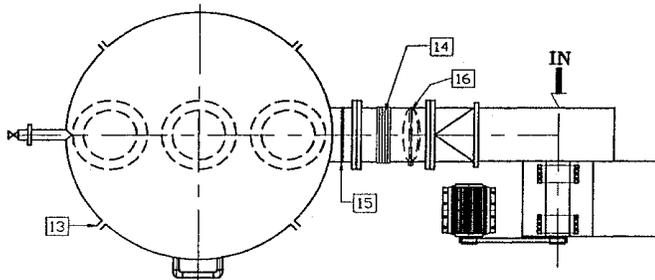
TECH UNIVERSAL (U.K.) LTD.



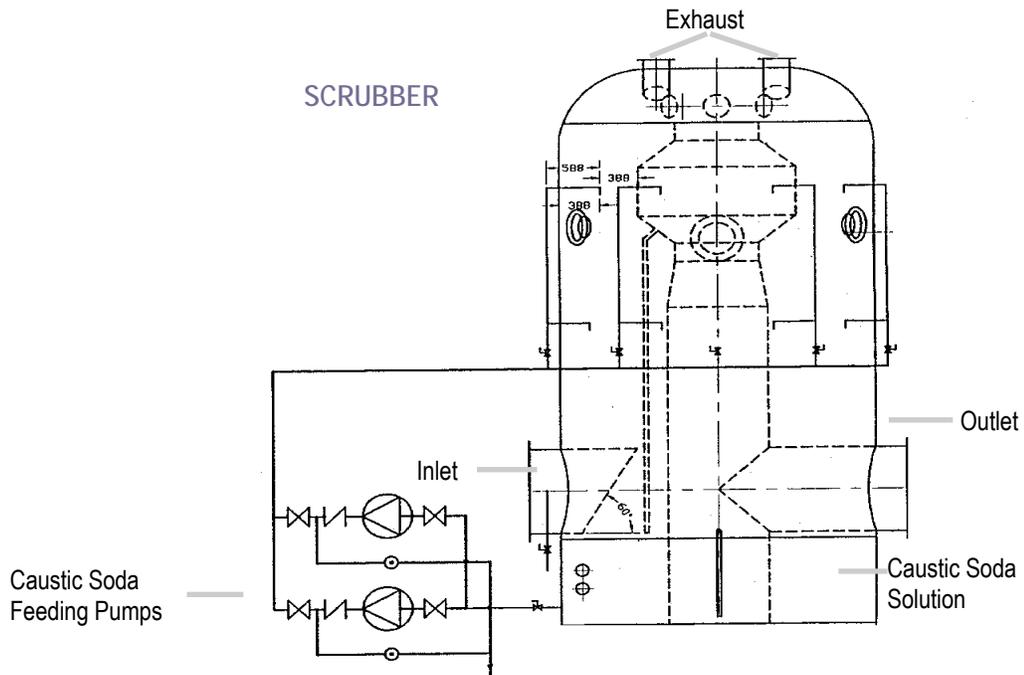
CARBON FILTER:

LEGEND:

- 1) Vessel
- 2) Exhaust pipe with damper
- 3) Manway
- 4) Pressure gauge
- 5) Air sampling
- 6) Grounding rod
- 7) Overflow
- 8) Carbon
- 9) Fan & motor
- 10) Pall ring
- 11) Drain
- 12) Concrete base
- 13) Holding down support
- 14) Flexible boot
- 15) Inlet grid
- 16) Damper flange



SCRUBBER



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Data : Tech 8-4/4



TECHSORB - ODOUR CONTROL UNIT

Purpose:

The **TECHSORB** series has been designed for the purification of up to 4000m³/hr H₂S laden air stream using single carbon bed. A feature is that the carbon can be regenerated at site.

Air is blown into the bottom of the carbon bed and flows upward through the carbon bed. The air discharges to atmosphere via the top outlet nozzles. As the air passes through the carbon bed the contaminants are absorbed.

The media consist of one of the following;

- IVP
- HSV Centaur
- Odour Carb. ST1
- SA 68

All type of Carbon are regenerated by caustic soda except the HSV Centaur which is by water.

