

CASE STUDY

WELLINGTON BREWERY

APPLICATION

BREWERY PRODUCT
WATER

WATER SOURCE

MUNICIPAL

YEAR INSTALLED

2019

LOCATION

ONTARIO, CANADA



INTRODUCTION

Dependable, consistent product water is an understated factor of importance for greattasting, superior brews, whether from a local artisan or large-scale beer production facility. Many breweries are located in areas of the world where municipal water sources have inconsistent or poor water quality, which can cause additional work for the brewer. From increased cleaning and maintenance to the inability to make certain styles of beer, these issues can adversely affect their brand, their proficiency at brewing consistent world-class beers and their ability to grow their business.

THE CHALLENGE

Wellington Brewery, located in Ontario, Canada – an area known for hard-water challenges – desired product water with lower hardness and overall TDS to continue to progress in their craft. Despite their municipal water being fantastic for heavier beers, it was causing significant maintenance issues, as well as impacting quality and consistency.

Wellington was frustrated with the high maintenance and labor demands from scale build-up in their brewery system – predominantly the hot liquor tank (HLT) and centrifuge – as well as the effect this may have on the lifetime of their valuable equipment. Heavy use of dangerous cleaning chemicals was required for the toofrequent cleanings caused by the scale build-up, as was excessive amounts of acid to manage the pH and water chemistry in their beers. All these factors were increasing their OpEx considerably. Natural variations in municipal water quality also posed an obstacle in keeping the quality and flavor profiles of their full line of brews steady after every batch.

Additionally, the level and distribution of mineral content, predominantly the hardness, sodium, sulfate and chlorides, were making production of their lighter styles of beer difficult. It is well known in the brewery industry that the balance of these ions can impact the flavor characteristics and profile of beer, such as hop bitterness, mouthfeel and body. Wellington was in need of a water purification solution.



VOLTEA'S CAPDI SOLUTION

The brewery considered both reverse osmosis (RO) and CapDI to address their water quality headaches. At Wellington, they have taken very seriously the desire to keep all things local; from their hops and yeast to their supply chain and product water. Marvin Dyck, Master Brewer voiced, "What is local about fully softened, RO water? Taking all minerals and salts out of the local water source and having to blend any ions back in to achieve a specific water quality removes the 'local' attributes of our city's water."

After evaluating all benefits and concerns with using RO, Wellington chose CapDI as their water purification solution. Some very important features of CapDI that influenced their decision were tunability, high water recovery, and low maintenance requirements. Rather than removing all ions and minerals from their water, they were able to reduce the TDS down to create a baseline water quality. They then used this tunably purified water, with the addition of certain minerals and ions, to build with as required for other unique brews in their arsenal.

Table 1 below references water quality data both pre- and post- CapDI purification.

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- Marvin Dyck, Master Brewer



Table 1	Parameter	Feed Water	Treated Water
	TDS (ppm)	588	128
	Conductivity ($\mu\text{S}/\text{cm}$)	897	286
	pH	7.6	7.2
	Hardness (ppm as CaCO_3)	462	108
	Calcium (ppm)	118	28
	Magnesium (ppm)	41	9
	Sodium (ppm)	34	32
	Alkalinity (ppm)	279	103
	Chloride (ppm)	71	16
	Sulfate (ppm)	142	26

Table 1 – Water quality data both pre- and post- CapDI water purification



Wellington's first two brews with CapDI purified water!

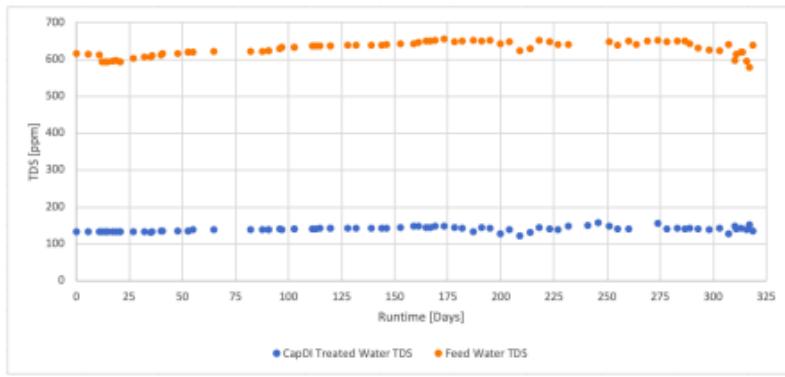
**Figure 1**

Figure 1 – Wellington Brewery feed water TDS hovers between 600-700 ppm pre-CapDI, with a target TDS of 125 ppm with CapDI purification.

PERFORMANCE RESULTS

Voltea's Industrial Series 24 CapDI System (IS-24), installed in April 2019, has provided the high-quality water that Wellington Brewery needs for their brand and business. It also enables them to continue improving and developing the flavor and consistency of their brews.

Figure 1 below displays both municipal feedwater TDS and CapDI purified water TDS over one year. Feedwater TDS hovers between 600–700 ppm pre-CapDI, with a target TDS of 125 ppm after CapDI purification.

Due to minimized scaling after the IS-24 CapDI installation, maintenance and labor issues on their brewery system have been reduced—most notably in the heat exchangers on the HLT. Cleanings were reduced from three times per week to only once every other week, freeing up staff to focus on what they are best at: making beer!

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Wellington Brewery – Case Study – May 15, 2020

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