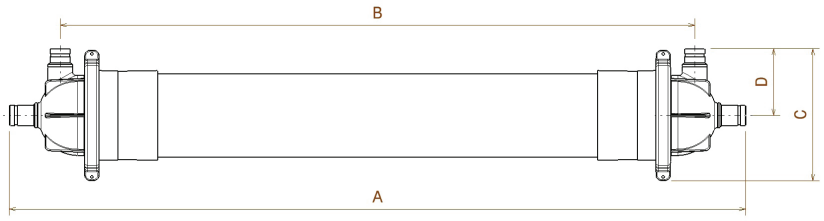
TECHNICAL DATA SHEET



MODEL	Surface Area (m^2)	Dimensions (mm)				Weight (kg)
		A	B	C	D	
AGM	70	2220±1	1915±1	395±1	200±1	60

A. SPECIFICATION

- PVDF based hollow fiber membranes have long lifetime due to their high mechanical strength and chemical resistance.
- The capacity of clean water production is higher due to modification of membranes which enhances the hydrophilicity of membrane.
- Virus and particules seperated by membrane are smaller than 30 nm.
- The product water quality is <0.1 NTU.

• Module Specifications

PARAMETER	UNIT	SPECIFICATION
Name of model	-	AGM
Diameter	mm	250
Body and cap material	-	U-PVC
Nozzles	mm	DN50 - Victaulic
Potting material	-	Polyurethane

• Membrane Specifications

PARAMETER	UNIT	SPECIFICATION
Material	-	Modified PVDF
Membrane type	-	Hollow Fiber UF
Flow direction	-	Outside to inside
Fiber outside/inside diameter	mm	1,4 / 0,8
Active surface area	m^2	70
Nominal MWCO, Dextrane	Dalton	≤ 150.000

Akualys Ultrafiltration Module is Certified by NSF to NSF/ANSI 61 Standart .

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• **Feed Water Specifications**

PARAMETRE	UNIT	SPECIFICATION
Temperature	°C	25 (max 40)
Particule dimension	µ	< 200
Turbidity	NTU	50 (max 250)
Oil and grease	%	0 (max 1)
pH	-	6-9
TOC	mg/l	< 10 (max 30)
Total Suspended Solid (TSS)	mg/l	50 (max 80)
Chlorine	mg/l	0,4 (max 150)

B. OPERATION

PARAMETER	UNIT	SPECIFICATION
Operation modes	-	Dead end / crossflow
Temperature	°C	1 - 40
pH	-	2 - 11
Filtrate flux @25°C *	L/m² h	45 - 180
Flow capacity**	m³/h	2 - 8
Feed water inlet pressure @ 25°C	bar	5
TMP	bar	0,4 - 2
Filtrate water SDI	-	≤ 2,5
Filtrate Water Turbidity*	NTU	≤ 0,1

(*), (**) : Depend on quality of feed water

C. CLEANING, DISINFECTION & PRESERVATIVE SOLUTION

PARAMETRE	UNIT	SPECIFICATION
CLEANING		
Max. bachwash pressure	bar	2,5
Max. air flowrate	Nm³/h	20
Chemically Enhanced Backwash (CEB)		
Sodium hypochlorite (NaOCl)	mg/l	1000
Sodium hydroxide (NaOH)	mg/l	500
Hydrogen peroxide (H_2O_2)	mg/l	100-500
Hydrochloric acid (HCl)	mg/l	1000
Citric acid	%	1-2
Oxalic acid	%	1-2
Cleaning in Place (CIP)		
Frequency	When the current TMP pressure is 0.9 bar higher than the first TMP Pressure.	
Operation duration	Circulation or Filling method, 2 hours	
Chemical cleaning solutions (up to pollutant)	0.1% NaOH + 0.2% NaOCl 0.2% HCl, 2% Citric acid, 2% Oxalic acid	
Cleaning flowrate per module	1-2 m³/h	
Preservative Solution	20% glycerol, 80% water, 1 g of Sodium metabisulfide per 100 g solution	

Important Warnings & Informations

• In order to prevent membrane deformation and to maintain membrane performance, please follow the instructions during start-up,

• During any operation mode, do not operate the module outside of the specified pressure values and special care should be taken to prevent to damage membranes,

• To obtain designed production capacity and designed water quality, operation parameters should be compatible with specifications,

• Please follow the instructions about draining of the preservative solution and flushing of the module. During th Important Warnings & Informations

• During shut-down, fill the module with preservative solution in order to avoid biological contamination in module,

