



Integrated National Supply Chain Company
Panca Kusuma Group



COMPANY OVERVIEW



**Established since
1973**



Branch:

- Jakarta
- Cikarang
- Bandung
- Semarang
- Surabaya



Product:

General Chemicals
Specialty Chemicals



Supported by Global Principal



LANXESS

HYDRANAUTICS
Nitto Group Company



OUR CAPABILITIES

BOILER

Antiscalant | Oxygen Scavenger |
Alkalinity Builder



COOLING TOWER

Antiscalant | Corrosion Inhibitor |
Biocide | Algaecide



ION EXCHANGE

Anion Resin | Cation Resin

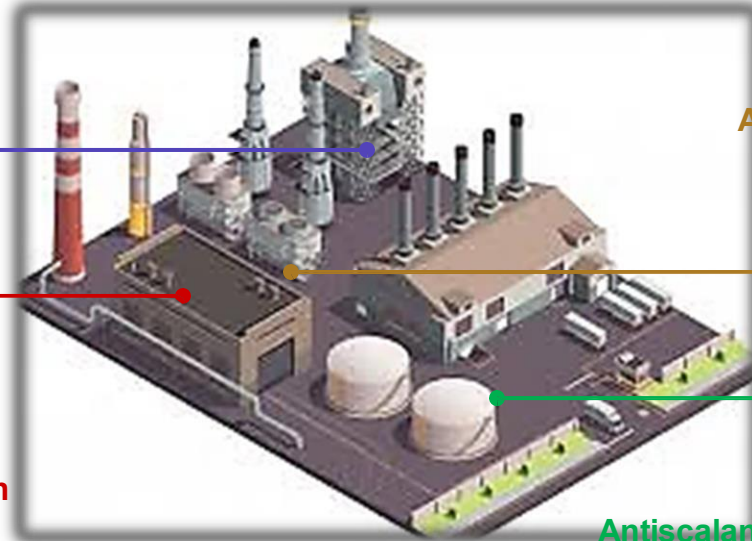
LANXESS

REVERSE OSMOSIS

Antiscalant | Membrane Cleaner | Membrane



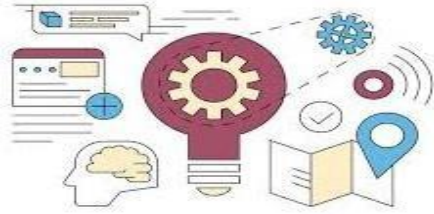
HYDRANAUTICS
Nitto Group Company



PancaKusuma
commercial

SPECIALTY CHEMICALS

CRESTOPRO & CRESTOGUARD ADVANTAGES



New Technology

Easy to Use



Environmental Friendly

High Efficiency



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SPECIALTY CHEMICALS

ION EXCHANGE

(LEWATIT)

ION EXCHANGE RESIN



LEWATIT® MonoPlus S 108

Strongly Acidic, Cation Exchanger Resin

LEWATIT® MonoPlus M 500

Strongly Basic, Anion Exchanger Resin

LEWATIT® MonoPlus SP 112

Macroporous Cation Exchanger Resin

LEWATIT® MonoPlus MP 500

Macroporous Anion Exchanger Resin

etc.

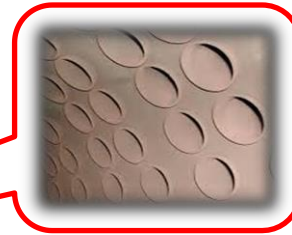
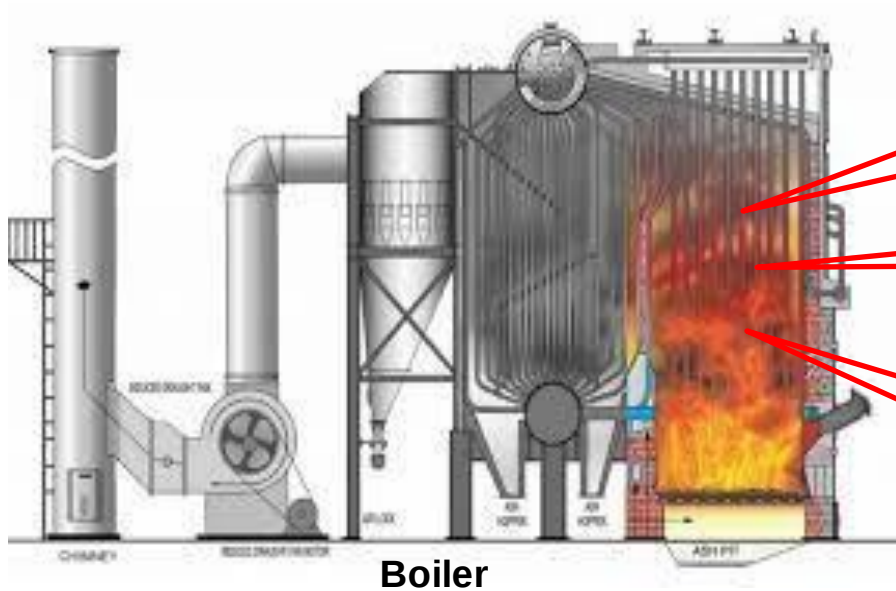