Single Bed Carbon Filter Models

Model (TECHSORB)	Capacity (m ³ /hr)	Filter Height (mm)	Carbon (kg)
18	125—200	1000	30
21	300	1000	65
25	400	1900	85
28	500	1900	100
30	450—600	2000	100
33	700	2000	150
35	800	2000	162
36	900	2000	182
39	1000	2000	202
48	1500	2000	302
54	2000	2000	402
60	2500	2000	500
64	3000	2000	600
72	3500	2000	705
78	4000	2000	805

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Mechanical Description:

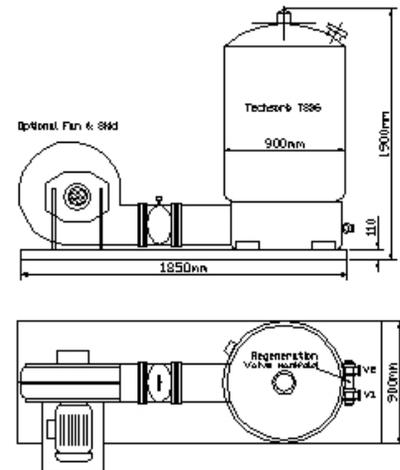
The **TECHNSORB** is a vertical cylindrical linear medium density polyethylene filter with a flat bottom and removable manhole top. The unit total height is 1900mm with white, or blue color.

There is also 3/4 inch BSP bottom regeneration liquid/drain manifold and a top 1 inch overflow hose connection. The process contact materials are polyethylene, polypropylene and polyester which has been selected for their good corrosion resistance to a wide range of organics, hydrogen sulphide, mercaptans and acid etc. In case of doubt consult Tech Universal.

Limitations:

- ⇒ Wall thickness will be 8 mm
- ⇒ Temperature less than 70 °C
- ⇒ Steam humidity less than 80%

Pressure: the maximum operating pressure for this unit should not exceed 4kPa.
The vacuum should not exceed 2kPa.



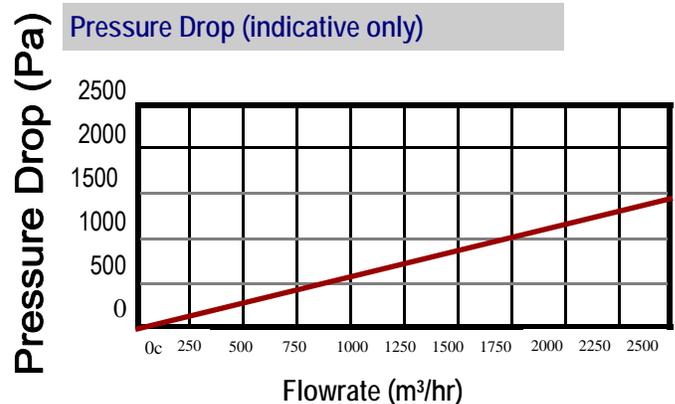
Equipment Protection:

Once installed the unit should at all times be protected from environmental elements such as direct sunlight or other heat source.

Options:

The unit can be supplied skid mounted complete with an electric 380V, 3 phase 60Hz IP55 fan. Other motors are available on request.

A fan pre-filter, sand trap, sound insulation are also available on Request.



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Data : Tech 9-2/2



ROTATING SCRAPER - Half Bridge Type

Typical Application:

Full Bridge Rotating Scraper (Clarifier) is designed and used in all sedimentation tanks (primary & secondary sedimentation). In general manner it is mainly used to treat domestic and industrial effluent containing heavy wastes that could rapidly settle and that the slurry can be removed as it is formed.

Equipment Scope & Specification:

DESCRIPTION	SPECIFICATION
Bottom Scraper	Mild Steel Epoxy coated or Aluminium
Diffusion Drum	FRP/Mild Steel/Aluminium
Toothed Outlet Weir	FRP/Aluminium/Mild Steel Galvanized
Walkway	Galvanized steel/ Aluminium
Surface Scum Skimming Blade	Mild Steel/Aluminium
Scum Boxes	Mild Steel
Scum Baffle	Mild Steel/FRP
Collecting Scum Basket	Mild Steel/Stainless Steel
Diffusion Drum	FRP/Galvanized Steel
Control Panel	IP55/IP66
Wheel	2 per carriage
Handrail	Mild Steel Galvanized or Aluminium w/ lower & upper bar
Outlet channel cleaning brush device	
Clarifier Tank	GLS/Concrete from 5 to 40m diameter

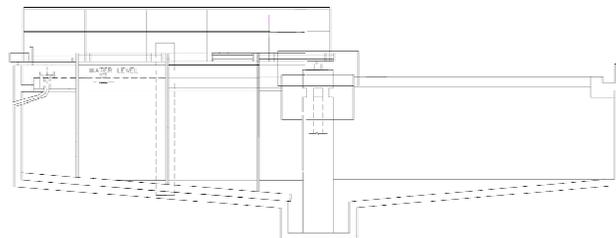
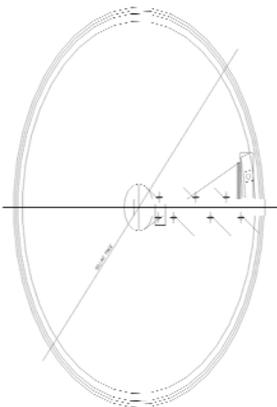
Mechanical Construction:

The bridge itself is made of a hollow section girder to which the protective guard rail is fixed. The bottom scraper, the central chamber and the surface scraper are fixed to the beam.

