

VACUUM DISTILLATION UNIT (VDU)



Distillation is the process of separating components from a liquid mixture by boiling and condensation. The distillation of water results in the production of very high-quality water, typically of a drinking standard. Distillation focuses on the water processing rather than contaminant removal. This makes the process of distillation a more effective and efficient process with respect to water quality.

The ICMQ Vacuum Distillation Unit (VDU) operates via the principle of mechanical vapour compression in which distillation is conducted at reduced pressure. This lowers the boiling point of water and greatly reduces the energy required. Vacuum distillation is able to remove water from mixtures with very high salt content and the energy requirement is much more stable with respect to increasing salt content. Unlike processes such as reverse osmosis (RO), recovery is not limited by the salt content of the mixture which results in greater volume reductions.

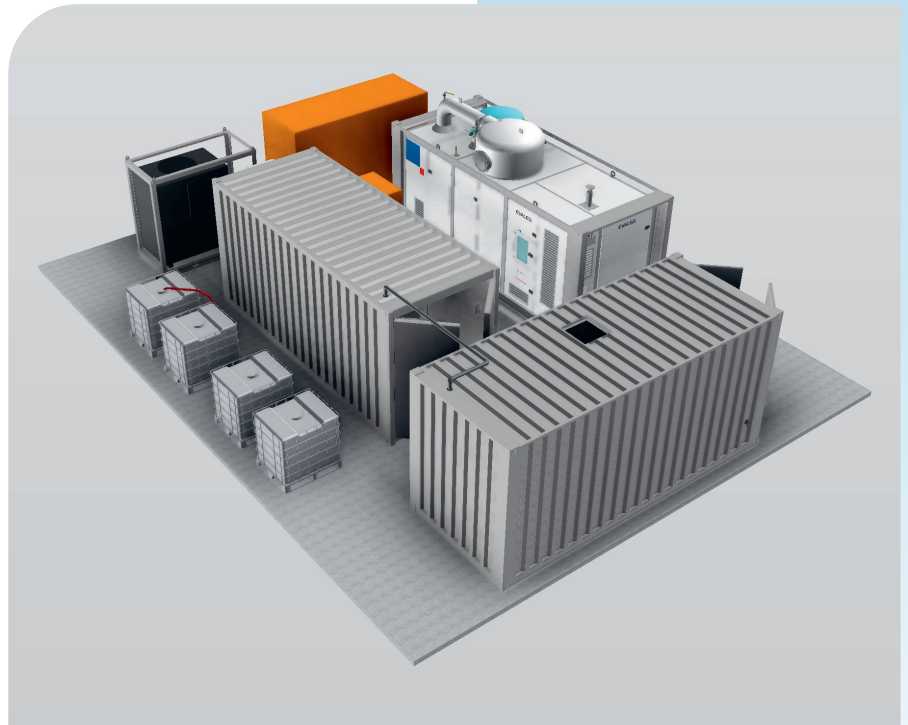
The VDU product water can be passed through an RO system to produce even higher quality water for high-value reuse and, when incorporating other technologies, can eliminate all liquid discharge to provide a Zero Liquid Discharge (ZLD) solution.

VDU ADVANTAGES

- ✓ Low-energy process, particularly useful for waters with high salt content.
- ✓ Largely unaffected by contaminants present in the feedwater.
- ✓ Produces very high quality water, typically drinking water standard.
- ✓ Able to achieve very high volume reduction.
- ✓ Highly transportable.
- ✓ Highly automated, minimal operator input required.

VDU SYSTEM LAYOUT

VDU systems are highly modular, allowing expansion to meet any capacity. In addition, the containerised design allows for high mobility, making it ideal for both permanent and temporary applications.



INDICATIVE WATER QUALITY

An example of expected water quality produced by ICMQs VDU is presented on the right:

Parameter	Feed Water	Product Water
pH	7	4.8
Turbidity (NTU)	55	<1
Ammonia (ppm)	4000	0.25
Tot. Kjeldahl Nitrogen (ppm)	4300	0.25
Tot. Phosphate (ppm)	12	0.25
Aluminium (ppm)	1.1	<0.05
Arsenic (ppm)	0.14	<0.001
Chromium (ppm)	24	0.008
Cobalt (ppm)	0.26	<0.001
Copper (ppm)	1.1	0.002
Lead (ppm)	0.029	<0.001
Manganese (ppm)	17	<0.005
Nickel (ppm)	3.8	0.003
Vanadium (ppm)	0.31	<0.005
Zinc (ppm)	11	0.031

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