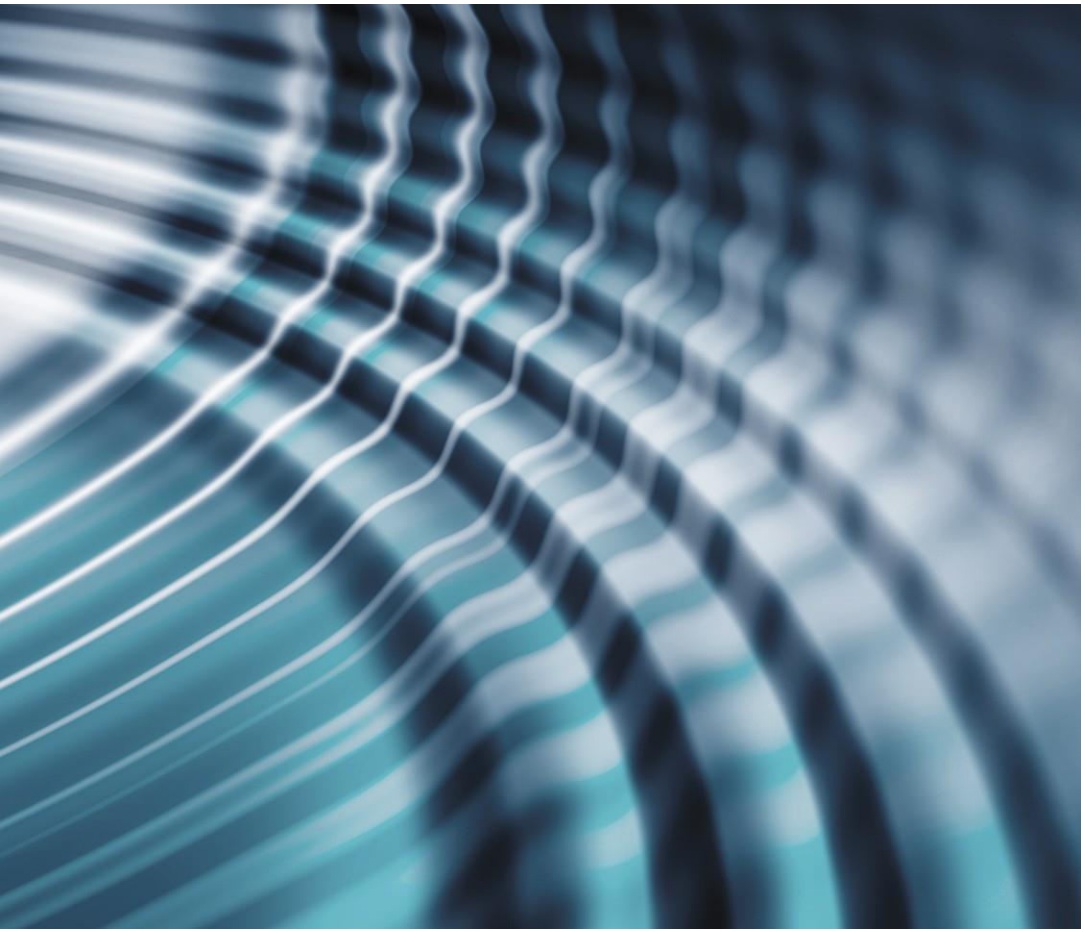
Pall Corporation

Polyspin®
Making Textiles Colourful

Better Lives. Better Planet.SM



Filtration of ETP Treated Water Success Stories

Polyspin Filtration (I) Pvt Ltd

Sales & Service Partner of Pall Water

Process Technologies Markets Served





Markets

- Refineries
- Oil & Gas
- Chemicals
- Power generation
- Mining / Metals
- Alternative Energy
- Drinking, Mobile & Industrial Water
- Mining
- Auto/In-plant
- Primary Metals
- Pulp & Paper
- OEMs (Mining, In-plant Turbines)

Focus Areas - Water

- Incoming water (River /Sea/Lake)
- Textile Effluent Water
- Boiler feed water
- Zero Liquid Discharge
- Cooling water Blow Down
- Reuse & Recycle
- Gasification
- Mining

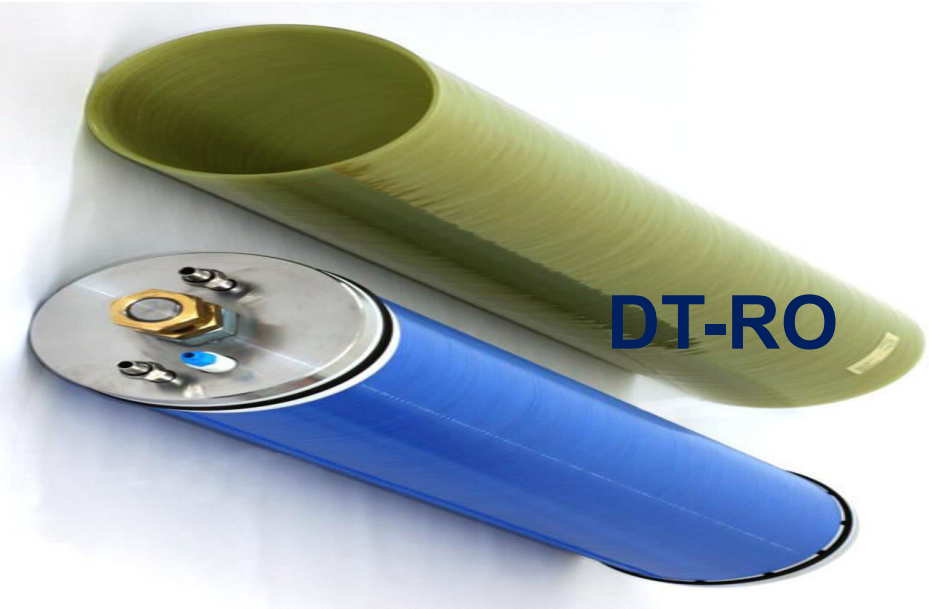
Pall Water Product Range

Cartridge Filters

Bag Filters

Cartridge Filter Housing

Bag Filter Housings



DT-RO

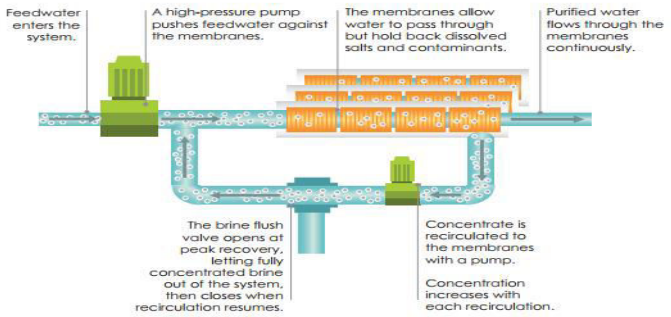
Microfiltration
&
Ultrafiltration

Pall Water Product Range – For ZLD (Brine Reduction)