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IMPROVE BOILER EFFICIENCY

(CRESTOPRO B-Series)

BOILER TREATMENT PROBLEM



Scaling



Corrosion



Carry Over

BOILER CHEMICAL TREATMENT

CRESTOPRO B-SERIES:

- a. Menggunakan **teknologi *polymeric- low phosphate base treatment*** dalam **mencegah terbentuknya kerak (Kalsium karbonat, kalsium fosfat & silikat)**, terjadinya **korosi**, dan *carry over* pada sistem *boiler*.
- b. Dapat bekerja pada *range* pH yang luas
- c. Menghasilkan transfer panas maksimal.
- d. Mampu meningkatkan produktifitas dari 20 – 40% dan mempertahankannya
- e. Mampu mengefisiensikan operasional dan perbaikan dari 20 – 40%
- f. Menghasilkan transfer panas yang maksimal
- g. **Tersertifikasi HALAL**

Bahan Kimia	Fungsi
CrestoPro B894	Anti-Scale
CrestoPro B895	Alkalinity Builder
CrestoPro B210	Oxygen Scavenger

OUR EXPERIENCE

Boiler Treatment Program



PG. KEBON AGUNG
KABUPATEN MALANG

Bahan kimia yang digunakan:

- CrestoPro B894, pencegah pembentukan kerak akibat mineral terkandung dalam air umpan.
- CrestoPro B895, pengontrol alkalinity air untuk mempertahankan pH air sistem.
- CrestoPro B210, penangkap oksigen untuk menghindari terjadinya korosi.

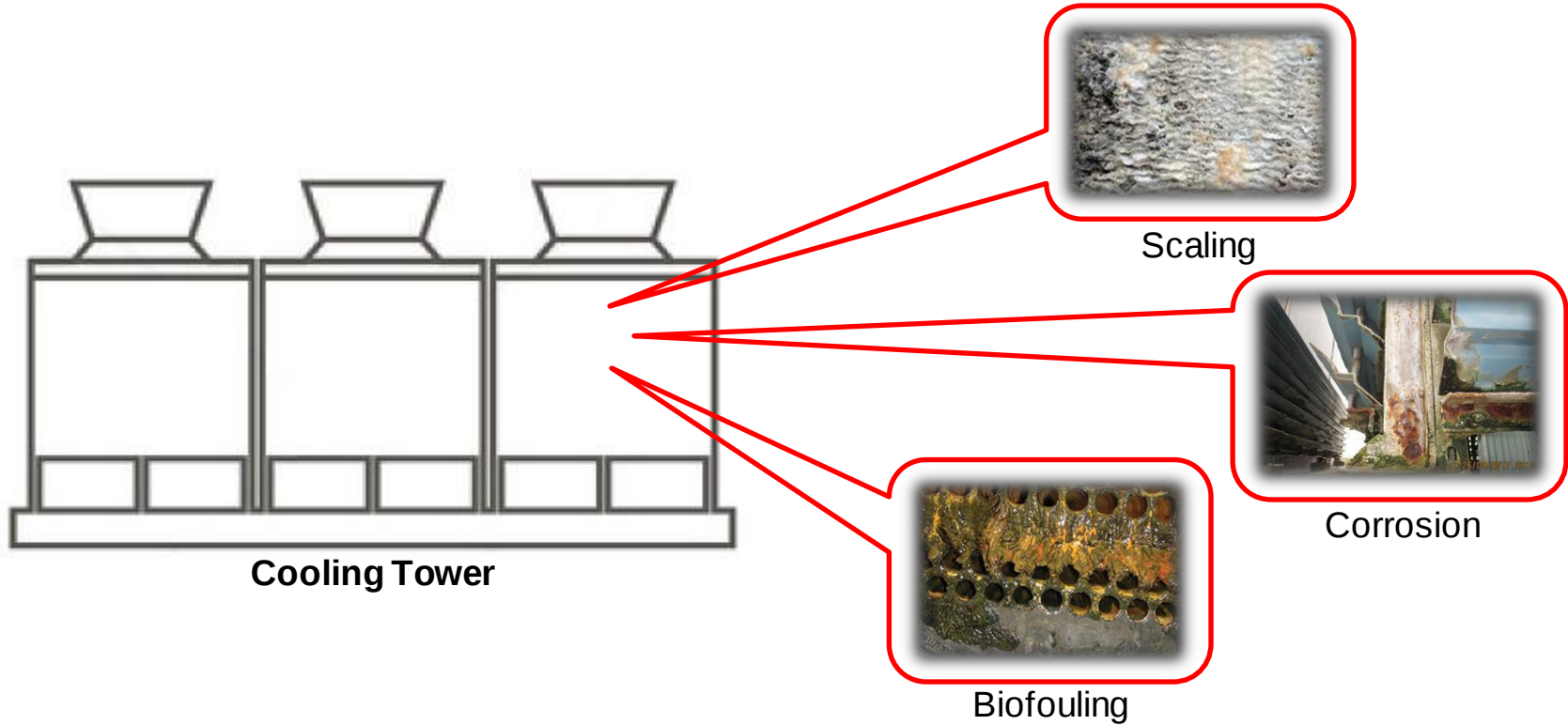
Hasil aplikasi:

