

# Hupacasath Water Treatment

Bi Pure Water completed a package water treatment system for the Hupacasath First Nation located near Port Alberni on Vancouver Island. This system uses a state of the art gravity-fed ultrafiltration system developed by UBC/RES'EAU.



Figure 1: Exterior after installation



Figure 2: Interior of completed system

## Key Features:

**Water Source:** Sproat River

**Peak Flow Rate:** 57 L/min

**Treatment:**

1. Ultrafiltration (UF) membranes
2. Sodium Hypochlorite disinfection
3. Ultraviolet (UV) disinfection

**Dimensions:** 24 Ft x 8 Ft x 11 Ft

## Partnerships

This system is currently serving the Hupacasath First Nation. Kleekhoot IR2, joined forces with Bi Pure Water, NTC, UBC scientists, FNHA, and ISC in applying Community Circle™ and SAILS™ to open innovation.

## About the System

Designed and manufactured in Surrey, BC by Bi Pure Water Canada Inc., the PWTP system was factory fabricated as a modular building unit. This approach allows factory testing of the process and greatly reduces the construction time on site. The unique heart of the treatment system is a novel gravity fed ultrafiltration system recently invented by professor Pierre Berube and associates at UBC. The Hupacasath plant was the larger scale pilot plant designed as proof of concept and funded by Indigenous Services Canada.

# The Technology

The skid with 4 ultrafiltration membranes will be able to produce approximately 19 m<sup>3</sup>/day (5000 USG). With the addition of a future second ultrafiltration skid, the production can be boosted up to 38 m<sup>3</sup>/day (10000 USG).

This means that no pump is used to produce the pressure required to filter raw water through the Membrane Modules. The difference between the elevation of the water level in TK-110 and the elevation of the open valve on the Permeate Header generates the pressure required for filtration.



Figure 3: Ultrafiltration skid at UBC

## Training

Operator training during COVID-19 was augmented by a novel Transform Interactive Solution for remote training, leveraging interactive AR (Augmented Reality), VR (Virtual Reality), MR (Mixed Reality). This was all possible because of the BIPW 3D CAD data from the water treatment plant design.

## Research in Motion

As it is a “research in motion” project, UBC and RES’EAU staff monitor the operations and fine tune the system as required. To date the system is performing to expectation but not without that fine tuning.

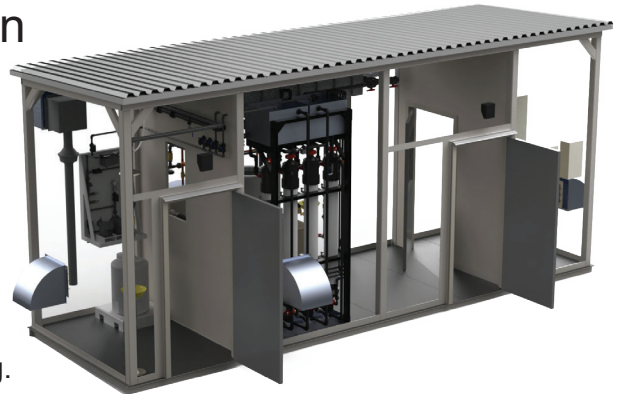


Figure 4: BIPW 3D CAD Model

BIPW specializes in reviewing water quality test results, analyzing customer needs and then prescribing the most cost-effective solution. Our engineers and staff pilot, design, manufacture, install, start-up and commission package water & wastewater treatment plants. The operators are then trained and the plants can be serviced on a regular basis.

These package water treatment plants are cost-effective because:

- The water treatment plants are custom engineered to a specific water analysis and budget.
- The plant can be built in the Port Kells factory where the trained staff works.
- The completed water treatment plant is quality, leak- and flow- tested at the factory.