Desalitech

FACT SHEET

Desalitech – The Performance Benchmark for Reverse Osmosis



RO reject filtration before Evaporator

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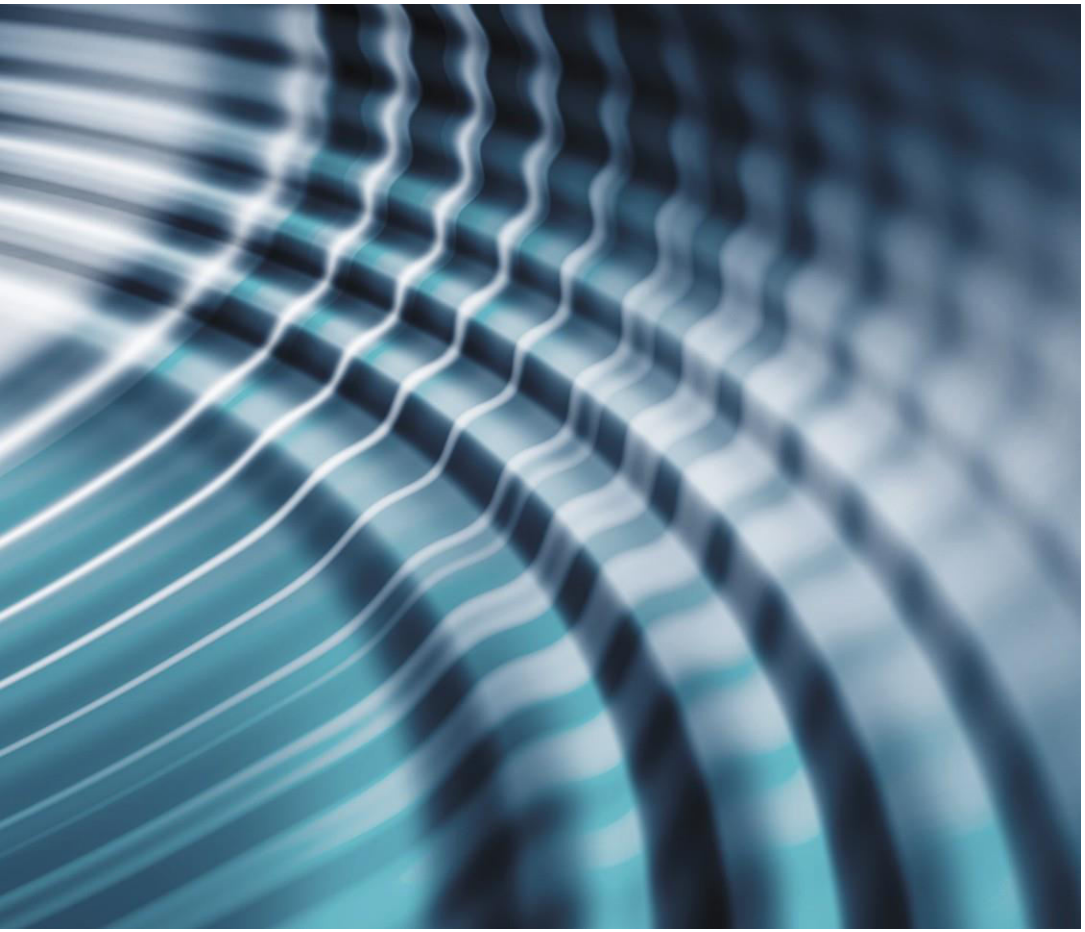
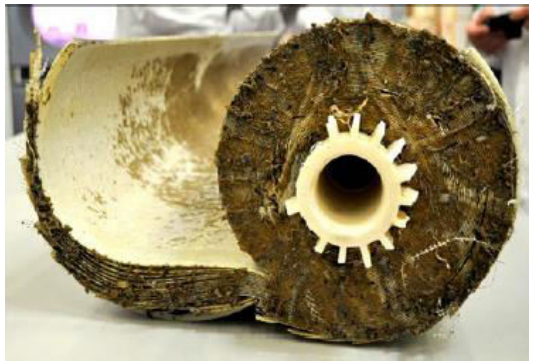
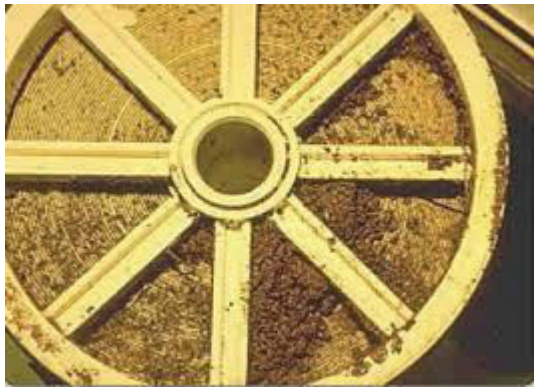


Success Stories on Filtration of ETP Treated Water for RO Pretreatment

Common Customer Concerns in ZLD





- RO Membrane frequent fouling
- RO Membrane Scaling
- Cartridge Filters Choking
- Less RO Recovery
- Less Membrane Life
- More Reject from RO
- High Load on Evaporator
- High Chemical consumption

Solution

You need Good RO Feed

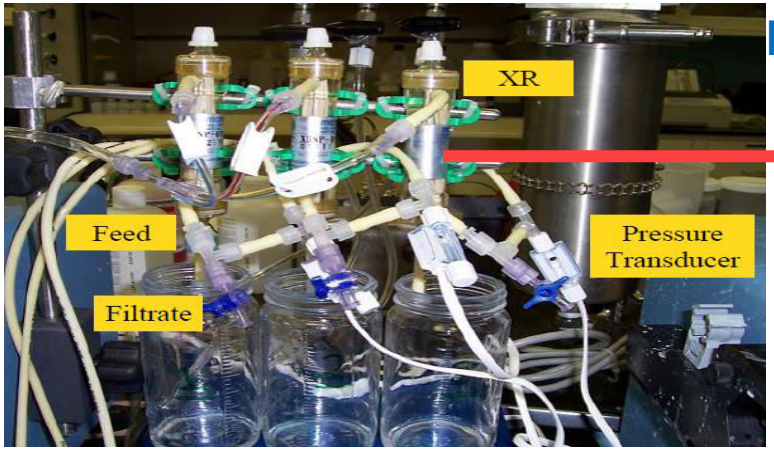
How to achieve Good RO Feed

- **Good RO Feed can not be achieved through PSF/DMF and ACFs**
- **It can only be achieved by Installing Membrane System**
- **To eliminate the TSS load going to RO**
- **More importantly choosing the correct membrane system**
- **We have done several trials & several successful installations to find out the perfect membrane/system.**