- Kualitas air sistem masuk ke dalam standar
- Peningkatan efisiensi boiler sebesar 20%
- Mengefisienkan biaya treatment sampai dengan 30%

IMPROVE COOLING SYSTEM EFFICIENCY

(CRESTOPRO C-Series)

COOLING WATER TREATMENT PROBLEM



COOLING WATER CHEMICAL TREATMENT

CRESTOPRO C-SERIES:

- a. Menggunakan teknologi ***polymeric base treatment*** yang ramah lingkungan
- b. Mampu **mencegah terbentuknya kerak** mulai dari kerak karbonat, sulfat, *flouride* dan silikat, serta **korosi**
- c. Efektif dalam **mengontrol pertumbuhan lumut dan mikrobiologi** (lendir, jamur, atau masalah mikrobiologi lainnya).
- d. **Tersertifikasi NSF & HALAL.**
- e. Mampu meningkatkan produktivitas dari 20 – 40% dan mempertahankannya
- f. Mampu mengefesiensikan biaya operasional dan perbaikan 20 – 40%
- g. Menghasilkan transfer panas maksimal.

Bahan Kimia	Fungsi
CrestoGuard 402	Scale & corrosion inhibitor
CrestoGuard 464	Scale inhibitor
CrestoGuard 168	Non-Oxidizing Biocide
CrestoPro C140	Algaecide

OUR EXPERIENCE

Cooling Water Treatment Program



Bahan kimia yang digunakan:

- CrestoPro C140, pencegah pertumbuhan lumut yang tidak terkontrol dalam sistem
- CrestoGuard 464, pencegah pembentukan kerak akibat mineral yang terkandung dalam sistem menara pendingin.

Hasil aplikasi:

- Pertumbuhan lumut tidak terjadi selama aplikasi
- Efisiensi sistem menara pendingin meningkat
- Waktu operasional sistem pendingin meningkat dengan pesat.
- Biaya perbaikan menurun.

Reverse Osmosis

(CRESTOPRO R-Series)

