



*Your Pure Water Partners*

# King Lee Technologies

Founded in 1977 in San Diego, CA

Leader in membrane chemistry and  
RO process support

Benefited thousands of brackish,  
seawater and wastewater facilities

Respected For:

- Highly Effective Chemicals
- Expert Based Technical Support
- System Based Problem Solving



# Mission - Vision



Advance the reverse osmosis and nanofiltration industry by providing superior products, services, and technical expertise aimed at increasing membrane life and productivity.

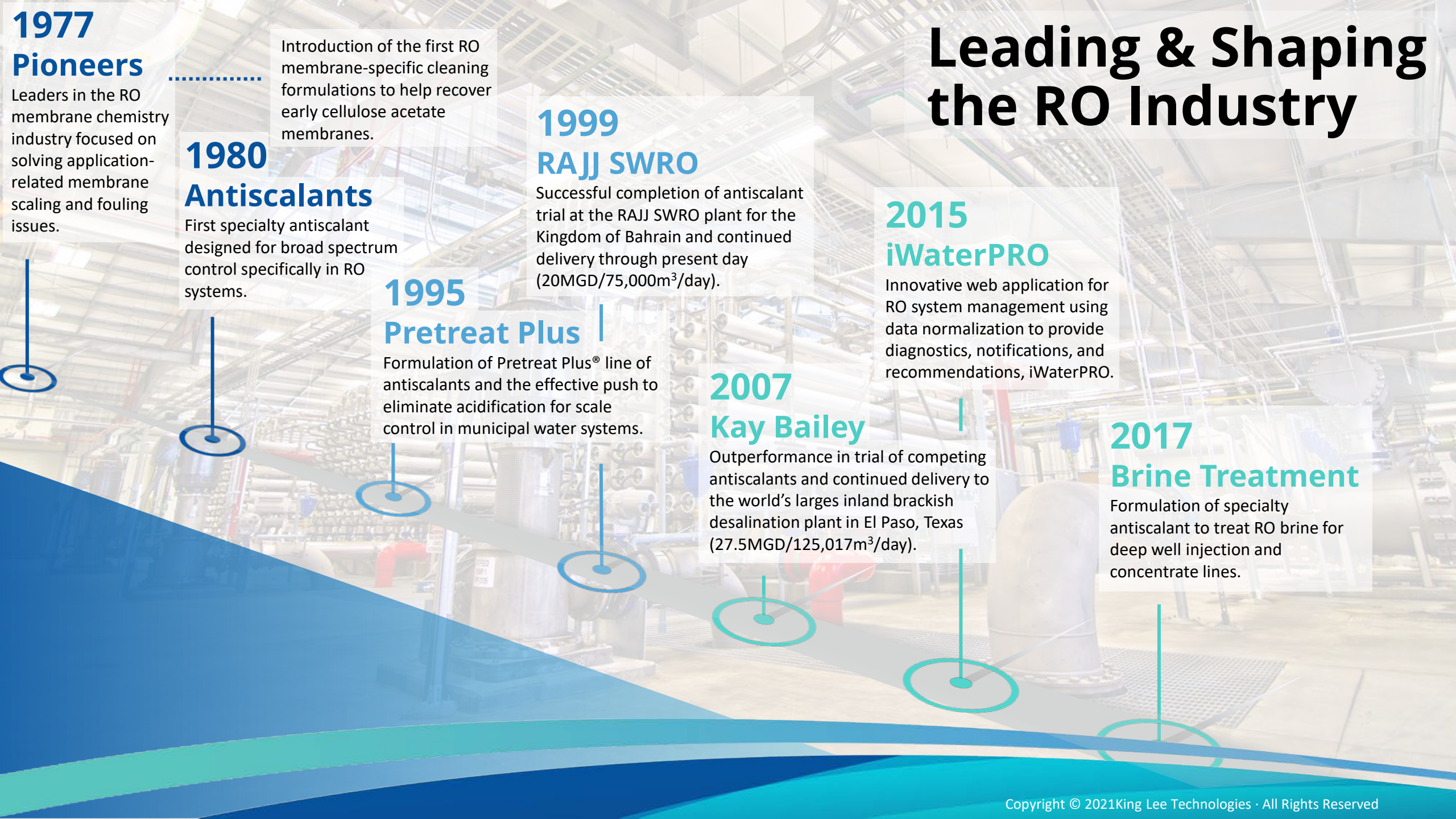
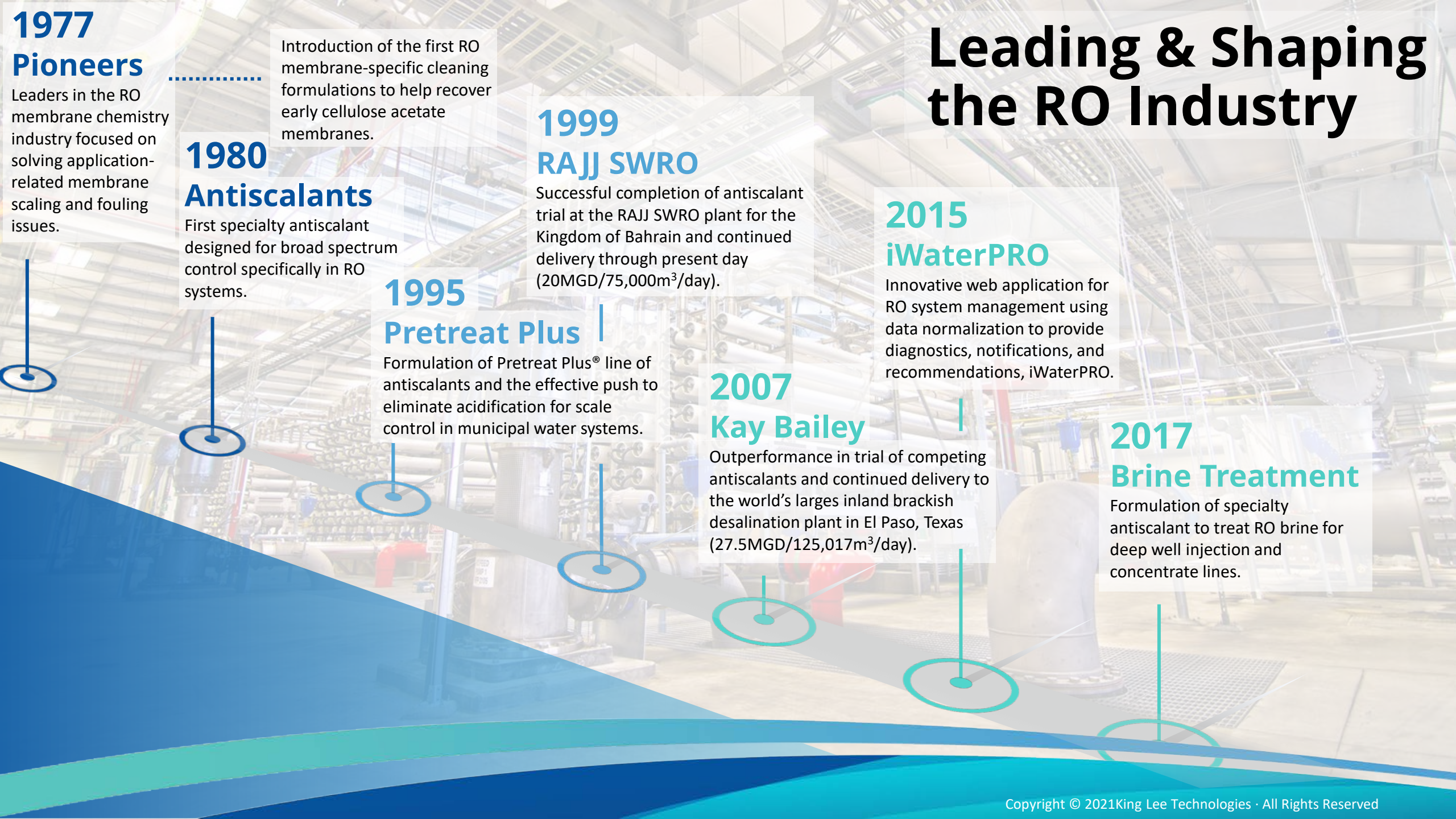


Be a leader in the global pure water community solving reverse osmosis and nanofiltration challenges worldwide.



Go beyond simply addressing clients' needs by helping them realize what their needs really are.