R&D, Trials and Piloting

Research and Modelling Unit

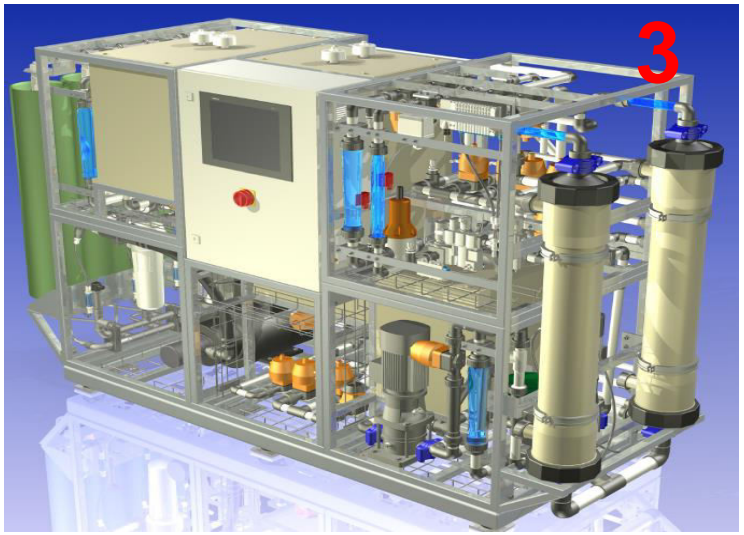
Microza Module



Membrane Performance Index Test

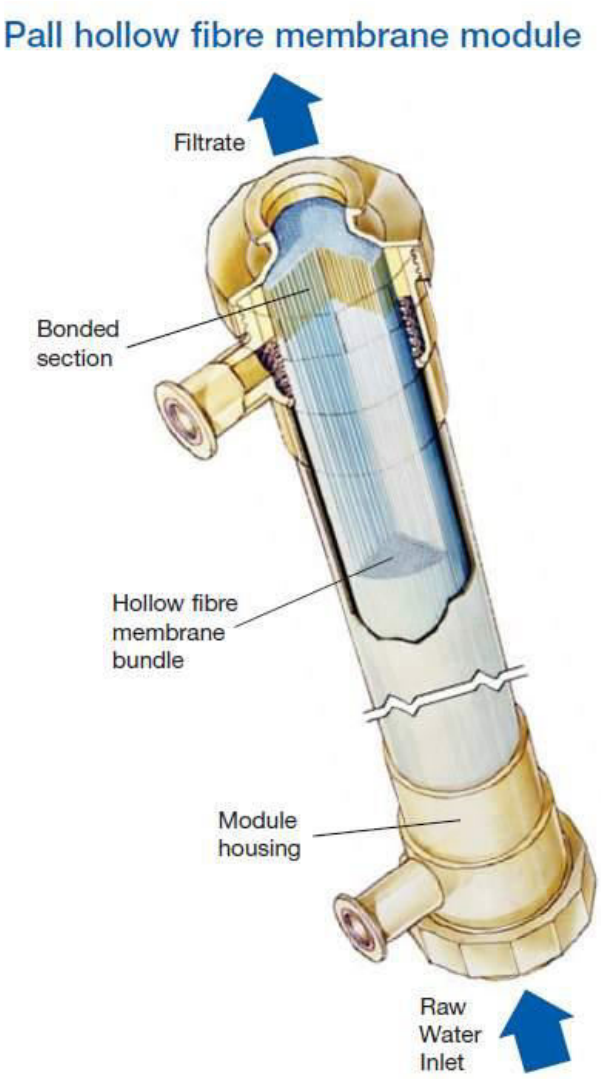
Pencil Module

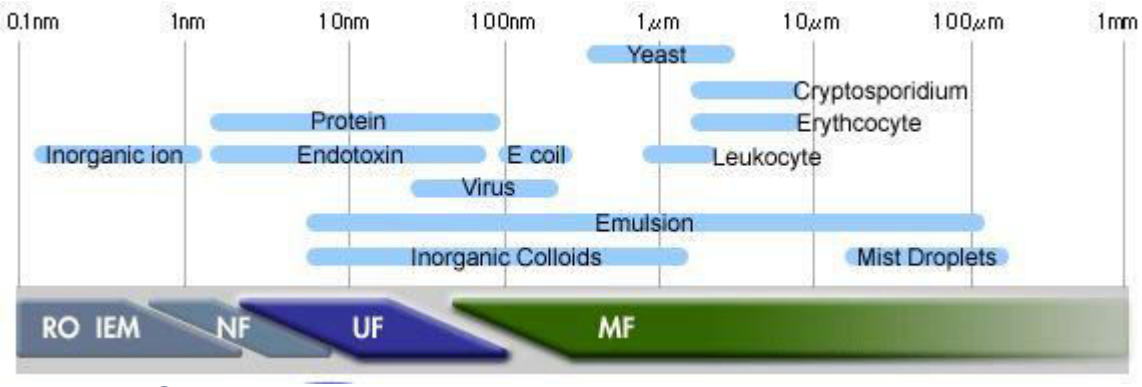
R&D, Trials and Piloting



1. Pall Aria MF Pilot
2. MF-RO Pilot
3. MF-RO-DTRO Pilot

What is PVDF Membranes?





Separation Techniques based on Micron sizes

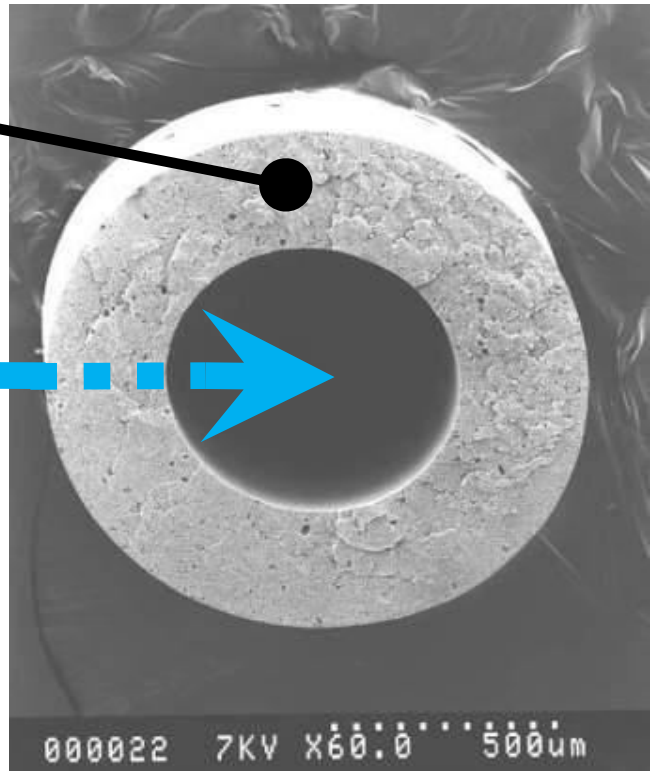
- **0.1 & 0.01 µ cross flow hollow fibers are configured in a Module.**
- **Approximately 6000 fibers are present in a Module.**

Pall Membranes 0.1 & 0.01 Micron

Homogenous
fiber material
made of HC- PVDF

Outside-Inside
flow

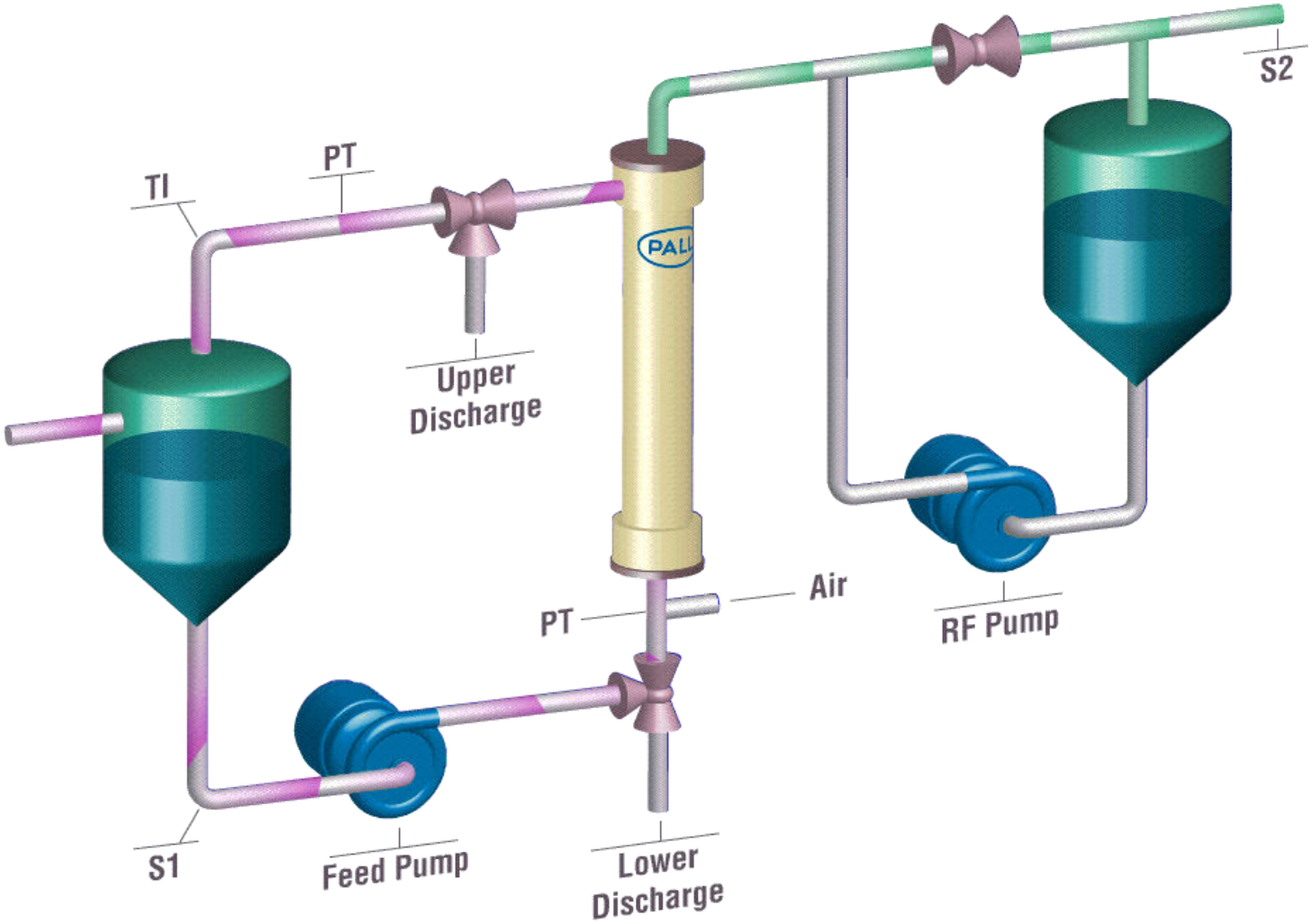
Chlorine resistant
(3.6 Million ppm hours
exposure)



