CASE STUDY

NUMBER FIVE CAFÉ, DUBAI

APPLICATION
HORECA
WATER SOURCE
MUNICIPAL
YEAR INSTALLED
2019
LOCATION
DUBAI, UAE

THE CHALLENGE

Around the world, café owners are looking for ways to have high-quality water for their beverages while still maintaining consistent TDS output, low OpEx and high water recovery. In Dubai, Number Five Café was experiencing the usual challenges present in this region: Fluctuating feed water temperature, peaking at 50-55°C and reducing filtration equipment lifetime Fluctuating municipal feed water TDS, taking up barista time to check the blend or having to accept variable quality Scale (such as calcium carbonate) formation affecting equipment Low water recovery on existing filtration coupled with high maintenance

VOLTEA'S CAPDI SOLUTION

CapDI is known to be effective at salt-free water purification, especially in the HoReCa (Hotel/Restaurant/Café) industry, all while being an environmentally responsible desalination solution. Proving that it's possible to produce the water quality desired for high-quality, great-tasting coffee while maintaining minimal intervention, Voltea's DiUse System was chosen as the water purification solution for Number Five Café in Dubai. Furthermore, CapDI can achieve its targets at an increased water recovery compared to traditional technologies, such as Reverse Osmosis (RO). With CapDI, the traditional headaches are removed.

PROVEN RESULTS

To allow real-time monitoring and adjustment of the DiUse performance, conductivity is recorded and used as a measure of TDS. This data is sent daily via email, a feature which is standard on all DiUse systems. The results of this Number Five Café system are presented in the figures on the following page. The DiUse is set to achieve 150 µS/cm and consistently achieves this within 10% of the target (Figure 1). The unit does not record feed conductivity; however, a spot sample is also shown in Table 1 for reference.

Running on municipal feed water with a carbon and 5-micron particle filter, operation is achieved with simple pre-filtration. The concentrate runs to the usual sewage as no harmful chemicals or additional salts are added. The CIP (Cleaning-in-Place) is automated and achieved with food-grade citric acid that is diluted before being sent to waste. This removes the worry of having to remember when to clean the system, plus it eliminates any issues or discharge permitting. This unit was installed in June 2019 and continues to operate today.

CapDI easily fits under a countertop and doesn't require any complicated installation.

Reduction of water loss through improved water recovery is important, not just for the environment but also for keeping operating expenses to a minimum.

CAPDI PERFORMANCE RESULTS

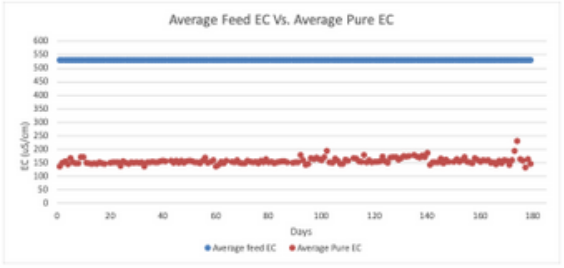

Fig. 1

Figure 1 – The conductivity of both purified water post-CapDI (Average Pure EC) and feedwater pre-CapDI (Average Feed EC).

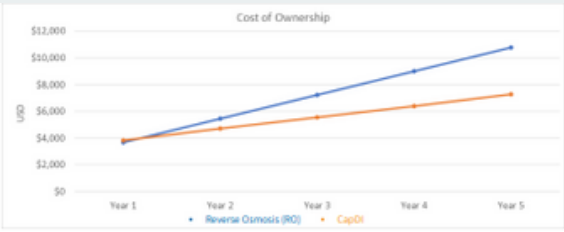

Fig. 2

Figure 2 – The cost of ownership over a 5-year period, including the CapEx of module replacement.

Figure 2 shows that operating expenses for the DiUse are, on average, lower than those for an equivalent RO unit over a 5-year period.

Table 1

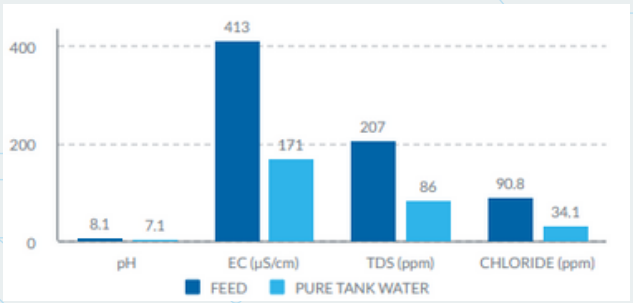

Table 1 – Sample of feed conductivity

"Our expectations in terms of performance and water quality have been fully met with the Voltea CapDI System. We have found the team to be very professional and supportive in helping us meet our stringent goals at our specialty coffee shop."
— The Management, Number Five Café

Expenditure Assumptions (Figure 2)

- Filter replacement: once a month
- RO requires CTO filter (chlorine, taste, odor)
- Module/membrane replacement:
  - 3–5 years for CapDI
  - 2 years for RO
  - (based on known water conditions and daily demand)
- Water recovery:
  - RO = 35%
  - CapDI = 73%
- Energy consumption: CapDI operates at ~0.61 kW/kgal (US)
- Module lifetime: Current CapDI set-up projected to last ~5 years, while meeting water demand easily

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