

# Deoxidization of Boiler Supply Water with SEPAREL®

One of the most serious problems related to boiler supply water is pipe corrosion caused by dissolved oxygen and this issue is commonly prevented by slow, costly, and large deoxidization treatment options.<sup>1</sup> However, SEPAREL® modules from the DIC Corporation offer an efficient and economical solution with immense cost and space savings.

In most cases, oxygen scavengers are widely used for deoxidization. However, some oxygen scavengers are hazardous and must be handled with care. Furthermore, some oxygen scavengers increase the solid concentration of water and require costly blowdown processes.

Along with oxygen scavengers, vacuum degassing towers are typically used for deoxidization. However, vacuum towers need a large amount of space and require a long time to be set up and become operational. Even worse, vacuum towers make it difficult to expand treatment capacity due to a lack of physical space.

SEPAREL membrane modules are non-hazardous, compact, maintenance-free as well as easy to install and replace in a short time. Moreover, with its proprietary hollow fiber and inner structure, SEPAREL can reach any ppb level with only a vacuum pump.<sup>2</sup>



SEPAREL® EF-120



SEPAREL®  
for Water

<sup>1</sup>As a countermeasure against pipe corrosion, besides deoxidization, surface treatments of pipe such as coating and oxide film forming are used. However, those treatment are not to remove dissolved oxygen, pipe corrosion by steam and condensate water cannot be prevented.

<sup>2</sup>In case of deoxidization by membrane, to reach to ppb level, combination method of vacuuming and N2 sweeping is commonly used. However, this method needs cost for N2 gas. Moreover, because configuration of total deoxidization become complicated, equipment become heavy and needs large space.

### Comparison of Deoxidization Methods

|   | SEPAREL  | Oxygen Scavengers | Vacuum Degassing Tower | N2 Injection |
|---|--|-------------------|------------------------|--------------|
| <b>Deoxidization Performance</b><br>High ← Performance → Low<br>◎ ○ △ ×           | ◎<br>SEPAREL® can reach any ppb level with only vacuuming.               | ◎                 | ◎                      | △            |
| <b>Initial Cost</b><br>High ← Cost → High<br>◎ ○ △ ×                              | ○<br>Only with a vacuuming unit, oxidization can be done.                | ◎                 | ×                      | △            |
| <b>Running Cost</b><br>Low ← Cost → High<br>◎ ○ △ ×                               | ◎<br>Maintenance-Free  | △~×               | ◎                      | ◎            |
| <b>Frequency of Blowdown</b><br>Low ← Frequency → High<br>◎ ○ △ ×                 | ◎<br>No Reactive product is generated.<br>Non-volatile content included. | ×                 | ◎                      | ◎            |
| <b>Handling Safety</b><br>High ← Safety → Low<br>◎ ○ △ ×                          | ◎<br>No hazardous material included.                                     | △~×               | ◎                      | ◎            |
| <b>Space</b><br>Small ← Space → Large<br>◎ ○ △ ×                                  | ○<br>Compact Size  | ◎                 | ×                      | △            |
| <b>Easiness of Capacity Enlargement</b><br>Easy ← Easiness → Difficult<br>◎ ○ △ × | ○<br>Easily enlarge by increasing units or switching product type.       | ◎                 | ×                      | ×            |
| <b>Period for Installation</b><br>Short ← Period → Long<br>◎ ○ △ ×                | ○<br>Only a few days are needed depending on use conditions.             | ◎                 | ×                      | △            |

- Items mentioned in this information are for customers' reference and limited to certain examples alth based on the most reliable data obtained by our company. It is hoped that customers make the best use of these products after careful examination.
- We are not responsible for any usage, installation, or any other handling done by the customer. The module must be used, installed, and handled responsibly by the customer.

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