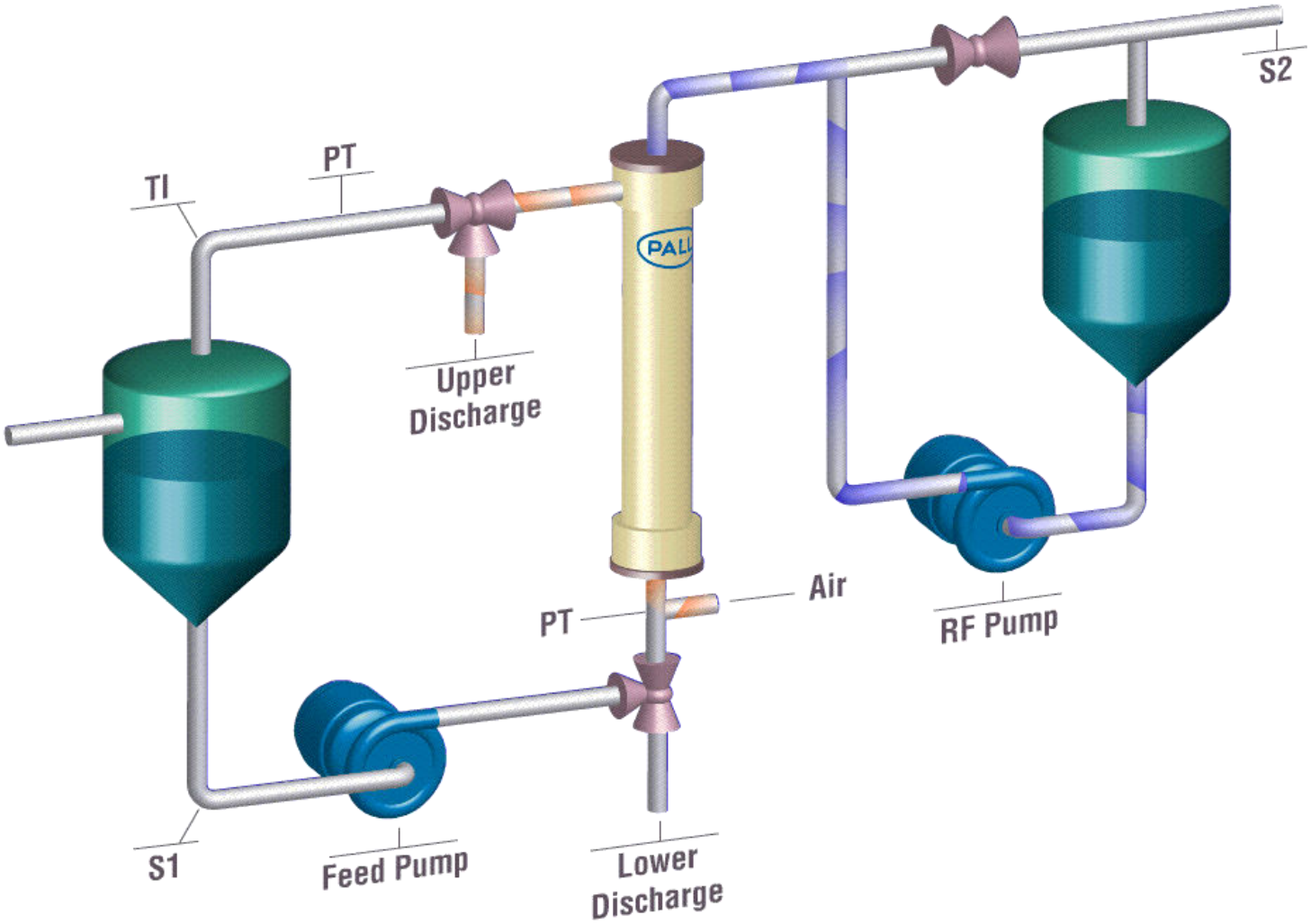
Homogenous material = high mechanical resistance

High Crystalline Polyvinylidene fluoride (PVDF) = high chemical resistance

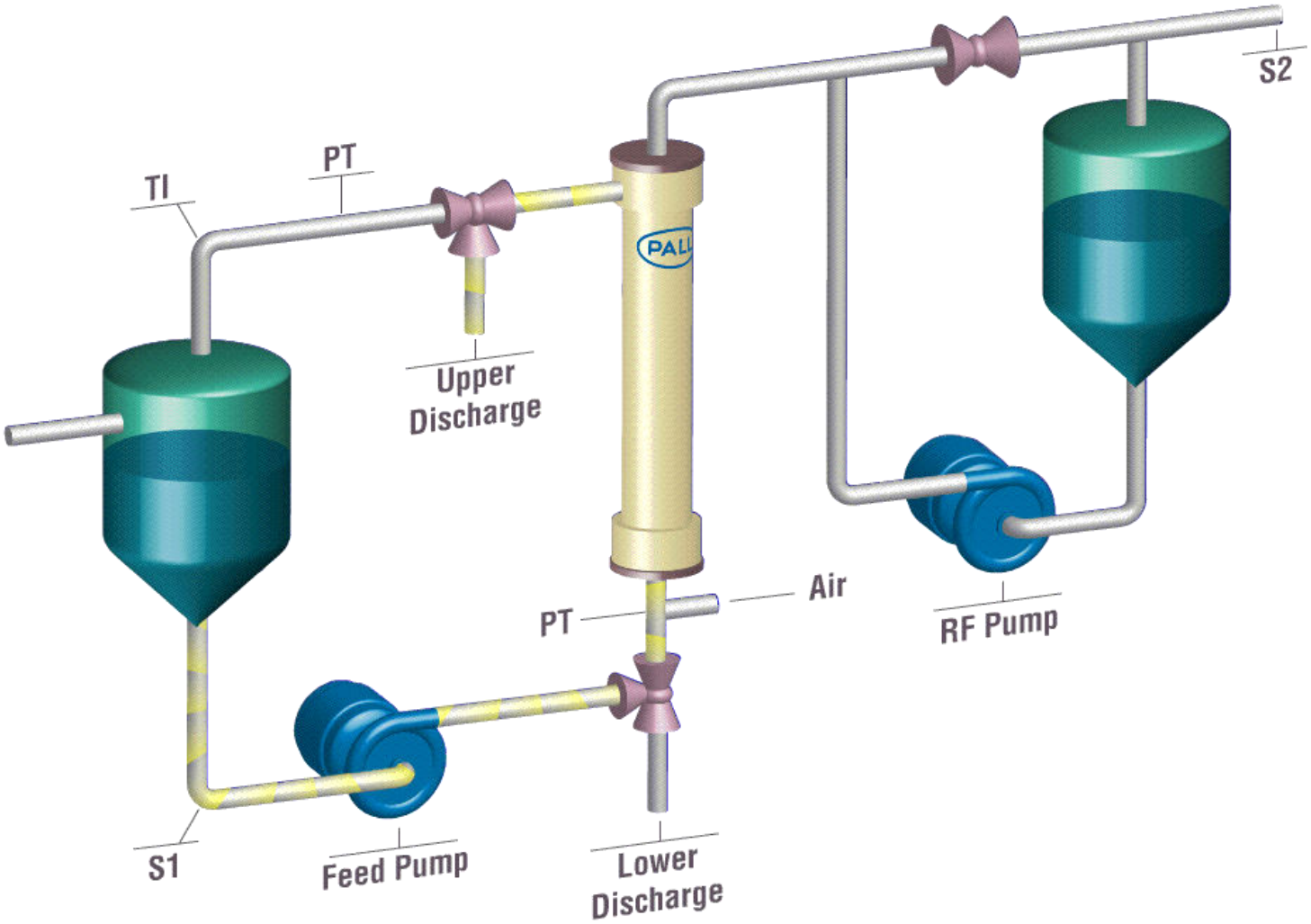
Filtration Mode – Up Flow & Outside to In



