

PRODUCT APPLICATION

CASE STUDY IN AUTOMOTIVE INDUSTRY



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With the development of technology as well as domestic and foreign demand in the automotive sector, We together with the resources and knowledge provide innovations and solutions that can develop the automotive industry in Indonesia.

PRODUCT LIST

Paint Spray Booth Chemicals

- Paint Killer
- Paint Flocculant
- Alkalinity Booster

Water & Wastewater Treatment

- Coagulant
 - Decoloring Agent
 - Mixed Organic Coagulant
 - Polyamine Based Polymer
 - Poly-dadmac Based Polymer
- Flocculant
 - Cationic Polymer
 - Anionic Polymer
 - Nonionic Polymer
- Antifoam/Defoamer
 - Mineral Based Antifoam
 - Silicon Based Antifoam
 - Silicone Free Based Polymer

Cooling Tower Chemicals

- Antiscalant
- Corrosion Inhibitor
- Bio-dispersant
- Biocide :
 - Oxidizing Biocide
 - Non-Oxidizing Biocide

Reverse Osmosis Treatment

- Antiscalant
- Anti Chlor
- Oxidizing Biocide
- RO Cleaner :
 - Acid Cleaner
 - Alkaline Cleaner

Boiler Treatment & Another Specialty Chemicals

- Boiler Treatment
 - Condensate Corrosion Inhibitor
 - Internal Treatment
 - Oxygen Scavenger
 - Antiscalant
 - Corrosion Inhibitor
- Other Specialty Chemicals
 - Paint Stripper/Remover
 - Degreaser
 - Heavy Metal Removal, etc

#1

PAINT SPRAY BOOTH TREATMENT



Zekindo's chemicals for paint spray booth treatment

Paint Spray Booth is an enclosed area where car body painting is processed. In this unit, there is a water circulation on the wall catching up the over spray paint. The mixture of over spray paint and water should be treated if do not want to have any problem such as formed clumps of sticky paint, blockage of mist eliminator, shower head and circulation pump.

Japanese car manufacturer in Karawang Barat produce approximately 600 - 700 unit car/day with sludge pool capacity 250 TON.

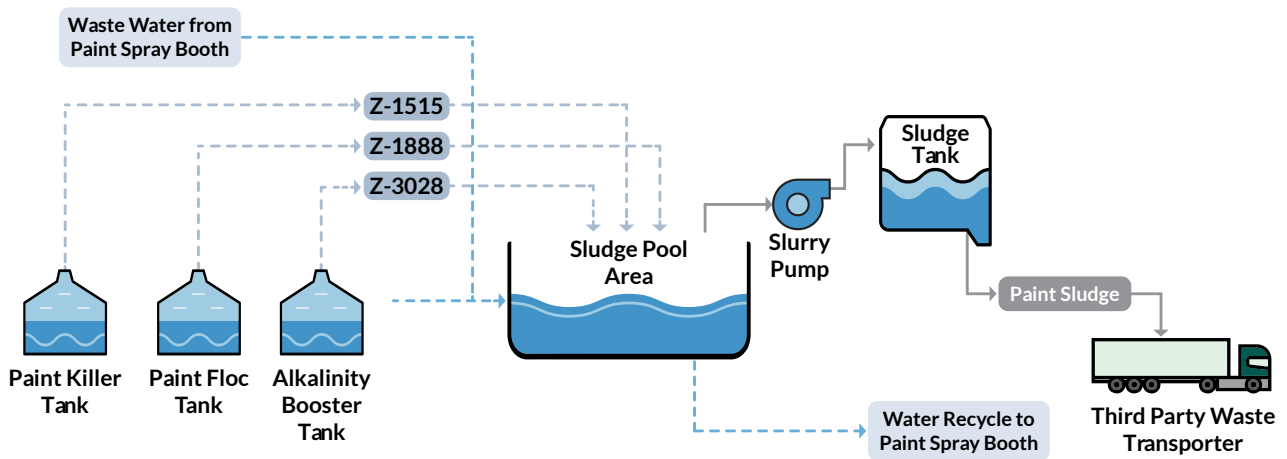
Zekindo Chemicals has successfully treated the mixture of wastewater and over spray paint in sludge pool PLANT 1.