Cleaning of Presarvative Solution

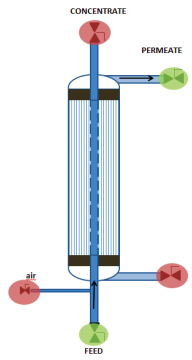
To prevent drying of membranes and avoid biological contamination, a preservative solution which is composed of water / glycerol / sodium metabisulfite is used. Flushing of preservative solution is done by following steps:

Filtration Module or Modules are filled slowly with raw water and the washing process is initiated as shown in figure (6). The duration of this process is minimum 4 hours and the washing water coming out of the module or modules are sent to drainage. The volume of water to be fed to the filter during this process should not be less than 12 cubic meters. The characterization of the water to be fed is mentioned in technical specifications. At the end of this process, the module or modules are free of the storage/protection solution in them and they are ready for filtration.

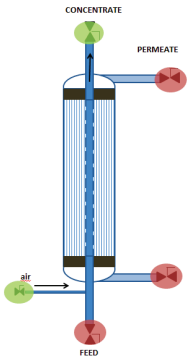
Cleaning - Disinfection

Before first start-up or in case of biological contamination, the module is chemically disinfected by operation (Describe under page 3 / Module Operation Modes). 100 ppm sodium hypochlorite solution is prepared in chemical solution vessel. The solution is circulated through the module approximately 10 minutes. The solutions should wait for 1 hour inside the module. After disinfection, filtration can start and drained until the filtrate line is dicharged from chlorine.

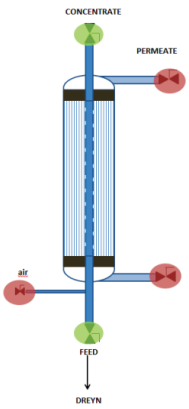
D. MODULE OPERATION MODES



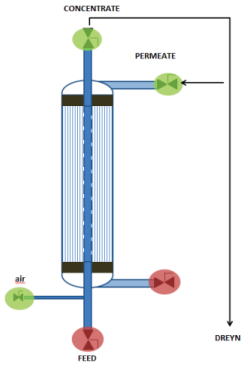
Production (1)



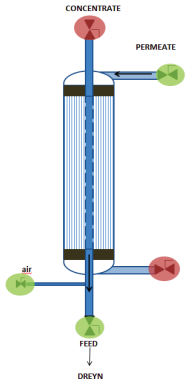
Air Scouring (2)



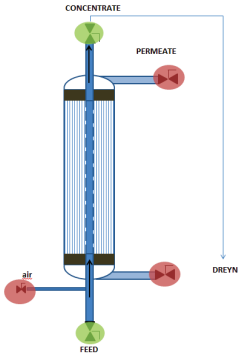
Drain (3)



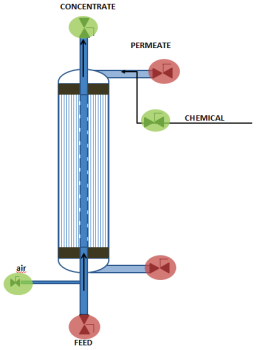
Backwash - Top Drain (4)



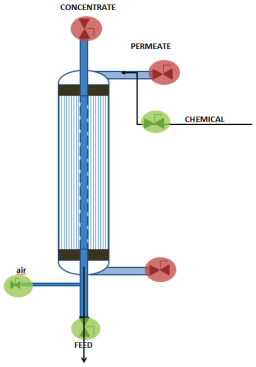
Backwash - Bottom Drain (5)



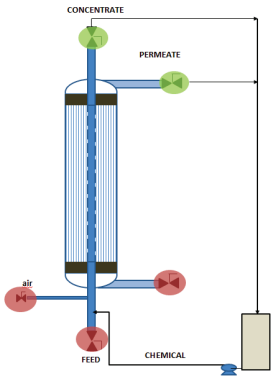
Filling (6)



Chemical Enhanced Washing Top Drain (7)



Chemical Enhanced Washing Bottom Drain (8)



Cleaning in Place (9)

1) Valve positions in production mode.

2) When module is fouled, air is fed from the feed water line. And, the particules on membrane surface are shaked out.

3) After air scouring, module is drained from the bottom.

4) The module is backwashed from filtrate water line and drained from top during air scouring.

5) Backwash procedure is same with the (4)th mode. But module is drained from bottom.

6) The module is drained with the flow from bottom to top in order to discharge air and suspended particules in the module.

7-8) Same procedure with (3)rd and (4)th modes. Instead of filtrate water, chemically enhanced cleaning solutions are used for backwash.

9) Depeding on fouling level of feed water, modules are subjected to CEB process monthly or once every three months. Chemical solution is either filled to the module and kept in module or is circulated through module by using a vessel and a pump up to 2 hours.

Open Closed