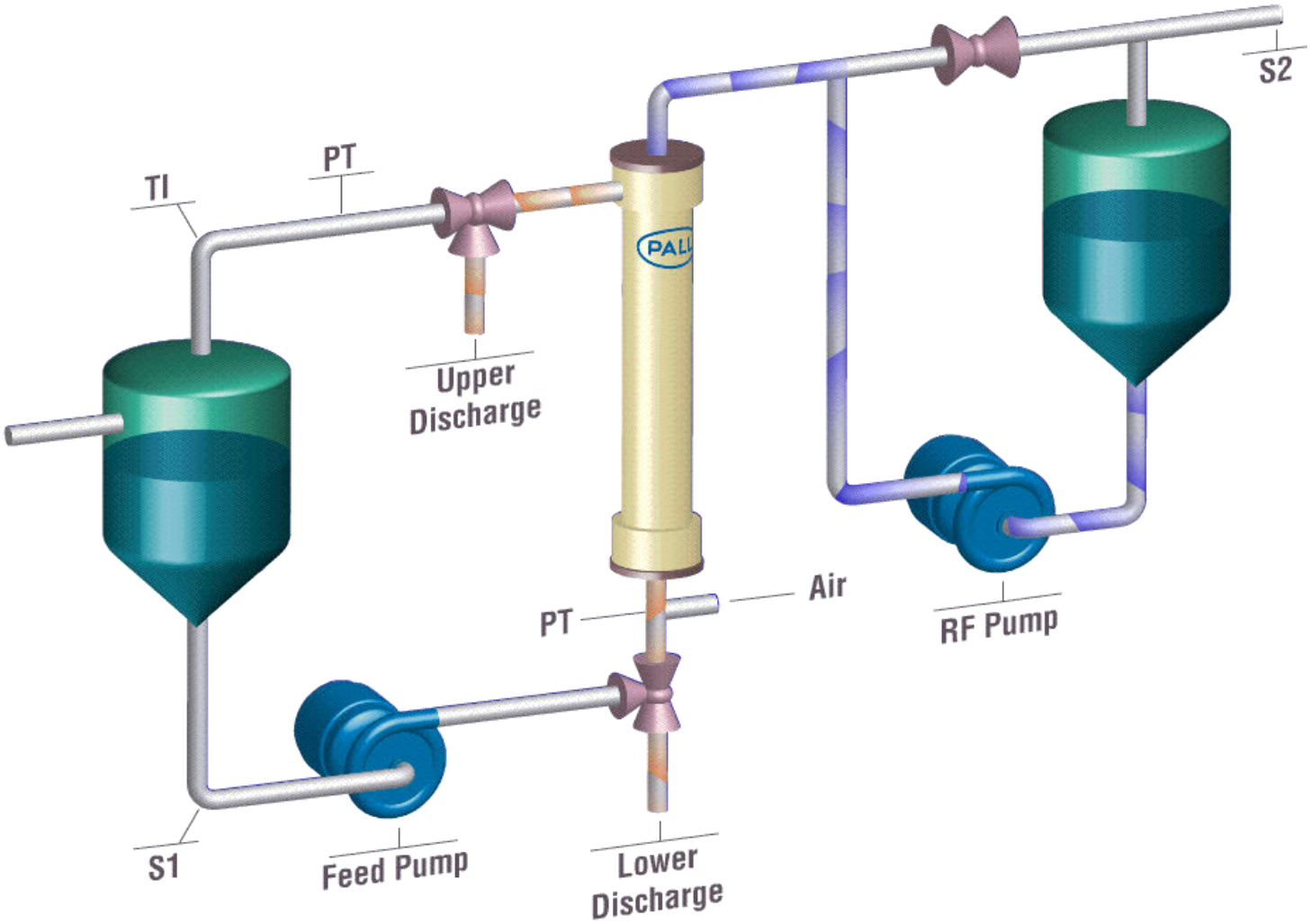
Air Scrub Mode



Forward Flush Mode



Reverse Flush Mode



Enhanced Flux Maintenance/CIP

EFM →

Chemical Cleaning

once in a day or Two

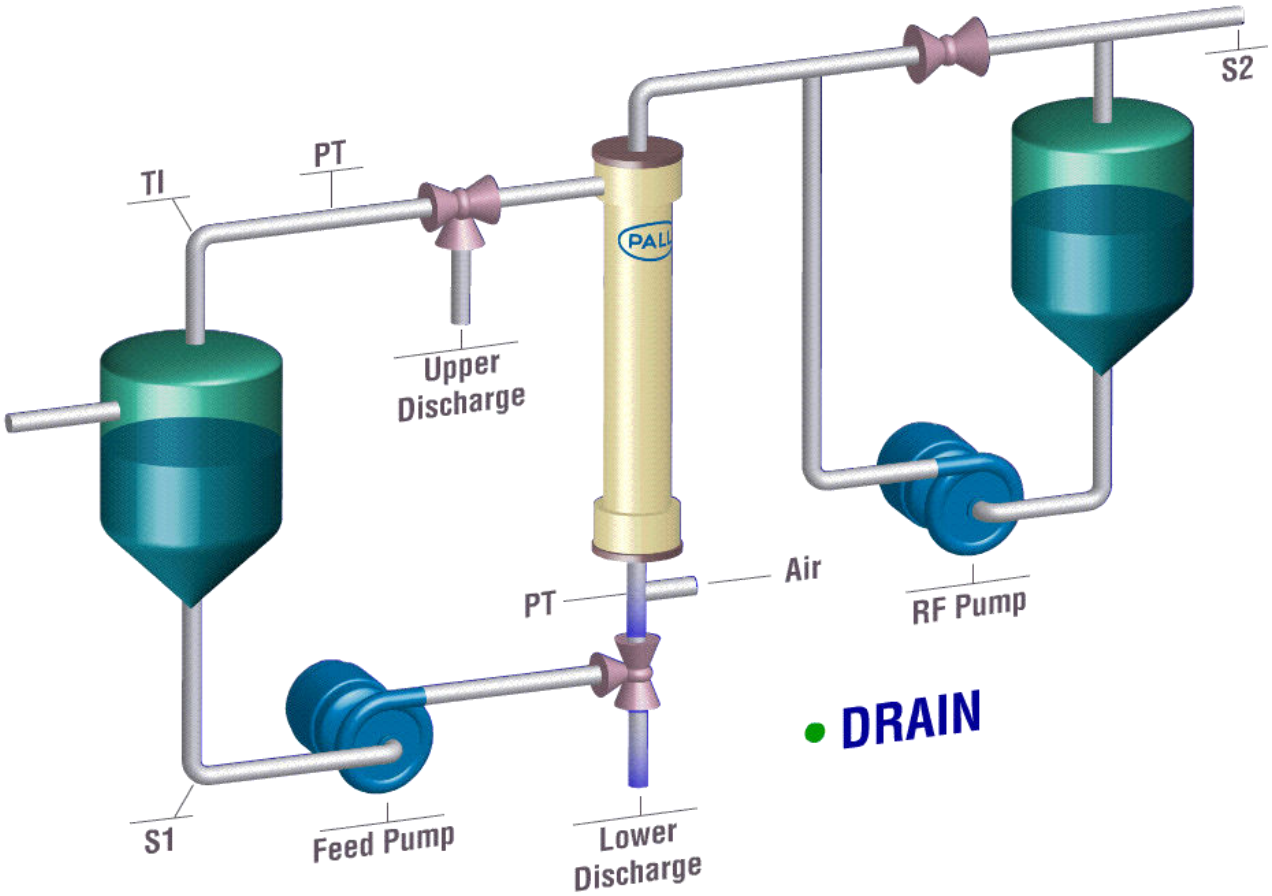
With Caustic + Hypo

CIP →

Chemical Cleaning once in 15 days or 30 days

With Caustic + Hypo

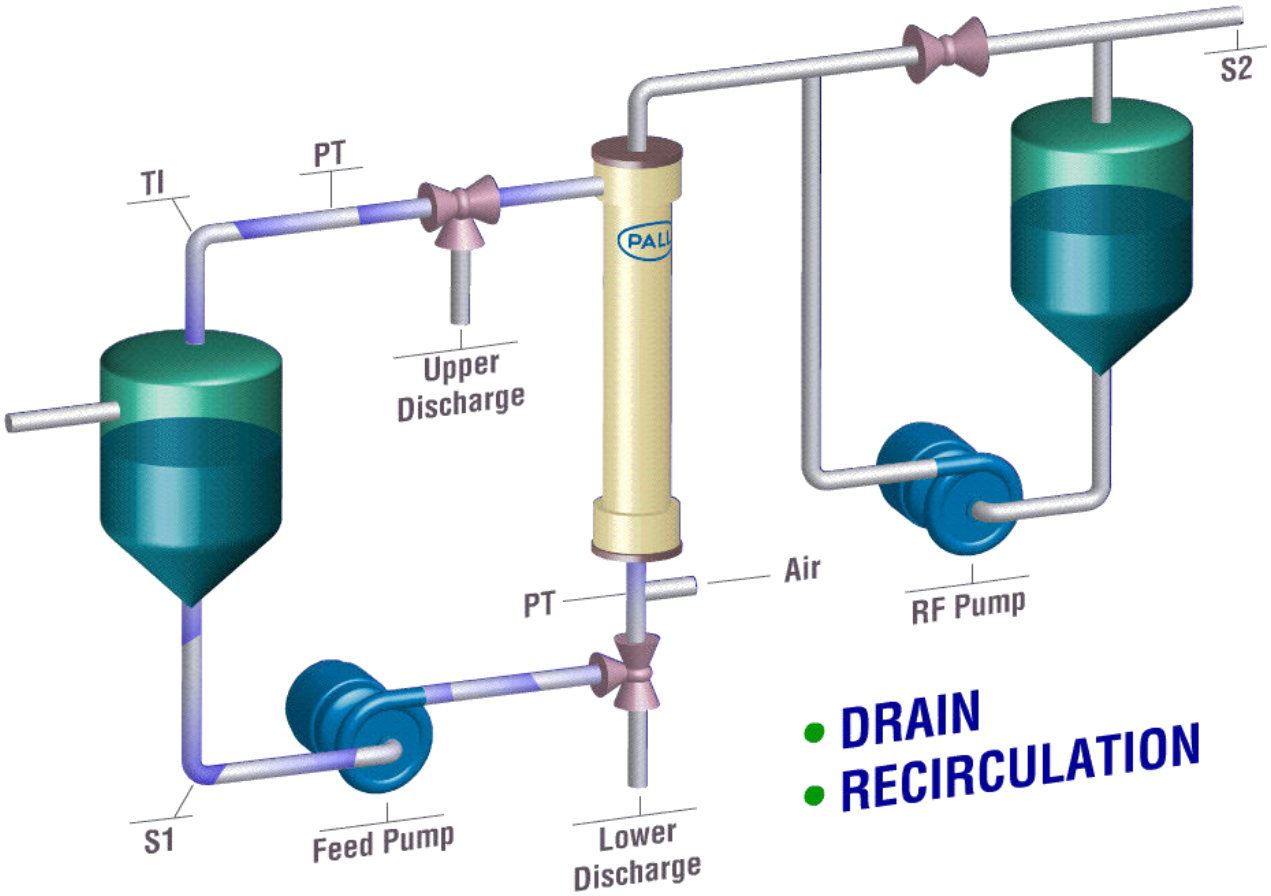
& then with Citric Acid



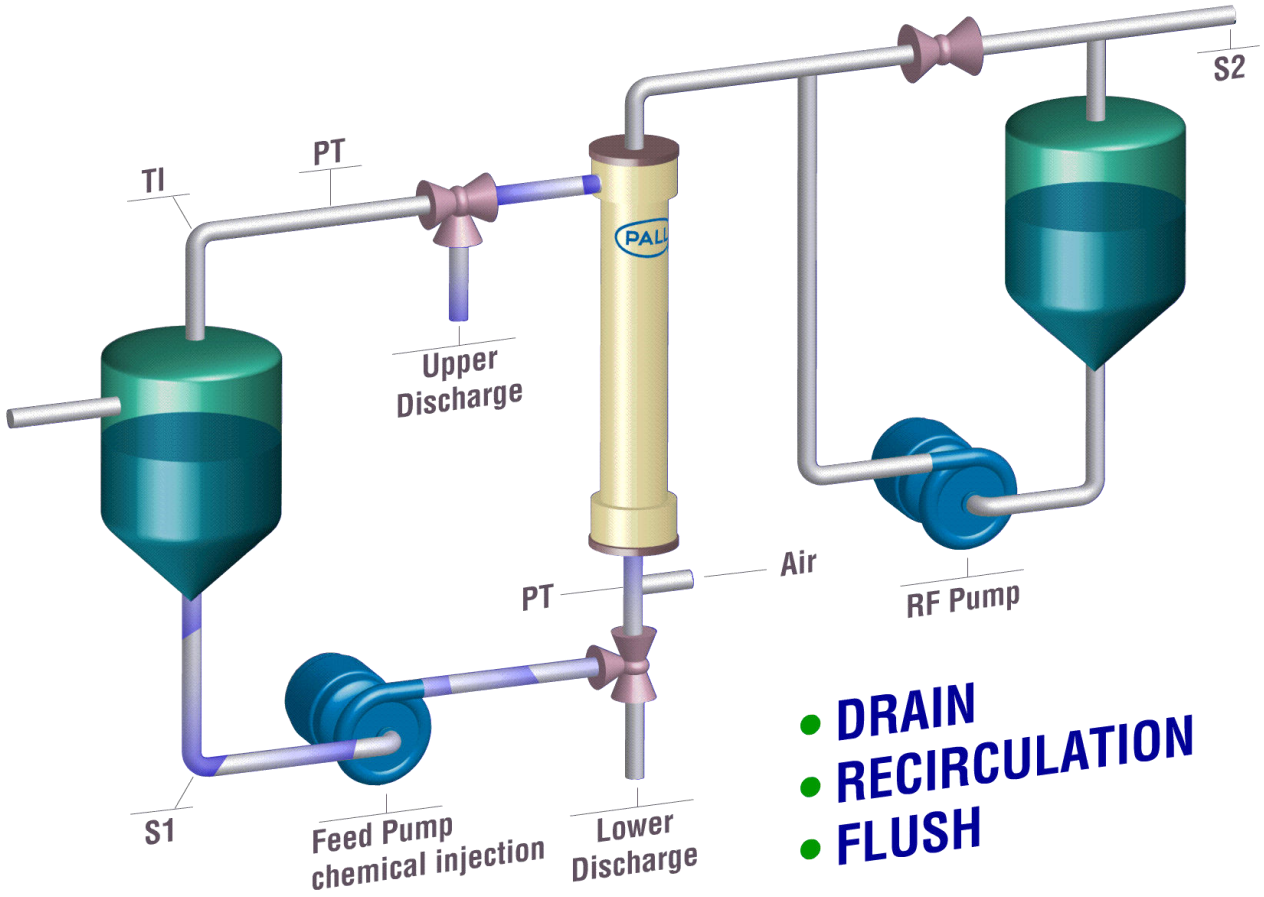
Enhanced Flux Maintenance/CIP

Highly Robust for Chemicals