In the centre of the unit, the bridge rests on the pivot which consist of twin effect thrust roller bearing. To this in turn a ring connector is fixed, providing the electrical supply to the drive head.

The drive is insured by a geared motor properly sized to deliver the necessary torque. A peripheral saw toothed outlet weir enables to clear the clear water and a scum baffle traps the scum and helps the collection and discharge into the scum box.

All mild steel materials are galvanized & epoxy coated as standard production.



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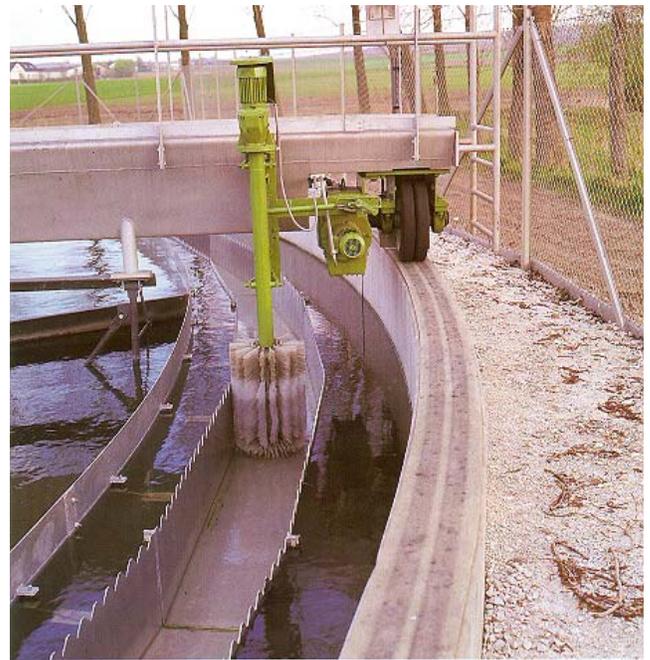
Data : Tech 10-1/2



ROTATING SCRAPER
HALF-BRIDGE



SCUM REMOVAL
SYSTEM



OUTLET CHANNEL CLEANING
BRUSH DEVICE

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Data : Tech 10-2/2



Automatic Water Softener

Application:

Tech Universal automatic water softeners are designed for local authorities, industries, large residential buildings, hospitals, and similar places demanding efficient water softening.



Advantages

The advantage of Tech Universal softeners include:

- ⇒ Resin tank of glass fiber or carbon steel vessel corrosion proofed.
- ⇒ Brine tank of polyethylene.
- ⇒ High – value ion exchanger of Polystyrene.
- ⇒ Flexible electrical and valve systems easily adapted to suit varying operating conditions.

Design:

The resin tank is made of either a glass fiber reinforced polyester or carbon steel epoxy coated internally and externally for corrosion/rust resistant. Internally the softener has a PVC distributor, which spreads the water evenly over the whole resin bed.

Tech Universal water softening unit is manufactured to the highest international standard from non-corrodible materials, thus ensuring a long and trouble free life. The full 5 cycle operation of the unit is controlled by a twin piston Master Valve. Hence, regeneration of the ion exchange resins is fully automatic. The regeneration cycle may be initiated either by time clock, automatic resetting water meter, or by a manually operated pushbutton.

The softener is supplied fully mounted and pressure tested for immediate connection to the main water supply at the place of installation. The electrical equipments is connected via a protective transformer.

Operation:

When the water passes through the softener, calcium and magnesium are absorbed by the ion exchange resin, at the same time corresponding amount of sodium is added to the water. This is the process of ion exchange.

The ion exchange resin is gradually saturated with calcium and magnesium. How long this takes depends on the hardness of the raw water and the amount of water consumed.

To restore the resin to its original state, a dilute solution of sodium chloride is added. This is a reverse ion exchange.

Calcium and magnesium are freed from the ion exchange material and led off to the drain. This process is called regeneration and takes place automatically according to the type of the control setting.