Product List

- **Paint Killer**
 - Non-sticky paint into excellent result
 - Good coagulated paint
 - Lower consumption of chemical treatment
- **Alkalinity Booster**
 - Alkalinity Adjustment
- **Paint Flocculant**
 - Non-sticky paint into excellent
 - Good flocculated paint sludge
 - Dryer paint sludge produced from sludge tank

Paint Spray Booth Process Flow

Here are the process flow diagram of paint spray booth chemicals treatment supported by Zekindo Chemicals :



Benefit

- Good effluent softener quality
- Reduce cost for resin
- Resin performance are stable
- Easy for storage and handling

Our Performance

The table describes how Zekindo successfully treated the wastewater of paint booth treatment.

Time	Turbidity	Suspended Solid	Conductivity	Dissolved Solid
STANDARD	< 100	< 100	< 2000	< 1500
BEFORE	353	337	2100	1548
W-1	12	10	954	1121
W-2	13	15	1130	1234
W-3	15	17	897	910
W-4	10	9	943	1220



Sludge Pool before Zekindo Treatment



Sludge Pool after Zekindo Treatment



Paint Sludge Produced

Paint Killer Award

At the event of the 2021 Industrial Technology Pioneer (Rintisan Teknologi Industri (RINTEK)) Award ceremony, the Ministry of Industry (Kemenperin) presented an award to **PT Zeus Kimiatama Indonesia** for the achievement of **'Synthesis of Amine Resin for Paint Spray Booth Detackifier Applications'** on Zekindo's products in the automotive industry. This product has successfully become a market leader in its field, surpassing similar products from other competitors.

The objective of Kemenperin to confer the 2021 Industrial Technology Pioneer (Rintek) award to PT Zeus Kimiatama Indonesia is a concrete manifestation of the priority program implementation on the roadmap of Making Indonesia 4.0. This initiative aims to encourage the national industry forward and enhance the spirit of industrialists to continually innovate and utilize new technologies to improve the quality of products that meet current consumer demands. Ultimately, this enables national products to be competitive in both domestic and international trade.



Paint Killer Award from Government of Indonesia (2021)