Can take Chlorine level up to 36000 ppm



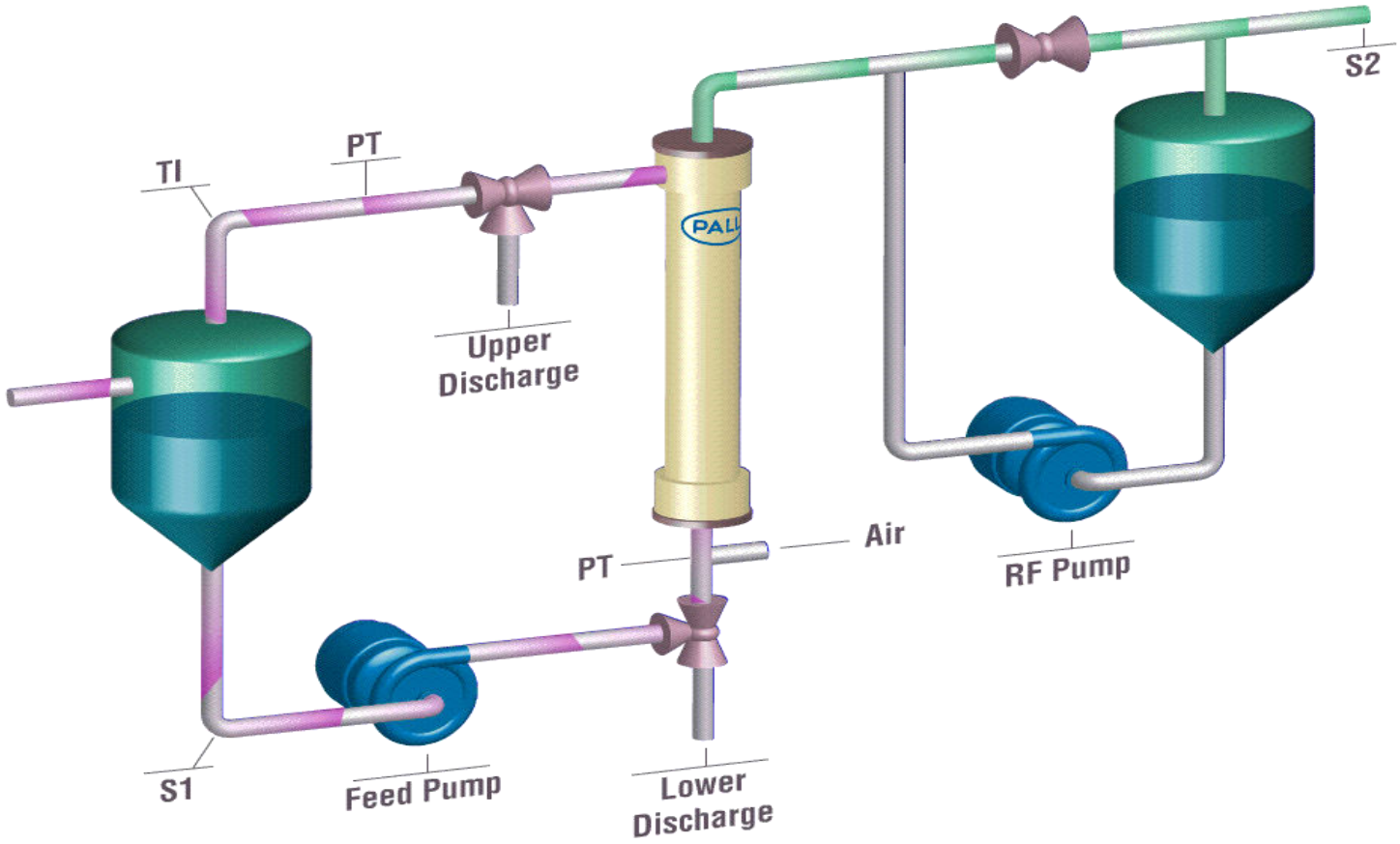
Enhanced Flux Maintenance/CIP



- DRAIN
- RECIRCULATION
- FLUSH

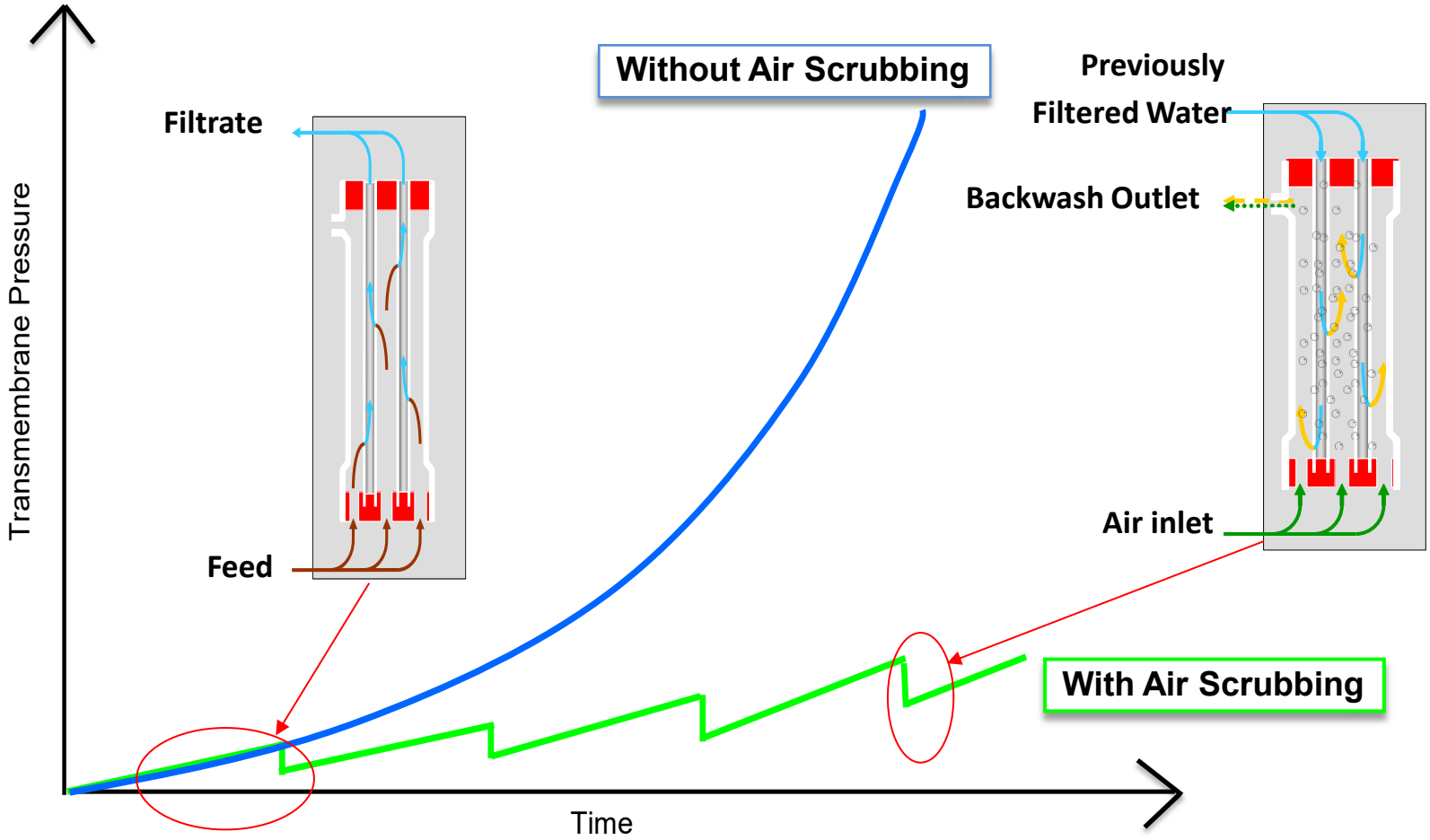
Dead End Filtration Mode & Excess Feed Recirculation

- **Standard Operation Mode: Dead End Filtration**
- **Excess Recirculation of Feed Water through Reject line is provided when Solid Load is higher**

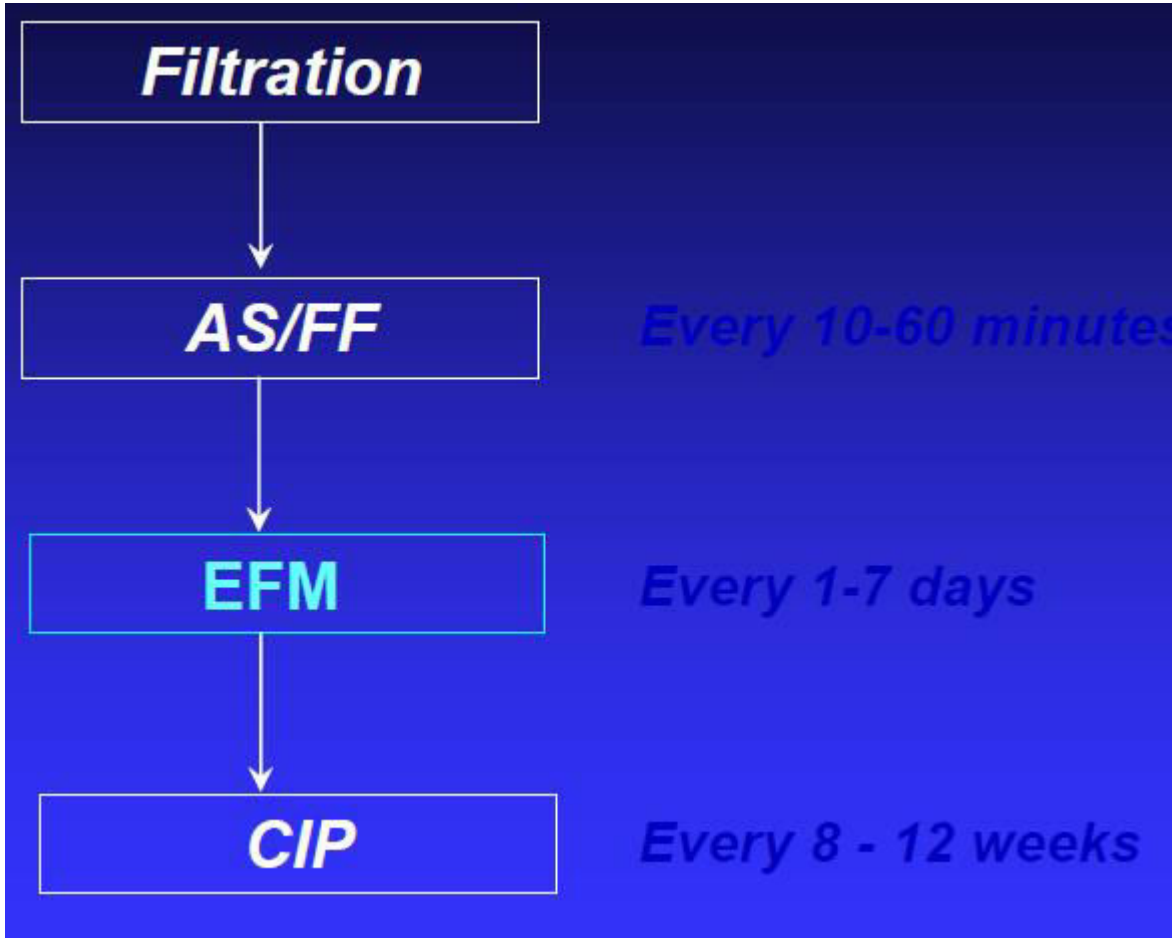


TMP Profile with ASRF