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Data : Tech 11-1/2



Standard Performance and Technical Data:

Model No.	Exchange Capacity		Service Flow		Tank Dimensions	
	Max. Grains	Min. Grains	Min	Max	Resin Tank	Brine Tank
Tech - SC003.S	30,000	20,000	3	7	10 x 40	18 x 24
Tech - SC006.S	60,000	40,000	6	15	12 x 52	18 x 24
Tech - SC009.S	90,000	60,000	10	20	13 x 54	20 x 40
Tech - SC012.S	120,000	80,000	15	25	14 x 65	20 x 40
Tech - SC015.S	150,000	100,000	20	35	16 x 65	24 x 40
Tech - SC018.S	180,000	120,000	25	40	18 x 65	24 x 40
Tech - SC021.S	210,000	140,000	30	50	21 x 60	24 x 60
Tech - SC027.S	270,000	180,000	40	60	24 x 60	24 x 60
Tech - SC033.S	330,000	220,000	50	75	24 x 72	24 x 60
Tech - SC042.S	420,000	280,000	60	95	30 x 60	30 x 60
Tech - SC048.S	480,000	320,000	70	120	30 x 72	30 x 60
Tech - SC060.S	600,000	400,000	90	135	36 x 60	40 x 60
Tech - SC072.S	720,000	480,000	105	160	36 x 72	40 x 60
Tech - SC084.S	840,000	560,000	120	190	42 x 60	42 x 60
Tech - SC096.S	960,000	640,000	140	230	42 x 72	42 x 60
Tech - SC114.S	1,140,000	760,000	160	260	48 x 60	50 x 60
Tech - SC132.S	1,320,000	880,000	200	300	48 x 72	50 x 60

- ⇒ The exchange capacity is based on 15 lbs/Ft³ salting.
- ⇒ The letter S at the right side of the model number is for simplex, and D for duplex.
- ⇒ Minimum operating pressure is 30 PSI.
- ⇒ Maximum operating pressure is 110 PSI
- ⇒ Electrical connection is 220V—24 Volts.

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Automatic Water Deionizer

Application:

Tech Universal deionizers designed for the removal of dissolved salts from feed water used for high pressure boilers, laboratories, process water, etc. The system is flexible and available in both simplex and duplex versions with different control alternatives.

Design:

The filter tanks are of glass fibre reinforced polyester and the internal distribution system is of polypropylene. The valve is made of synthetic resin with viton washers, making it fully resistant to corrosion by the regeneration chemicals.

The unit has continuous circulation of water over the resin bed to avoid high conductivity during periods of little or no water consumption.

Advantages

- ⇒ Tech Universal deionizer unit has been developed with extra consideration for ease of operation and low running cost.
- ⇒ Fully automatic controls.
- ⇒ Fully automatic and adjustable quality limits.
- ⇒ All parts that come into contact with water are of corrosion resistant material.
- ⇒ Continuous circulation to avoid high conductivity during periods of low water consumption.
- ⇒ Automatic intake of chemicals during the regeneration cycle.

Standard Performance and Technical Data:

Model No.	Capacity Per Regeneration (Gallons)		Tank Dimension (Inches)		Service Flow Rate (GPM)		Chemical Consumption (Gallons)	
	Theoretical	Practical	Diame-ter	Height	Intermit-tent	Continu-ous	NAOH	HCL
Tech - DCA - 25	12000	8000	10	54	6	4	3	6
Tech - DCA - 35	21000	14000	13	54	12	8	5	10
Tech - DCA - 45	36000	24000	16	65	21	14	8	16

- ⇒ Minimum operating pressure is 30 PSI
- ⇒ Maximum operating pressure is 110 PSI
- ⇒ Electrical connection is 220 V- 24 Volt

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Data : Tech 12-1/2



Operation:

Deioniser means that all the salts in the water are removed. The cation resin is regenerated with acid, whereby the positive ions contained in the water are exchanged for hydrogen ions, H⁺. The anion resin is regenerated with caustic solution, whereby the negative ions are exchanged for hydroxide ions, OH⁻.

When an anion resin follows a cation resin, the result will be deionised water.

The ion exchange process is carried out in two cycles:

1. The working cycle: in which H⁺ and OH⁻ ions from the ion exchangers go to the liquid phase while an equivalent quantity of undesired ions are collected by the ion exchangers.
2. The regeneration cycle: the ion exchangers are once again charged with H⁺ and OH⁻ ions.

The regeneration cycle usually consists of four stages: backwashing, intake of chemicals, constriction, and rinsing.