**1977**  
**Pioneers**  
Leaders in the RO membrane chemistry industry focused on solving application-related membrane scaling and fouling issues.

**1980**  
**Antiscalants**  
First specialty antiscalant designed for broad spectrum control specifically in RO systems.

**1995**  
**Pretreat Plus**  
Formulation of Pretreat Plus® line of antiscalants and the effective push to eliminate acidification for scale control in municipal water systems.

**1999**  
**RAJJ SWRO**  
Successful completion of antiscalant trial at the RAJJ SWRO plant for the Kingdom of Bahrain and continued delivery through present day (20MGD/75,000m<sup>3</sup>/day).

**2007**  
**Kay Bailey**  
Outperformance in trial of competing antiscalants and continued delivery to the world's largest inland brackish desalination plant in El Paso, Texas (27.5MGD/125,017m<sup>3</sup>/day).

**2015**  
**iWaterPRO**  
Innovative web application for RO system management using data normalization to provide diagnostics, notifications, and recommendations, iWaterPRO.

**2017**  
**Brine Treatment**  
Formulation of specialty antiscalant to treat RO brine for deep well injection and concentrate lines.

# Leading & Shaping the RO Industry



# Our products are valued industry wide



Treating feedwater, each with their own unique set of challenges

# PRODUCTS

## CHEMICAL



## PHYSICAL



**Antiscalants & Antifoulants**



**Membrane Cleaners**



**Specialty Chemicals**

- Microbiological Control
- Membrane Storage
- Coagulants



**RO/NF Membrane Elements**



**Cartridge Filters**



**RO Vessel Spare Parts**

# Antiscalants & Antifoulants

| ANTISCALANTS & ANTIFOULANTS                                                  |                                                                                                                   |                        |                      |                   |                                        |                                                 |       |     |                  |                  |               |              |        |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------|----------------------|-------------------|----------------------------------------|-------------------------------------------------|-------|-----|------------------|------------------|---------------|--------------|--------|
| PRODUCTS                                                                     |                                                                                                                   |                        | EFFECTIVELY CONTROLS |                   |                                        |                                                 |       |     |                  |                  |               |              |        |
| NSF/ANSI 60 Certified & RO/NF Membrane Compatible                            |                                                                                                                   |                        | CaCO <sub>3</sub>    | CaSO <sub>4</sub> | BaSO <sub>4</sub><br>SrSO <sub>4</sub> | Ca <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> | Fe/Mn | Al  | SiO <sub>2</sub> | Acid Elimination | Silt/Colloids | Organics/Bio | Sulfur |
| CLASSICS                                                                     | Tried and true broad-spectrum line of antiscalants fully capable for the majority of water applications.          | Pretreat Plus® Y2K     | ○ ■                  | ○                 | ○                                      | ○                                               | ○ ■   | ○   | ○ ■              | ○ ■              |               |              |        |
|                                                                              |                                                                                                                   | Pretreat Plus® 0100    | ○ ■                  | ○                 | ○                                      | ○                                               | ○ ■   | ○   | ○                | ○                |               |              |        |
|                                                                              |                                                                                                                   | Pretreat Plus® Select  | ○                    | ○                 | ○                                      | ○                                               | ○     | ○   | ○                | ○                |               |              |        |
| TARGETED                                                                     | Targeted line of antiscalants & antifoulants meant for particularly difficult and unique applications.            | Pretreat Plus® Gypsum* | ○                    | ○ ■               | ○ ■                                    | ○                                               | ○     |     | ○                |                  |               |              |        |
|                                                                              |                                                                                                                   | Nutreat™ 1700          | ○ ■                  | ○                 | ○                                      |                                                 |       |     | ○                | ○ ■              |               |              |        |
|                                                                              |                                                                                                                   | Protec™ RO             |                      |                   |                                        |                                                 |       |     | ○ ■              |                  | ○ ■           | ○ ■          |        |
|                                                                              |                                                                                                                   | Protec™ RO C           |                      |                   |                                        |                                                 |       |     |                  |                  | ○ ■           | ○ ■          | ○      |
| SYNERGY                                                                      | Synergistic blends combine the ability to target specific scale and foulants while having broad-spectrum control. | Pretreat Plus® S1000   | ○ ■                  | ○                 | ○                                      | ○ ■                                             | ○ ■   | ○ ■ | ○ ■              | ○                | ○             | ○            |        |
|                                                                              |                                                                                                                   | Pretreat Plus® G2000   | ○ ■                  | ○ ■               | ○ ■                                    | ○                                               | ○ ■   | ○   | ○                | ○                |               |              |        |
|                                                                              |                                                                                                                   | Pretreat Plus® G5000   | ○                    | ○ ■               | ○ ■                                    | ○                                               | ○     | ○   |                  |                  |               |              |        |
| *Concentrated    ○ = Effectively Controls    ■ = Specifically Formulated For |                                                                                                                   |                        |                      |                   |                                        |                                                 |       |     |                  |                  |               |              |        |