- **Physical Regeneration of Membrane by Air Scrubbing and Reverse Filtration**
- **It helps to retain the TMP for longer period, hence increases Recovery**



TMP Fouling Control



Advantages of Aria System

- Strong chemical resistance of membrane
- Can apply strong chemical cleaning condition
- MICROZA membrane's chemical cleaning condition up to

  5,000 ppm of Chlorine, 4% of NaOH

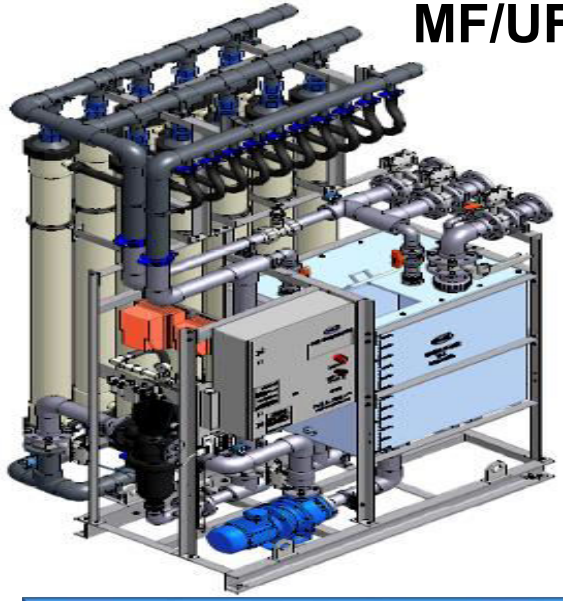
  10% of HCl, H2SO4, Citric Acid, 1% H2O2