#2

WASTEWATER & RECYCLE WATER TREATMENT



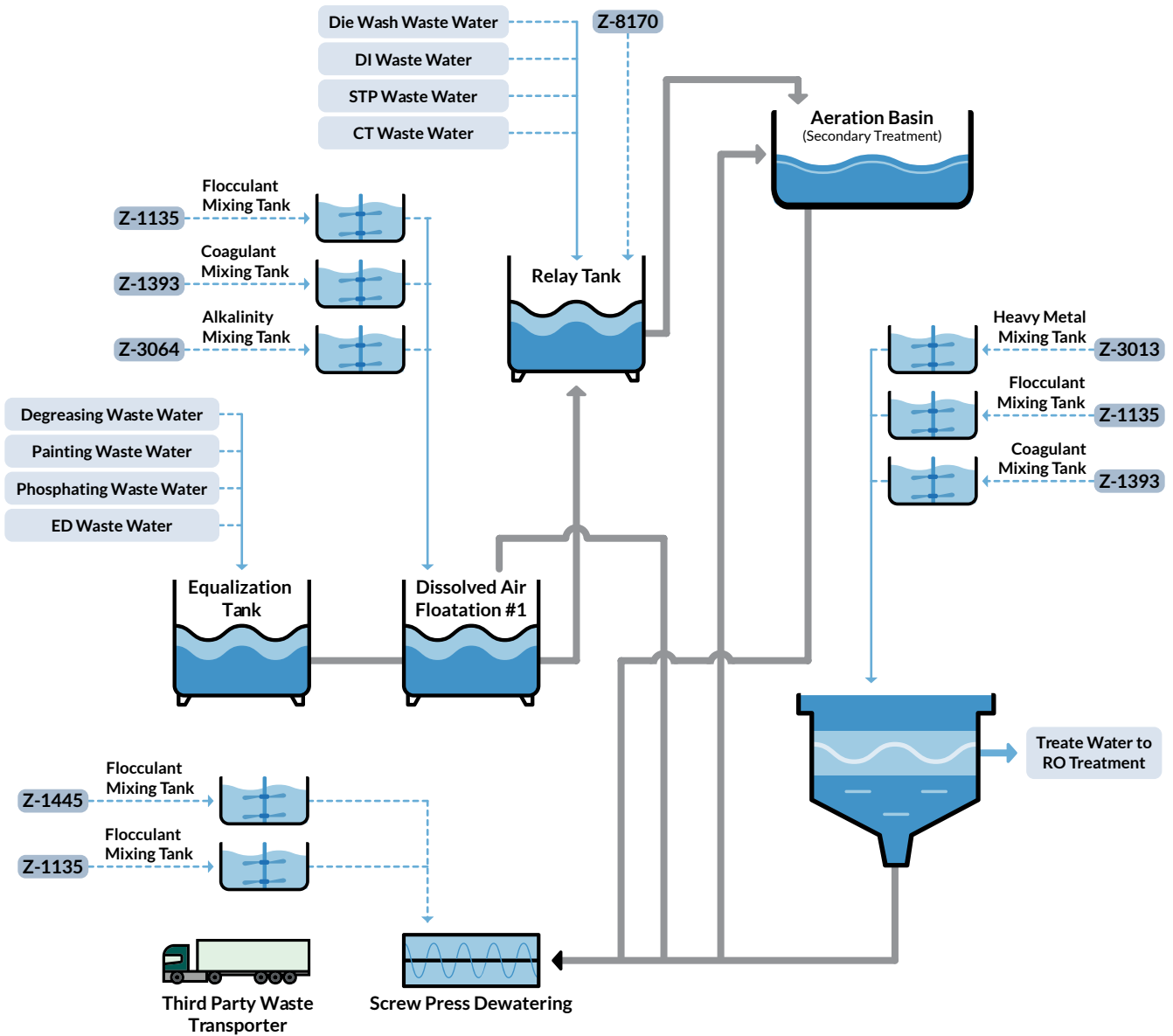
Zekindo's chemicals for wastewater & recycle treatment

Japanese car manufacturer located in Cikarang, produce approximately 65 - 70m³/hour of wastewater which is treated by using primary and secondary wastewater treatment. The biological sludge coming from activated sludge and coagulation-flocculation treatment have to be separated and dewatered before going to thirdly transporter. The effluent produced also should meet the Industrial Estate requirement before disposal processing.

Zekindo Chemicals has successfully managed the whole wastewater treatment system by reducing the sludge volume into 63%.

Most powerful coagulant performance and suitable condition treatment giving very good impact into effluent quality result and high percentage of nickel removal.

Our Performance



Parameter	Raw Wastewater	Wastewater Effluent
Flowrate	65 m3/hour	65 m3/hour
Turbidity	> 1400 FAU	0 FAU
TSS	> 1400 ppm	1 ppm
Nickel	5.5 ppm	0.09 ppm
% Nickel Removal		98%
% Sludge Volume Reduction		63%

Benefit

- Good effluent quality
- High Nickel Removal
- Reduce cost for chemicals
- Chemicals performance are stable
- Easy for storage and handling

Chemical List for Wastewater Treatment

Chemicals	Injection Point	Result
Mixed Organic Coagulant	DAF I	<ul style="list-style-type: none"> • Lower turbidity and TSS inlet to aeration basin and wastewater effluent • Lower consumption quantity with lower sludge produced result
Polymer Flocculant	DAF I, Clarifier, Screw Press	<ul style="list-style-type: none"> • Lower polymer consumption • Good flocculated sludge produced
Alkalinity Booster	DAF I	<ul style="list-style-type: none"> • Alkalinity Adjustment
Heavy Metal Removal	Clarifier	<ul style="list-style-type: none"> • Good nickel reduction result
Polymer Flocculant	Screw Press	<ul style="list-style-type: none"> • Lower polymer consumption • Lower sludge handling cost
Antifoaming Agent	Relay Tank	<ul style="list-style-type: none"> • Good and faster foam removal

#3

COOLING WATER TREATMENT



Zekindo's chemicals for Cooling Water Treatment

Zekindo Chemicals is also able to manage cooling water system in Japanese car manufacturer in Karawang Barat, which has recirculation rate 315m³/hour of cooling tower compressor and 1,100m³/hour of cooling tower-chiller.