# Antiscalants

## Classics

- Pretreat Plus® 0100
- Pretreat Plus® 0100 Concentrate
- Pretreat Plus® Y2K
- Pretreat Plus® Select



Tried and true broad-spectrum line of antiscalants fully capable of handling the majority of water applications



# Antiscalants & Antifoulants

## Targeted

- Pretreat Plus® Gypsum Concentrate
- NuTreat™ 1700
- \*Protec™ RO
- \*Protec™ RO C

*\*antifoulant*



Targeted line of antiscalants and antifoulants meant for particularly difficult and unique applications

# Antiscalants

## Synergy

- Pretreat Plus® S1000
- Pretreat Plus® G2000
- Pretreat Plus® G5000



Synergy line combines the ability to target specific scale and foulants while also having the comfort of broad-spectrum control



# Membrane Cleaners

| MEMBRANE CLEANERS                                          |                                                                                                 |                   |                     |                   |                                      |                                                 |                           |                  |                                |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------|---------------------|-------------------|--------------------------------------|-------------------------------------------------|---------------------------|------------------|--------------------------------|
| PRODUCTS                                                   |                                                                                                 |                   | EFFECTIVELY REMOVES |                   |                                      |                                                 |                           |                  |                                |
| NSF/ANSI 60 Certified & RO/NF Membrane Compatible          |                                                                                                 |                   | CaCO <sub>3</sub>   | CaSO <sub>4</sub> | BaSO <sub>4</sub> /SrSO <sub>4</sub> | Ca <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> | Metal Oxide/<br>Hydroxide | SiO <sub>2</sub> | Organics/Silt/<br>Colloids/Bio |
| CLASSICS                                                   | Broad-spectrum cleaners designed to cover a wide range of scales and foulants.                  | KL™ LpH           | ● □                 | ●                 | ●                                    | ●                                               | ●                         |                  |                                |
|                                                            |                                                                                                 | KL™ HpH           |                     |                   |                                      |                                                 |                           |                  | ● □                            |
|                                                            |                                                                                                 | Diamite™ LpH      | ● □                 | ●                 | ●                                    | ●                                               | ●                         |                  |                                |
|                                                            |                                                                                                 | Diamite™ HpH      |                     |                   |                                      |                                                 |                           |                  | ● □                            |
| TARGETED                                                   | Designed for more difficult applications or when needing to target a specific scale or foulant. | KL™ Silica        |                     |                   |                                      |                                                 |                           | ● □              |                                |
|                                                            |                                                                                                 | Diamite™ Gypsum   |                     | ● □               | ●                                    |                                                 |                           |                  |                                |
|                                                            |                                                                                                 | Diamite™ Silica   |                     |                   |                                      |                                                 |                           | ● □              |                                |
|                                                            |                                                                                                 | Diamite™ LpH Plus | ●                   | ●                 | ●                                    | ● □                                             | ●                         |                  |                                |
|                                                            |                                                                                                 | Diamite™ HpH Plus |                     |                   |                                      |                                                 |                           |                  | ● □                            |
| ● = Effectively Removes    □ = Specifically Formulated For |                                                                                                 |                   |                     |                   |                                      |                                                 |                           |                  |                                |

# Membrane Cleaners - Powder

## Classics

- KL™ LpH
- KL™ HpH

## Targeted

- KL™ Silica
- KL™ 2040
- KL™ 7330



KL™ line of powder cleaners for the removal of organic material, membrane scale and other inorganics