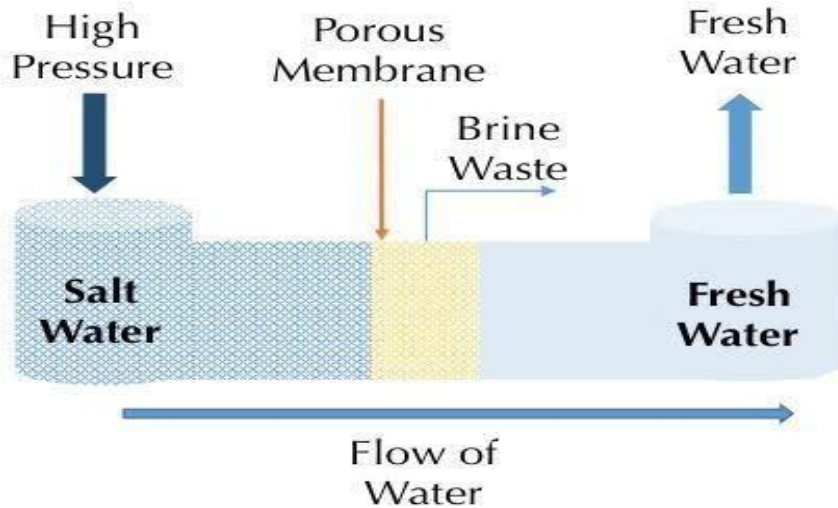
CrestoPro R-Series

CrestoPro R-Series Product Portfolio:

1. CrestoPro R490, antiscalant chemical to inhibit carbonate and sulphate scale formation
2. CrestoPro R494, antiscalant chemical to inhibit silicate, carbonate, sulphate and fluoride scale formation
3. CrestoPro R800, acid cleaner to remove inorganic fouling at membrane surface
4. CrestoPro R820, alkaline cleaner to remove organic fouling at membrane surface
5. CrestoPro R145, non-oxidizing biocide



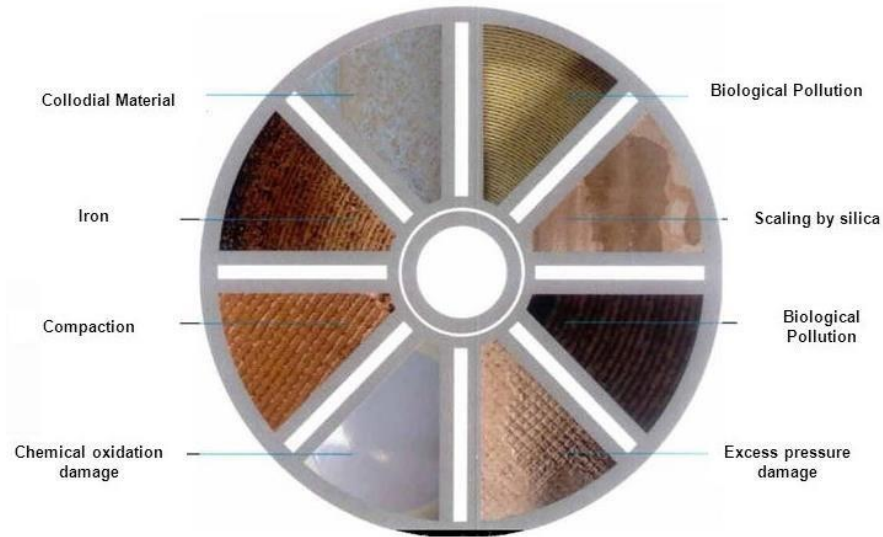
REVERSE OSMOSIS



Reverse Osmosis (RO) is a filter media that has a semi-permeable membrane with 0.0001 micron pores that can separate water from unwanted components so that water with a high level of purity will be obtained (William, 2003).

At the molecular level our product (CrestoPro R-Series) are larger and long chained and thus will be in the reject Water.

REVERSE OSMOSIS PROBLEM



Types of fouling that clog the RO membrane:

1. Inorganic Materials: silica, hardness, silt, iron, etc.
2. Organic Material: Slime, Algae, etc.

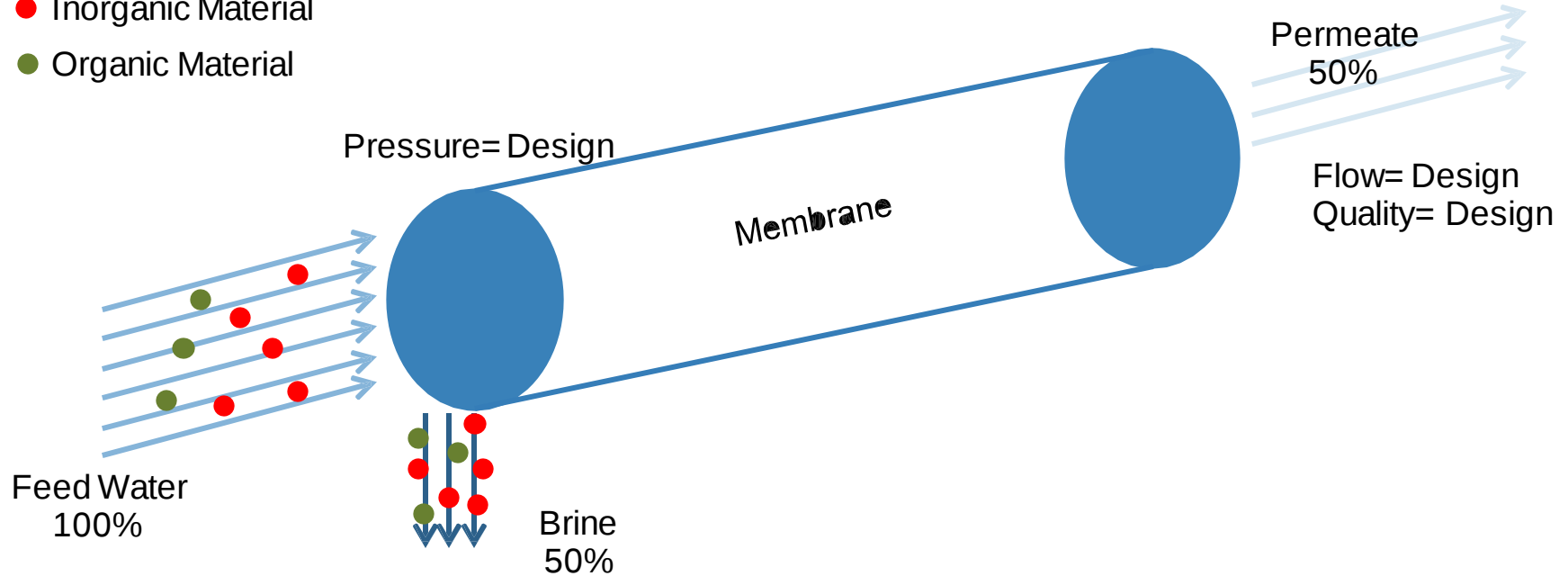
The main problem with reverse osmosis is the formation of fouling which clogs the membrane



REVERSE OSMOSIS WITHOUT ANTISCALANT (CrestoPro R-Series)