Zekindo Chemicals has successfully treated cooling water system to reduce scalling, corrosion and biofouling potential problem

Benefit

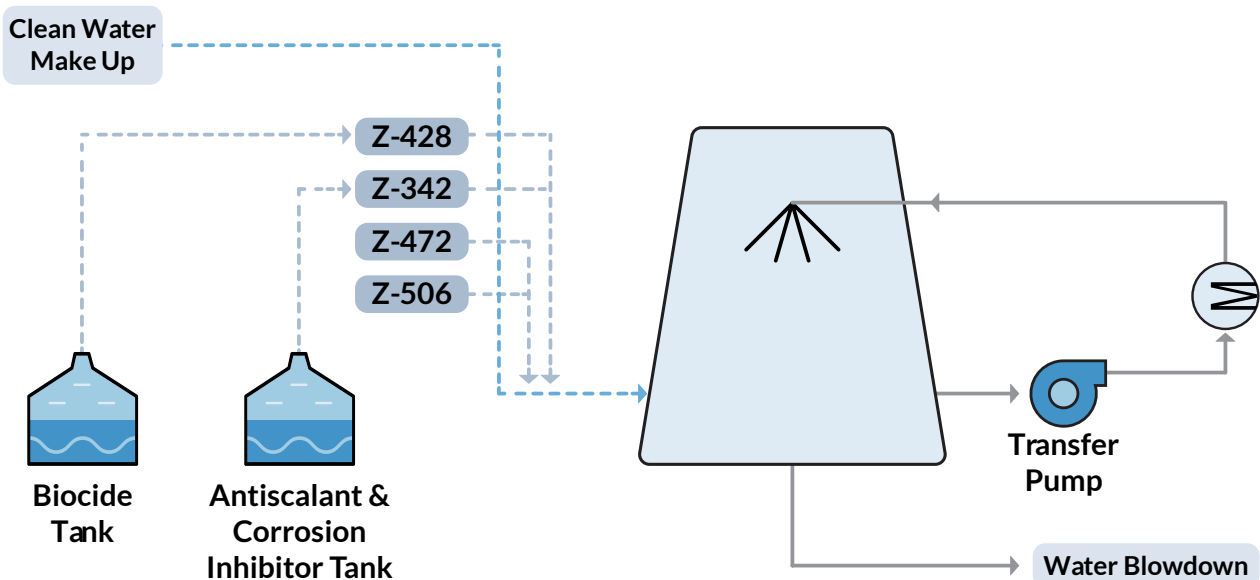
- Reduce water usage in the cooling tower system
- Reduce energy consumed in the cooling tower process
- Reduce cooling tower system maintenance costs
- Improve environmental/human health and safety related to cooling water operations
- Minimize the environment impact from cooling system operations

Product List

- **Biocide Oxidizing & Non-Oxidizing**
 - Minimize bacterial present especially Legionella, TCA, Slime Forming Bacteria, Sulphate Reducing Bacteria and Algae
 - No bacterial present in cooling tower
- **Biodispersant**
 - Minimize complex matrix of microorganism biofilm
- **Antiscalant & Corrosion Inhibitor**
 - Minimize corrosion in cooling system
 - Protect from scaling and improve heat transfer efficiency

Case Study

ZEKINDO CHEMICALS has successfully treated the cooling water system in Japanese car manufacturer in Karawang Barat.



Our Performance

Parameter	Unit	Limit	Before	W-1	W-2	W-3	W-4
Conductivity	μS	< 1500	1020	1590	801	775	740
TDS	ppm	< 1250	733	1157	563	650	645
Free Chlorine	ppm Cl_2	0.2 – 0.5	0.04	0.08	0.3	0.4	0.4
Phosphate	ppm PO_4	5 -6	0.8	13.8	4.6	7.1	6.3
RSI***			8.5	7.0	7.1	6.6	6.4



