

Digester Membrane Gasholder



Case Study Details

Water Authorities throughout North America are re-evaluating the function of their wastewater treatment plants. These facilities are being repurposed into resource recovery facilities, as biosolids contain energy, which can be harnessed to reduce the costs of operating a wastewater water plant. In the past, anaerobic digesters would produce methane gas which would be burned in a flare.

These same facilities are using the methane gas (natural gas) to produce electrical power. One way to do this is to store as much gas as possible instead of burning it through flares. Fixed covers are limited in their capacity to hold gas. Membrane gasholders can significantly increase the storage capacity of gas produced by digesters.

The Region of Waterloo has replaced one the steel covers on their digesters with an Ovivo membrane gasholder. This project was unique, in that the design of the membrane gasholder was to integrate into the landscape of the facility. The digester is 33m. in diameter. When designing a membrane gasholder, the dome itself will be half the diameter of the digester in height. This would have made the dome on top of the digester, 16 meters in height. This was considered to be an obstruction by the plant, so a design was developed to reduce the height by designing a $\frac{1}{4}$ sphere dome for the digester. This concept still provided a gas storage capacity of 3,000 m³. A conventional steel cover would be able to hold the same volume with a 4 meter skirt at a much higher cost.