# Membrane Cleaners - Liquid

## Classics

- Diamite™ LpH
- Diamite™ HpH

## Targeted

- Diamite™ LpH Plus
- Diamite™ HpH Plus
- Diamite™ Silica
- Diamite™ Gypsum



Diamite™ line of liquid cleaners for the removal of organic material, membrane scale and other inorganics



# Specialty Chemicals

## Coagulant

- Profloc™ C

## Membrane Storage

- Memstor™

## Microbiological Control

- Microtreat™ BIO – membrane sanitizer
- Microguard™ A – diluted antiscalant preservative
- Microclean™ UHP – ultra pure water piping and tank sanitization



Specialty chemicals to aid multimedia filters, long term membrane storage and microbiological control products

# RO System Components

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To address overall RO/NF system needs, we partner with major manufacturers to provide a total solutions package. We carry RO/NF membranes, cartridge filters, and pressure vessel spare parts.

# SERVICES



## TECHNICAL & ANALYTICAL



## MEMBRANE



**Membrane Autopsy**



**Membrane Cleaning Study**



**Chemical Dosing Projections**



**RO Process Support**

- On-Site Trainings
- Webinars
- Data Analysis: iWaterPRO
- Pilot Opportunities: ROD2



**Off-Site Membrane Cleaning**



**Membrane Replacement**



# Membrane Autopsy

A very effective method for understanding and resolving membrane related issues.

Membrane foulant samples, chemical analyses, physical inspection, documentation, and conclusions are provided in a full report with the goal to understand the issues at hand so they can be addressed and prevented during future operation.

