

EDEN, VERMONT HIGH BRIX REVERSE OSMOSIS



APPLICATION: Maple Syrup Production CAPACITY: 6000 acres (150,000 taps) LOCATION: Eden, VT TECHNOLOGY: High Brix Reverse Osmosis COMMISSIONED: 2018





Custom 3.5" diameter main-lines

Greener Agriculture: Using H₂O Innovation's High Brix Systems to Enhance Maple Syrup Production and Reduce Fuel Consumption

CONTEXT

Based in Eden, Vermont, Goodrich's Maple Farm is a family business that has been producing maple syrup since 1840. At its beginnings, their production was small, as they would tap 25 trees in their back yard and boil the sap in a small pan over a wood fire. The business has expanded over the years; it now has 120,000 taps and plans to add 30,000 more in the near future.

The owners were looking for a technology that could help them fulfill their growth ambitions and partnered with H_2O Innovation in 2018 to find a cost-effective solution to increase their production and implement more sustainable processes.

SOLUTION

In 2018, the producers purchased their first High Brix system, for which H_2O Innovation holds the patent. Since then, they have bought three other systems, partly because the machines allow them to tap more trees.

Each Supra is comprised of three skids, which all hold six standard-issue membranes operating at a pressure of 350 psi and two High Brix membranes operating at 700 psi, for a total of 24 membranes in each Supra. To meet their production needs, Goodrich's Farm needed a tank that could contain 30,000 gallons, which was simply unheard of at the time. H₂O Innovation was the first company on the market to build a tank of this size. At 30 feet long, 10 feet wide, and 7 feet high, the tank is ideal for the client's requirements.

Through membrane filtration, the High Brix allows producers to concentrate the maple sap between 30 and 45 degrees Brix, which is not possible with a conventional evaporator. Substantially increasing the sugar concentration level leads to a significant reduction of the water that needs to be evaporated. As a result, boiling time and energy consumption are both drastically reduced.



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Goodrich's custom sap tanks, now a standard product



High Brix Supra membranes lined up

RESULTS

The High Brix technology has proven to be a highly effective and user friendly machine that requires little maintenance and is easy to clean. Each machine of this system is able to consume 6,000 gallons of sap/hour, which allows Goodrich's Maple Farm to produce almost 7 gallons/minutes of concentrate.

Whereas the Goodrich family would normally use 250,000 gallons of fuel per year, the High Brix reverse osmosis system allows them to bring their fuel consumption down to 10,000 to 12,000 gallons. Not only does this translate in a significant reduction in greenhouse gas emissions, but it also allows them to achieve major cost savings annually.

The High Brix machines have had considerable impacts on Goodrich's production. While their syrup has the same exquisite taste it did 200 years ago, it is now produced in a much more energy-efficient and sustainable way. As such, H₂O Innovation's High Brix technology goes a long way towards helping Goodrich's Maple Farm, as well as many other businesses, reach their sustainability objectives.



The High Brix Supra, when it was first delivered back in 2018.