WOW TECHNOLOGY's improved and advanced Evaporative treatment

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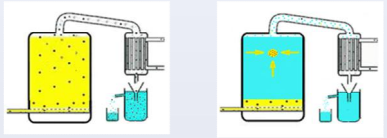
Outperforming liquid treatment designed for application in industrial field and in decommissioning

Fluid Dynamics Technology

WOW proprietary technology performs a **localized molecular separation** between solute and suspended elements and the solvent.

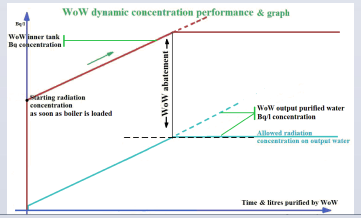


Standard process vs WOW process

The **SUPER** selective evaporation improves the abatement factor or decontamination factor by thousands of times in respect to any standard evaporator. It works even with volatile elements by adding a pre+post-evaporator WOW process to strip efficiently volatiles.

Continuous Process

Thanks to the **full control of the drag/entrainment effect**, no batches or multi stages are required to reach the desired total D.F..



No Secondary Waste

No filters/membranes, additional tools or additives, such as demisters or distillation columns, are used to carry on the process. And **the equipment self decontaminates** after use.

Safe, automatic and tailored

With performance verified by several International bodies and advisors for the highest category of liquid **nuclear waste,** it can be tailored for many applications. Operation is **fully automated, remotely controlled, Fault Tolerant & Failure Proof** and designed for easy **transportation and deployment.**

Validations and Certifications obtained on the nuclear fields

1 Test with first device, at LENA (Applied Nuclear Energy Lab.) of the University of Pavia

Continuous Operation:	20 litres/day for 39 days
Contaminants Concentration:	1,500 mg/l of ^{133}Cs totally soluted + 2 radioactive tracers: ^{134}Cs (4.2MBq) *few µg*, ^{137}Cs (3.6MBq) *few µg*
Conc. Level Simulation:	**4.8 TBq/l typical of HLW** *6,000 times higher than Fukushima-Daiichi cooling water*

Certified Results

Min. Decontamination Factor (DF)	**DF > 7,500**
Removal Efficiency	**99.986%**

2 Real case application of the improved device, on LLW: treatment of 1,000lt. of solution produced for decommissioning by the Radiochemistry Laboratory of the University of Pavia.

Certified Results

RADIOISOTOPES	MEASURED DECONT. FACTORS (DF)
^{137}Cs	40,338
^{134}Cs	39,744
^{241}Am	33,425
^{109}Cd	18,735
^{60}Co	7,581

Final residual concentrated waste solution < 1 Lt

3 **Full scale industrial application: Nuclear repository of Saluggia (IT)**

Certified:
by British National Physics Lab. NPL
& by site operator
+
University of Pavia – LENA Lab.

Continuous Operation:	Average ≈410litres/day for 120 days → total ≈50,000 Lt
Initial liquid characteristics	pH = 4.6; Fluorides <1mg/l; Chlorides ≈15mg/l; Nitrates <5mg/l; Sulfates ≈303mg/l; Phosphates Absent; Sodium ≈22mg/l; Potassium ≈11mg/l; Magnesium ≈6mg/l; Calcium ≈94mg/l.
Radioisotopes	LLW of ^{137}Cs ; ^{60}Co ; ^{241}Am ; ^{90}Sr

Certified Results

Radio-nuclides	Measures by	Decontamination Factor (DF)			
		After 30 Days	After 60 Days	After 90 Days	After 120 Days
^{137}Cs	UNIPV-LENA and by N.P.L.	≈80,000	≈ 142,000 ÷ 168,000	≈107,000 ÷ 412,000	≈335,000
^{60}Co	UNIPV-LENA and by N.P.L.	≈56,000	≈161,000 ÷ 178,000	≈520,000 ÷ 685,000	>264,000
^{241}Am	UNIPV-LENA and by N.P.L.	>23,000	>5,290 ÷ >238,400 (*)	>300,000	>>ND
^{90}Sr	UNIPV-LENA and by N.P.L.	>2,044	>26,200	>66,760 ÷ >96,000	>91,470

OIL & GAS

TUV SUD NEL in UK – NORTH SEA

Produced Water decontamination

Despite the **strong presence of volatile elements**, **WOW** performed very well

WOW's tailored equipment for this specific application and proof of concept

WOW PUT 2.0 DEVICE installed at TUV NEL labs in Glasgow

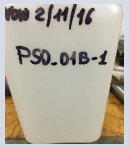
Produced Water from oil & gas production contaminated by Crude Oil, Volatile elements and Chemicals

Input stream contamination: ≈ 300 ppm

Output Purified stream residual contamination with a concentration factor of 5 (Test C): ≈ 6 ppm

Minimum Boiler DF > 185 (for oil element)
Minimum Total DF ≈ 50 (it can be improved)

Input contaminated stream



Output decontaminated stream

WOW OFFERS A PROVEN COMPLIANT SOLUTION FOR MEETING the < 30 ppm RESIDUAL CONTAMINATION STANDARD WHEN IT IS ADOPTED.