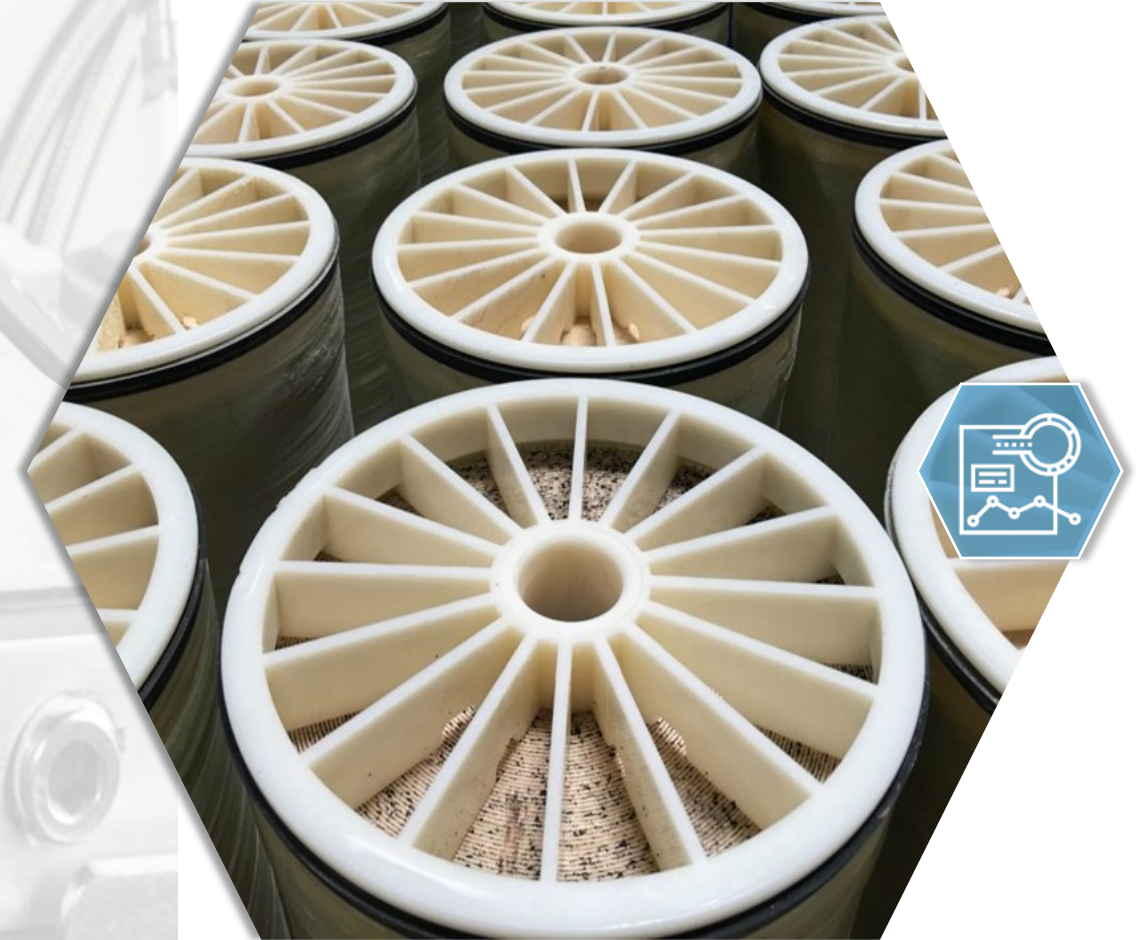


BSE Si Ca



# Membrane Cleaning Study

Membranes are cleaned with King Lee's proprietary cleaning formulations to determine the most effective chemistry and procedures to create a customized cleaning protocol to help effectively remove scale and foulants.



# Chemical Dosing Projections

- How do I know which antiscalant to choose?
- What is the optimal dosing rate?

With the help of a water analysis, flow and recovery rates, and other information, we can create a customized dosing projection to keep your membrane system running efficiently.

## Typical Feed Water Composition

### Dissolved minerals

|                  |                               |
|------------------|-------------------------------|
| Ca <sup>2+</sup> | HCO <sub>3</sub> <sup>-</sup> |
| Mg <sup>2+</sup> | CO <sub>3</sub> <sup>-</sup>  |
| Ba <sup>2+</sup> | SO <sub>4</sub> <sup>2-</sup> |
| Fe / Mn / Al     | NO <sub>3</sub> <sup>-</sup>  |
| Silicates        | PO <sub>4</sub> <sup>3-</sup> |

### Suspended matters

### Biological matters

### Dissolved organic matters (DOM)

Feed Water







# Training

Running an RO facility can be complicated with many moving parts and considerations to make. From selecting the correct chemicals, to ensuring the system is running efficiently, or simply choosing the optimal membranes for your site. Let us help be a part of the solution with...

- On-Site Customized Training
- Webinars / Remote Training



## Free Training Sessions

### Monday 10/21

- 14:30-14:45 Water Chemistry & Antiscalants
- 15:40-15:55 Treatment of Brine Through Chemistry

### Tuesday 10/22

- 14:30-14:45 Optimizing RO/NF Cleaning Through Chemistry
- 15:40-15:55 Data Normalization & Performance Optimization

### Wednesday 10/23

- 10:40-10:55 Water Chemistry & Antiscalants
- 15:40-15:55 Optimizing RO/NF Cleaning Through Chemistry

Catch **PART 2** of  
**Treatment of Brine Through Chemistry: Lessons Learned**  
presented by Amy Nowlin, M.S.ChE  
**Tuesday 10/22**  
9:00 Session 3.1 BWD Room 3

**Booth B60**

**King Lee Technologies**



# Data Analysis: iWaterPRO

Graphs long-term trends and gives you system diagnostics, notifications, and recommendations to help maximize the life of your membranes.

- System Data Normalization
- Automated Data Interpretation and Recommendations
- Warnings and Alerts via Notification Center
- Graphs Long-Term Trends
- Interactive and Customizable
- Encrypted Web-Based Data You Can Access Worldwide
- Easy Access To Support



# Pilot Opportunities: with ROD2

Our pilot unit is enabled to track data,  
can be controlled remotely

What can I learn from piloting?

- Optimize your system performance by learning if you have the correct pretreatment in place.
- Find out if your cleanings are restorative or how to get better cleans.
- Interested in bringing a new chemical online before introducing it to the main system.