● Inorganic Material

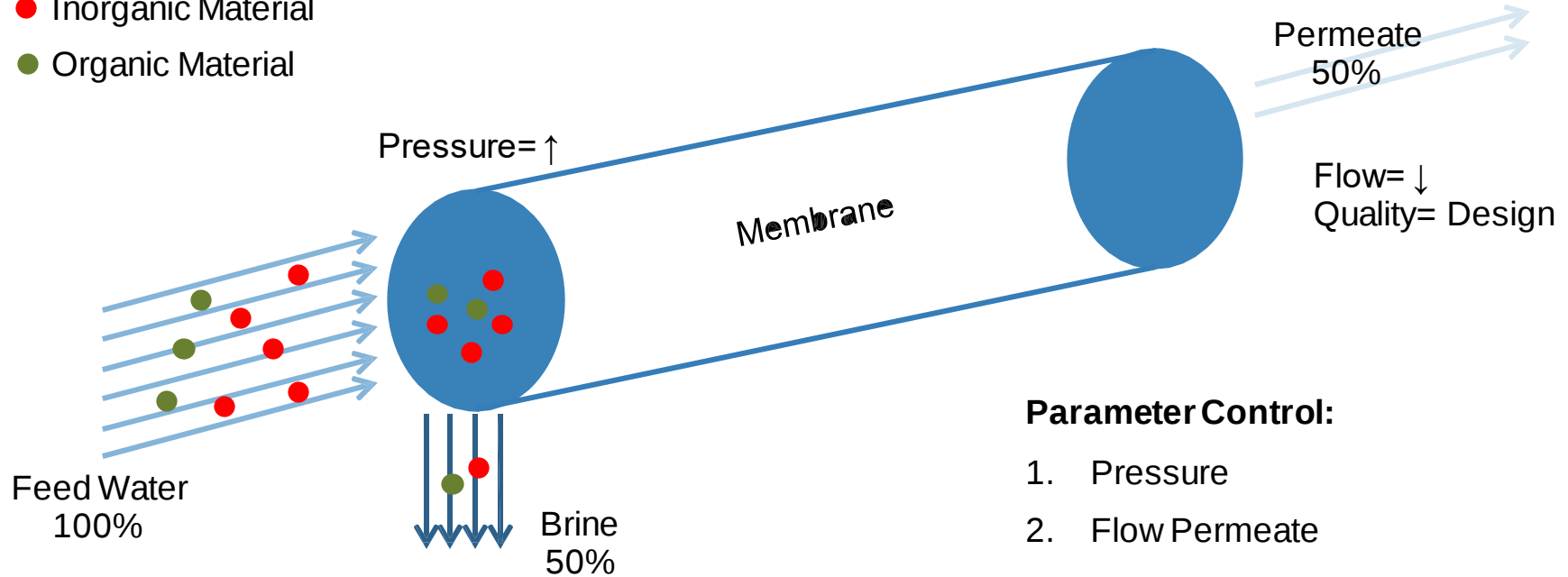
● Organic Material



REVERSE OSMOSIS WITHOUT ANTISCALANT (CrestoPro R-Series)

● Inorganic Material

● Organic Material



Parameter Control:

1. Pressure
2. Flow Permeate



REVERSE OSMOSIS RESULT WITHOUT ANTISCALANT (CrestoPro R-Series)

- **Operating Pressure**

↗ Operating pressure up (↑), Scaling formation up (↑) and make Cleaning / Change Membrane frequency up (↑).

- **Permeate Quality**

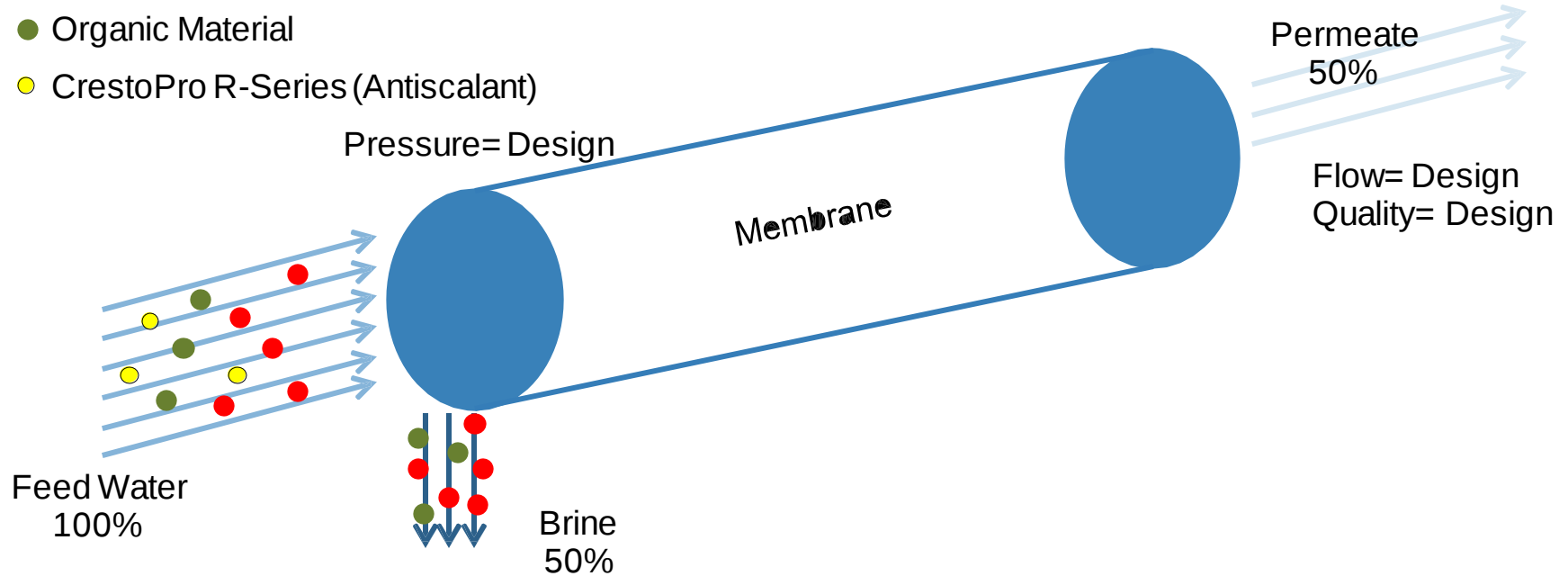
↗ Permeate flow down (↓), scaling formation up (↑) and make Cleaning / Change Membrane frequency up (↑)