The regeneration cycle is controlled automatically according to preset limit values for conductivity of pure water and / or preset quantities of deionised water. The system can be connected to central alarm and monitoring systems. The PC alternative allows for great flexibility regarding control and monitoring of the unit and any complementary equipment.

The conductivity of the treated water is normally 5-10 μ S/cm. The quality depends on factors such as the raw water quality and the composition of dissolved salts.

Tech Universal deionizer designed to produce water volume per regeneration, based on a total salt content in mg/lit.

Tech Universal can provide complete unit custom designed for special product water quality, using mixed bed and floating bed types.



Super Flux Filter

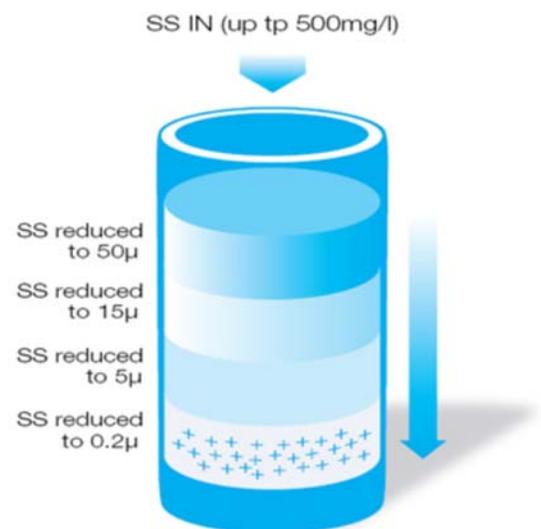
General:

The Super Flux Filter is an improved system and process for the elimination of suspended solids from water and wastewater on a commercially viable scale.

Taking deep-bed filtration to levels previously not thought possible in terms of both speed and filtrate quality (Down to 0.2 micron).

Value Proposition:

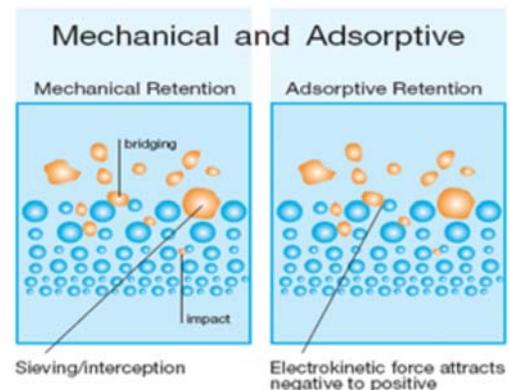
- 1. Performance:**
 - High filtration velocity
 - High dirt loading capacity
 - Exceptional filtrate quality
- 2. Protection:**
 - Protect in line equipment
 - Protect the environment and meet environmental targets
 - Protect your commercial bottom line
- 3. Price:**
 - Fast rate of interest
 - Low whole of life costs
 - Competitive capex



How It Works:

- ⇒ Super Flux Filter uses 6 layers of proprietary filter media. The inert natural media have an increasing density, a decreasing particle size and specific shape factor.
- ⇒ High filtration velocities up to 50m³/m²hr
- ⇒ High solid holding capacity up to 500mg/l
- ⇒ Backwash water consumption, 0.1 to 1% at 50m³/m²hr
- ⇒ Media has a naturally high positive charge enabling negatively charged particulates such as Cryptosporidium and Legionella to be removed by surface adsorption.

Dual Method:





One Product - Many Applications

Super Flux Versatility:

- ⇒ Waste Water: Secondary or Tertiary
- ⇒ Potable Water
- ⇒ Bore Hole Water
- ⇒ Desalination Pre -treatment: (SDI<3)
- ⇒ Cooling Tower: Full stream, side stream or make up water filtration
- ⇒ Groundwater
- ⇒ Rainwater Harvesting
- ⇒ Industrial Process Water

Filter Type	Max Velocity through bed (m/hr)	Maximum sus-solids loading (mg/l)	Average sus-solids remaining (microns)	Retained particle size after backwash (microns)
Super Flux	50	500	0.2	<0.5
Rapid Sand	10	100	3	10
Cartridge	14	5	0.6	3
Cross flow	8	50	3.2	6
Anthracite	9	100	50	15

Performance Benefits:

- ⇒ Flow rates at least 5x faster
- ⇒ Remove 15x more suspended solids than rapid sand filter
- ⇒ Lower backwash consumption
- ⇒ Lower running costs
- ⇒ Longer media life
- ⇒ Chemical free
- ⇒ Smaller footprint

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