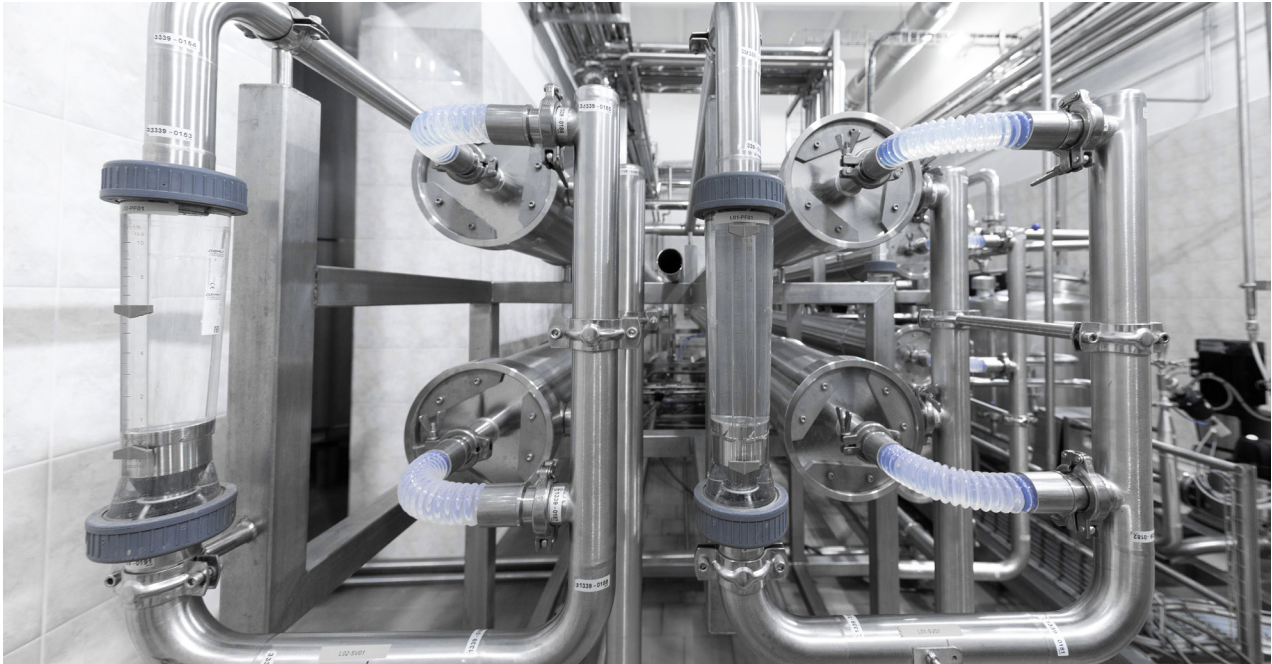
Before Zekindo Treatment



After Zekindo Treatment

#4

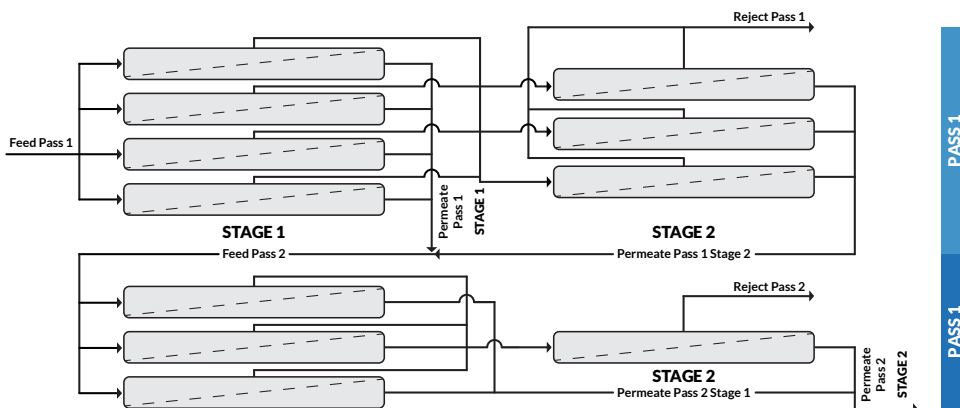
REVERSE OSMOSIS TREATMENT



Zekindo’s chemicals for wastewater & recycle treatment

Chinese car manufacturer located in Cikarang has treated 30 m³/hour industrial water by Reverse Osmosis Treatment. This treatment has 2 passes of Reverse Osmosis System with 55 pcs of total membrane.