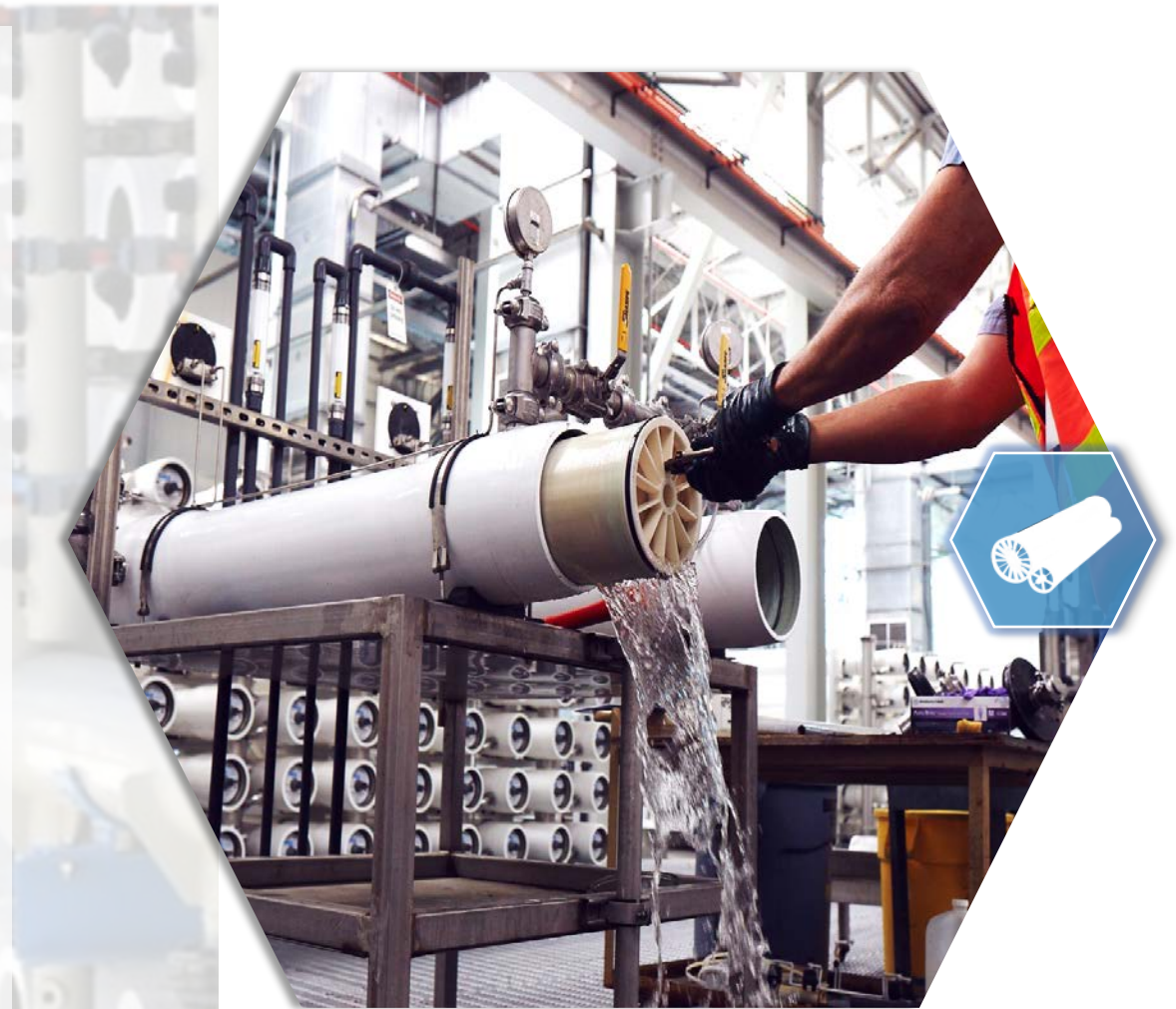




# Off-Site Membrane Cleaning

Geared toward smaller RO systems when membrane cleaning cannot be done on-site or is not cost effective.

- Membranes are shipped to King Lee's headquarters.
- Cleaned using our specially formulated broad spectrum and targeted cleaners to ensure optimal removal of scale and foulants.





# Membrane Replacement

A full membrane changeout may not be a frequent occurrence and having knowledgeable people to lead this task is critical.

Our trained experts can guide the entire process from proper membrane selection, to knowing what parts need to be changed out, to ensuring the system starts up smoothly.



# King Lee Technologies

Your partner in the pure water industry. We commit our decades of field experience to support plant managers, system operators, OEMs, consulting engineering firms, and distributors. We will help you treat challenging water, increase product recoveries, extend cleaning intervals, and excel beyond each new challenge to maximize the productivity, efficiency, and life of your membrane systems.

Please feel free to reach out to us to get your next project going.

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