Scaling ↑ Operation Cost ↑ Maintenance Cost ↑ Efficiency ↓



REVERSE OSMOSIS WITH ANTISCALANT (CrestoPro R-Series)

- Inorganic Material
- Organic Material
- CrestoPro R-Series (Antiscalant)

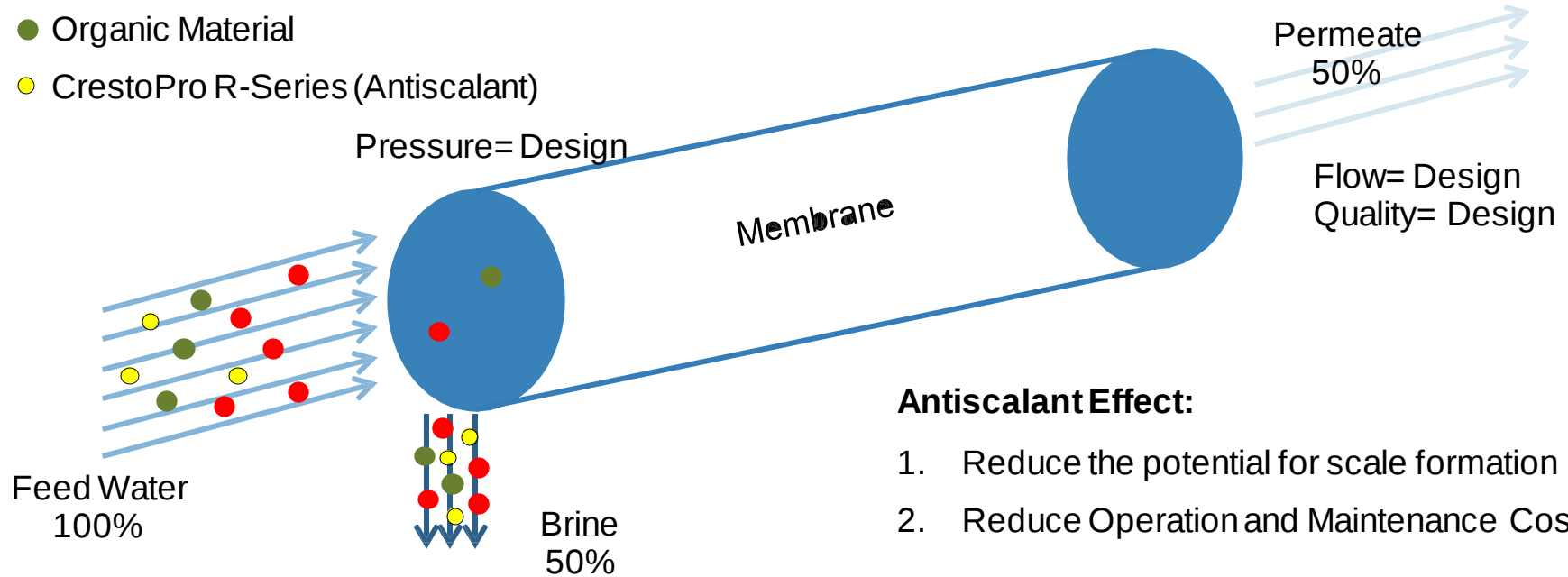


REVERSE OSMOSIS WITH ANTISCALANT (CrestoPro R-Series)

● Inorganic Material

● Organic Material

● CrestoPro R-Series (Antiscalant)



Antiscalant Effect:

1. Reduce the potential for scale formation
2. Reduce Operation and Maintenance Cost



REVERSE OSMOSIS RESULT WITH ANTISCALANT (CrestoPro R-Series)

- **Operating Pressure**

↗ Operating pressure stable, Scaling formation low (↓) and make Cleaning / Change Membrane frequency low (↓).