The use of chemical treatment in the reverse osmosis system can produce a permeate recovery output of 70%. Besides chemical treatment, ZEKINDO also provides Cleaning in Place services.



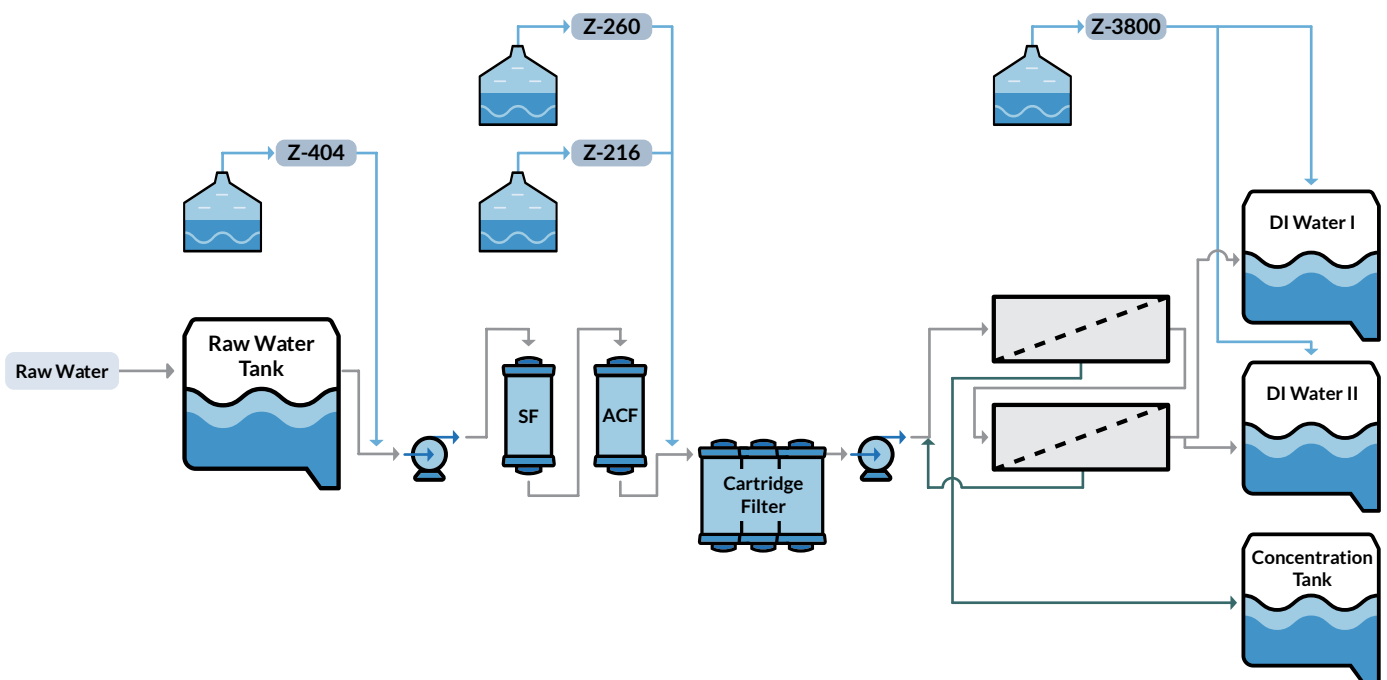
Product List

- **Oxidizing Biocide**
Preventing biological fouling in piping and RO Membrane
- **Chlorine Scavenger**
Remove residual chlorine before entering RO Membrane
- **Scale Inhibitor**
Preventing scale forming in piping and membrane
- **Non-Oxidizing Biocide**
Preventing biological fouling of RO Permeate
- **Alkaline & Acid Cleaner**
Cleaning RO Membrane from biological fouling and scaling

Benefit

- Good chemicals quality of RO Membrane Treatment
- Maintain the stabilization of RO Performance
- Good quality of RO Permeate
- Easy for storage and handling