Advantages of Pall Aria System

- Membrane Life more than 5-7 years
- Handles Turbidity upto 300 NTU
- Handles TSS Spikes, Shock loads
- Handles ETP/Clarifier Upsets
- Increased RO Recovery
- Increased RO Life
- Reduction in Chemical consumption

MF-RO based Technological Platform

MF/UF



RO

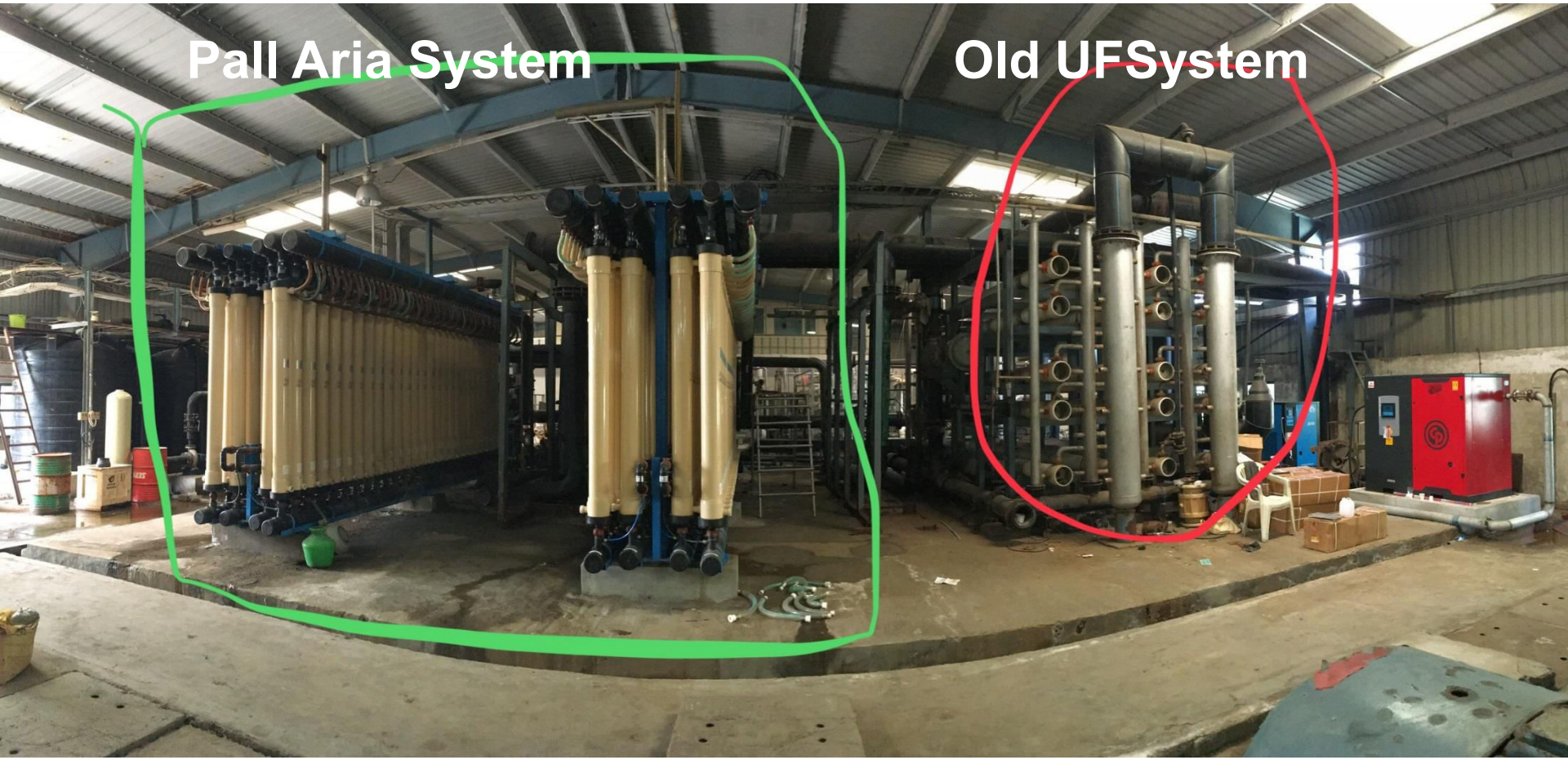
IMPRO-FAST

Micro Filtration Reverse Osmosis (MFRO) Freshwater Generator produces safe shipboard drinking water from a variety of water, including rivers and harbors with high levels of contamination.

Large Scale Successful Installations

RPCL: 16 Racks of 100 Module Each

Large Scale Successful Installations



Veerapandi CETP: 2 Racks of 108 Module Each

Angeripalayam CETP: 2 Racks of 108 Modules

Small Scale Successful Installations

1. Rohini Textiles
2. Best Colors
3. Free-look Fashions
4. Bannari Amman Spinning Mills
5. Naveena Printing Mills
6. SSM Dyeing
7. Danavarshini Textiles

Support on ZLD

- ETP Upsets controlled by PVDF MF/UF
- Reduction in RO Reject
- Good quality of RO Reject
- RO Reject filtration for Evaporator de-scaling
- Support on Sludge De-watering design
- Support in selection of Decanters and Evaporators

Contact Us:

admin@polyspin.co.in

9718719090 / 9810010479

www.polyspin.co.in

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References

Customer Name	Company Platform	Plant Location	Flowrate (KLPD)	Application	Commissioning Date
Novozymes	Pharma Company	Bengaluru, Karnataka	400	Surface Water Filtration	2010 - June
Rohini Textiles	Textile Company, Dyeing Unit	SIPCOT, Perandurai,Erode, Tamilnadu	3,500	Textile Effluent ETP treated water	2012 - July
Wolkswagen	Automobile Company	Chakan MIDC, Pune, Maharashtra	200	Cooling Tower Water Filtration	2013 - January
Raymond UCO Denim	Textile Company, Denim Unit	MIDC, Yavatmal, Maharashtra	200	Surface Water Filtration	2013 - February
Best Colors	Textile Company, Dyeing Unit	SIPCOT, Perandurai,Erode, Tamilnadu	600	Textile Effluent ETP treated water	2013 - December
Freelook Fashion	Textile Company, Dyeing Unit	SIPCOT, Perandurai,Erode, Tamilnadu	600	Textile Effluent ETP treated water	2015 - April
Manipal Hospital	Hospital	Bengaluru, Karnataka	400	POE Water	2015 - May
Kingfisher UB Mysore	Brewery Company	Nanjangud, Mysore, Karnataka	1000	Surface Water Filtration	2015 - May
Reliance Jamnagar	Oil & Gas	Gagva, Jamnagar, Gujarat	150	Surface Water Filtration	2015 - September
Bannari Aamman	Textile Company, Dyeing Unit	SIPCOT, Perandurai,Erode, Tamilnadu	1000	Textile Effluent ETP treated water	2015 - December
RPCL, L&T	Thermal Power Plant	Raichur, Karnataka	90,000	Surface Water Filtration	2016 - February
Naveena Textiles	Printing Mill	Perandurai,Erode, Tamilnadu	350	Textile Effluent ETP treated water	2016- April
Veerapandi CETP	Common Effluent Treatment Plant	Tirupur, Tamilnadu	4,000	Textile Effluent ETP treated water	2017- February
Reliance Jamnagar	Sea Water Filtration	Gagva, Jamnagar, Gujarat	2,500	Sea Water Filtration	2017- February
SSM Dyeing	Textile Company, Dyeing Unit	Tirupur, Tamilnadu	450	Textile Effluent ETP treated water	2017- July
Veerapandi CETP 2nd Rack	Common Effluent Treatment Plant	Tirupur, Tamilnadu	4,000	Textile Effluent ETP treated water	2017- September
Angeripalayam CETP	Common Effluent Treatment Plant	Tirupur, Tamilnadu	4,000	Textile Effluent ETP treated water	2018 - March
Danavarshini Exports	Textile Company, Dyeing Unit	Perandurai,Erode, Tamilnadu	600	Textile Effluent ETP treated water	2018 - March