Kuriverter IK-110
New patented technology of Biocide
If fouling would happened

Increase of the pressure energy

Decrease of Permeate
KURITA’s RO chemical line

- Pretreatment agent: KURIVERTER BP-201, EP-301
- Slime control agent: KURIVERTER IK-110, EC-503
- Anti-scalant: KURIVERTER N series, Selection software
- Rejuvenation agent: KURIVERTER RC-200, RC-300
- Cleaning agent: KURIDINE M-280, M-301, M-310

Original technology

Fouling

Deterioration
Slime Control Agent
KURIVERTER IK-110

- Peeling off the slime ability
- NSF certified online slime control agent
- No damage to membrane
# Slime Control Agent

## Comparison with conventional chemical

<table>
<thead>
<tr>
<th>Effect</th>
<th>EC-503</th>
<th>IK-110</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conventional product</strong></td>
<td><strong>Disinfection effect</strong></td>
<td><strong>New slime control agent</strong></td>
</tr>
<tr>
<td><strong>RO membrane</strong></td>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
</tbody>
</table>

- **EC-503**
  - Disinfection effect

- **IK-110**
  - New slime control agent
  - Peeling off effect
While hypochlorous acid reduces the activity of the slime layer surface, IK-110 also reduces the activity inside of a slime layer.

**Slime Control Agent**

**Comparison with conventional chemical**

While hypochlorous acid reduces the activity of the slime layer surface, IK-110 also reduces the activity inside of a slime layer.

**Without any treatment**
- Red - Active microbe
- Blue - Passive microbe

**NaClO**
- Red - Active microbe
- Blue - Passive microbe

**IK-110**
- Red - Active microbe
- Blue - Passive microbe

**Procurement of a sample:** Methyllobacterium hispanicum
**Medicine concentration:** 10mgCl2/L
**Contact time:** 3h (room temperature and keep stable)
**The dyeing method:** DAPI (blue), CTC (red)
**Measuring device:** BIOREVO BZ-9000 (made by KEYENCE)
Before dosing IK-110, Delta-P was increasing.

Peel-off Ability of IK-110 <in actual RO plant>
After dosing IK-110, Delta-P was decreasing.
Slime Control Agent

Peel-off Ability of IK-110 <in actual RO plant>

Without IK-110 dosing (without cleaning for 2 months) (3years after replacement)

With IK-110 dosing (without cleaning for 7 months) (3years after replacement)
Cost benefit of IK-110

Ex. Cost Comparison

Before IK-110

After IK-110

51% Cost Cut!
KURIVERTER IK-110 is the world first product, which can be dosed in RO system during operation.
SWRO Result of FLUX

IK-110 20mg/L × 3h/24h intermittent dosing

IK-110 could decrease the frequency to 1/3.

Flux (m/D)

Operation time (日)

30 days

90 days or over

CIP

Control
# SWRO Benefit

**Operation Costs**

<table>
<thead>
<tr>
<th></th>
<th>Without</th>
<th>With F-R110</th>
</tr>
</thead>
<tbody>
<tr>
<td>NaClO</td>
<td>0.0017</td>
<td>0.0017</td>
</tr>
<tr>
<td>IK-110</td>
<td>0</td>
<td>0.0221</td>
</tr>
<tr>
<td>Exchange RO membranes</td>
<td>0.0366</td>
<td>0.0157</td>
</tr>
<tr>
<td>Cleaning</td>
<td>0.0146</td>
<td>0.0049</td>
</tr>
<tr>
<td>Energy</td>
<td>0.360</td>
<td>0.2988</td>
</tr>
<tr>
<td>Replacement of Mix bed resin</td>
<td>0.0151</td>
<td>0.0151</td>
</tr>
<tr>
<td>Cost/1m³-permeate</td>
<td>0.428</td>
<td>0.358</td>
</tr>
<tr>
<td>Cost ratio</td>
<td>1.00</td>
<td>0.84</td>
</tr>
</tbody>
</table>

Yen/m³
SWRO Benefit

Operation Costs

Total cost 15% decrease

Cost ($/m²)

Without | With IK-110

- Replacement of Mixbed
- Energy
- Cleaning
- Exchange RO membranes
- IK-110
- NaClO
Conclusion

1. Reduce $\Delta P$
2. Recover Flux
3. Reduce Costs

IK-110 gives the stable operation not only for BWRO but also SWRO
THANK YOU FOR YOUR ATTENTION

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www.kurita.eu

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A useful unit conversion tool - for Android and iOS

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