- **Permeate Quality**

↗ Permeate flow stable, scaling formation low (↓) and make Cleaning / Change Membrane frequency low (↓)

Scaling ↓ Operation Cost ↓ Maintenance Cost ↓ Efficiency ↑

OUR PRODUCT ADVANTAGES

- Antiscalant will inhibit scale formation
- Antiscalant will maintain RO performance
- Antiscalant can maintain the quality and quantity of permeate water
- Antiscalant able to extend the life of the membrane
- The residual antiscalant does not contaminate the permeate water
- Antiscalant can reduce operational costs and improve RO
- CrestoPro R-Series has NSF and Halal certified



REVERSE OSMOSIS

- BWRO Capacity: 2 X 100 MT/Hr
- Recovery rate: 70%
- Membrane type: DOW BW30-400
- Raw water source: River water
- Pre-treatment process: Coagulation / Sedimentation / Multimedia filter / UF / Cartridge filter

Application Report:

- Feed and Permeate flow declining
- Feed and Permeate flow remain stable
- Feed and Permeate flow are more stable over a same period of one month
- First stage pressure increases after chemical cleaning
- First stage pressure remains stable
- First stage pressure drop is lower over a same period of one month

REVERSE OSMOSIS MEMBRANE EXPERIENCE

Country	Customer Name	Applications	Industry
Philippines	QPL	BWRO	Power Plant
Philippines	MWC	BWRO	Municipal Water
Philippines	MWS	BWRO	Municipal Water
Philippines	SM Mining	SWRO	Mining
Philippines	PEDC	SWRO	Power Plant
Philippines	San Miguel	BWRO	Power Plant
China	HNPGDZ Power Plant	BWRO	Power Plant
China	SD HHS Chemical	SWRO	Chemicals
China	SD HH	BWRO	Chemicals
China	SD BZ Chemical	BWRO	Chemicals
China	XY Chemical	SWRO	Power Plant
China	HNPG ZH Power Plant	SWRO	Power Plant
China	HDG QD Power Plant	SWRO	Power Plant
China	HYL Biomass Power Generation	BWRO	Power Plant
China	GD LW Paper	BWRO	Paper
China	JS LW Paper	BWRO	Paper
China	YL Resources	BWRO	Chemicals
China	SH GR Fine Chemical	BWRO	Chemicals



RO MEMBRANE

Membrane Element		SWC5 MAX
Performance:	Permeate Flow:	9,900 gpd (37.5 m ³ /d)
	Salt Rejection:	99.8 % (99.7 % minimum)
Type	Configuration:	Spiral Wound
	Membrane Polymer:	Composite Polyamide
	Membrane Active Area:	440 ft ² (40.9m ²)
Application Data*	Maximum Applied Pressure:	1200 psig (8.27 MPa)
	Maximum Chlorine Concentration:	< 0.1 PPM
	Maximum Operating Temperature:	113 °F (45 °C)
	pH Range, Continuous (Cleaning):	2-11 (1-13)*
	Maximum Feedwater Turbidity:	1.0 NTU
	Maximum Feedwater SDI (15 mins):	5.0
	Maximum Feed Flow:	75 GPM (17.0 m ³ /h)
	Minimum Ratio of Concentrate to Permeate Flow for any Element:	5:1
	Maximum Pressure Drop for Each Element:	15 psi

* The limitations shown here are for general use. For specific projects, operating at more conservative values may ensure the best performance and longest life of the membrane. See Hydranautics Technical Bulletins for more detail on operation limits, cleaning pH, and cleaning temperatures.



BWRO MEMBRANE

Membrane Element		CPA5-LD (Low Fouling Technology)
Performance:	Permeate Flow:	11,000 gpd (41.6 m ³ /d)
	Salt Rejection:	99.7% (99.6% minimum)
Type	Configuration:	Low Fouling Spiral Wound
	Membrane Polymer:	Composite Polyamide
	Membrane Active Area:	400 ft ² (37.1m ²)
	Feed Spacer:	34 mil (0.864 mm)
Application Data*	Maximum Applied Pressure:	600 psig (4.14 MPa)
	Maximum Chlorine Concentration:	< 0.1 PPM
	Maximum Operating Temperature:	113 °F (45 °C)
	pH Range, Continuous (Cleaning):	2-11 (1-13)*
	Maximum Feedwater Turbidity:	1.0 NTU
	Maximum Feedwater SDI (15 mins):	5.0
	Maximum Feed Flow:	75 GPM (17.0 m ³ /h)
	Minimum Ratio of Concentrate to Permeate Flow for any Element:	5:1
	Maximum Pressure Drop for Each Element:	15 psi

* The limitations shown here are for general use. For specific projects, operating at more conservative values may ensure the best performance and longest life of the membrane. See Hydranautics Technical Bulletins for more detail on operation limits, cleaning pH, and cleaning temperatures.



Thank You



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