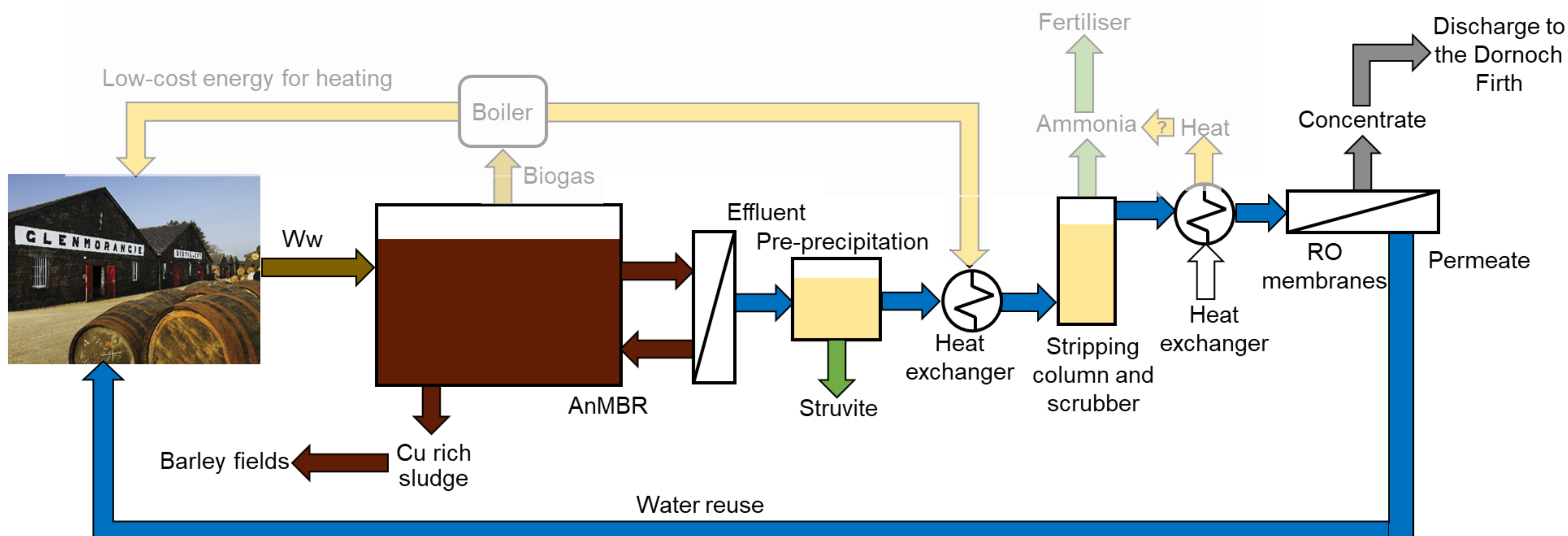


CS7 – Production of high quality water for reuse

Concept:

Treatment of distillery wastewater through an anaerobic membrane bioreactor, struvite pre-precipitation, ammonia stripping and scrubbing and reverse osmosis membranes for the production of high quality water for cleaning processes at the site.



Objectives:

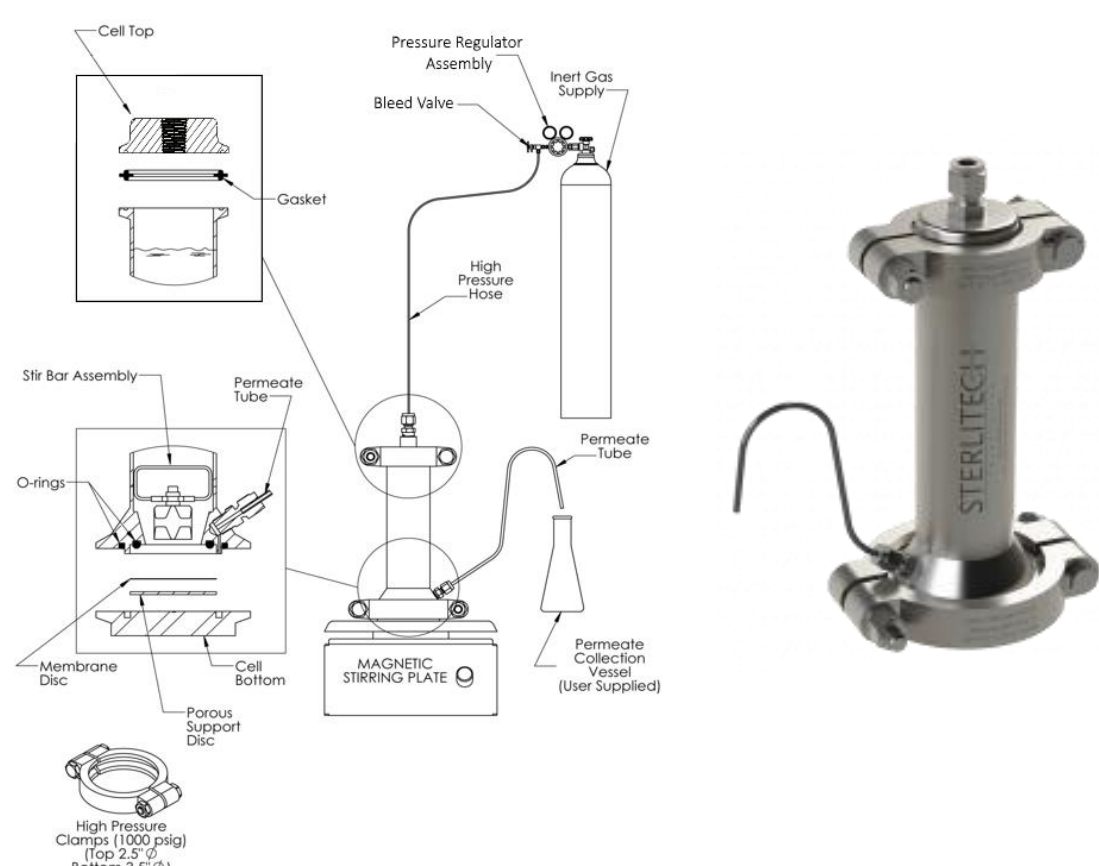
- Evaluate the impact of organics, nutrients and temperature on the operational and treatment performance of the reverse osmosis membranes
- Define sustainable operational conditions of the reverse osmosis membranes for the production of high quality water for cleaning processes at the site
- Achieve 50% water recovery through the system

Anaerobically treated distillery wastewater

	Avg ± St.dev *	n		Avg ± St.dev *	n		Avg ± St.dev *	n
pH	7.16 ± 0.34	33	[TN]	824 ± 76	32	[Alk] _t	3265 ± 791	33
Temp. (°C)	37.8 ± 2	619	[TAN]	801 ± 96	33	[SO ₄]	532 ± 572	22
EC (mS/cm)	5.88 ± 0.63	33	[PO ₄ -P]	210 ± 23	33	[Cl]	246 ± 30	22
[TSS]	85 ± 135	33	[Mg]	40 ± 30	33	[Na]	406 ± 103	33
[COD] _t	554 ± 195	33	[Ca]	368 ± 121	33	[Cu]	0.99 ± 0.71	271

*mg/L

Lab-scale dead-end filtration cell



Reverse osmosis membranes pilot unit



Lessons learned from the design phase

→ Variability in the wastewater characteristics will have a significant impact on the performance of the system so it is critical to have a detailed understanding of the production patterns on site and their influence on the wastewater produced

What is crucial in terms of replication of the technology?

→ For direct industrial wastewater treatment for reuse, it will be essential to understand the specificities of the site as it will influence the characteristics of the wastewater to be treated as well as the potential for reuse applications i.e. fit-for-purpose

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