Our Performance



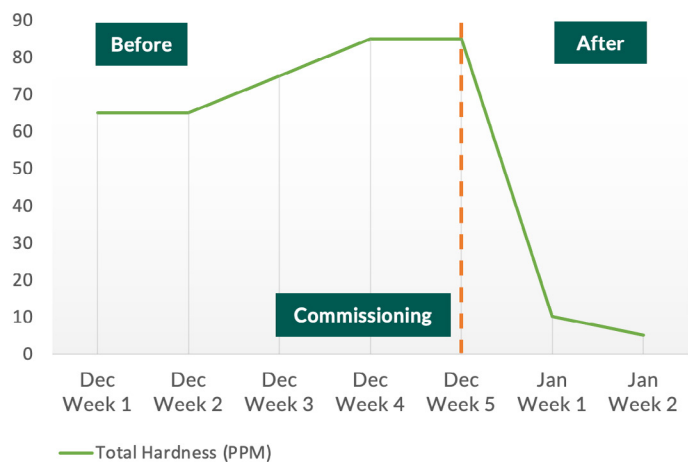
#5

RESIN FOR SOFTENER TREATMENT IN RECLYING WATER PROCESSING



Zekindo's resin for softener treatment

Japanese car manufacturer located in Cikarang, produce approximately 65 - 70 m³/hour of wastewater which is treated by using primary and secondary wastewater treatment. In this recycle water processing, the effluent from the waste water treatment plant is flowed as influent of recycle water. The first process is a sand filter, carbon filter, and softener. Then enter to reverse osmosis process.

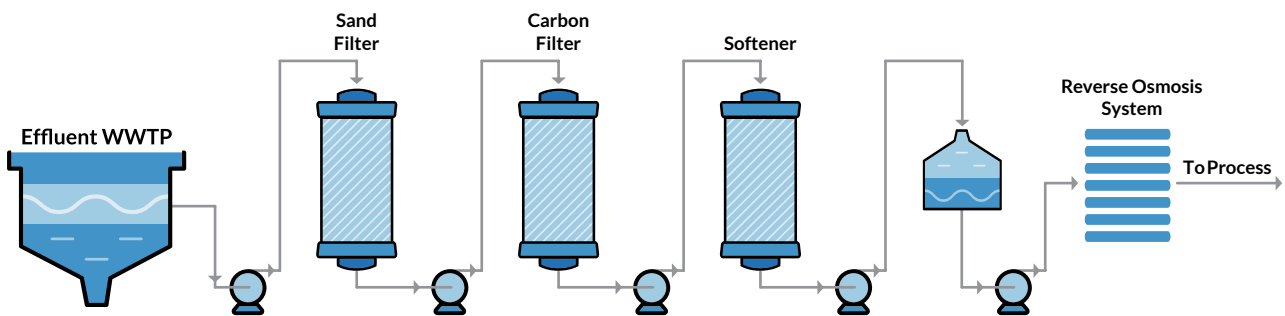


ZEKINDO has succeeded in replacing existing resins with our newest resin **ZEKINDO MC 10**. Our resins can reduce hardness levels in the system by 85,7%. In addition to replacing the resin we made repairs to the mushroom strainers and retrofit the fiber lining on the softener tank walls.

Benefit

- Good effluent softener quality
- Reduce cost for resin
- Resin performance are stable
- Easy for storage and handling

Resin Chemicals



Resin Properties

Properties	ZEKINDO MC 10
Physical Form	Khaki Translucent Spherical Beads
Functional Group	Sulfonic Acid
Total Capacity (eq/l)	2.2 ↑
Shipping Density (g/l)	850
Uniformity Coefficient	1.1 ↓
Whole Beads (%)	95 ↑
Matrix	Styrene-DVB, Gel
Ionic Form	Na ⁺
Moisture Retention (%)	38-44
Particle Density	1.32
Particle Size (micrometer)	650 ±
Swelling (Na ⁺ → H ⁺ , %)	8

OUR FACTORIES



Water Based Factory

Plant 1, Cikarang

Jl. Sungkai Blok F25 No.09 IA,
Delta Silicon V Lippo Cikarang,
Kabupaten Bekasi, Jawa Barat
Indonesia, 17550



Solvent Based Factory

Plant 2, Kota Bukit Indah

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Kawasan Bukit Indah, Dawuan,
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Indonesia, 41181

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