# Water and sewage

## Liverpool Wastewater Treatment Plant

**UNITED STATES**

**Medina, OH**

**Owner**
Medina County Sanitary Engineers

**Engineer**
Timmerman Geotechnical Group, Inc.

**General contractor**
Overland Contracting (Black & Veatch)

**Dates of work**
2017/01 2017/12

## Main figures

**Bi-modulus columns**
263 EA.

## Description

The Liverpool Wastewater Treatment Plant (WWTP), located about 30 miles south of Cleveland in Medina, OH, was the proposed site for the construction of three new tanks as part of a facility-wide upgrade. The resulting plant will be self-sustaining by using a blend of renewable biogas and natural gas to power its operation (www.bv.com).

The three tanks, one with a 20-ft diameter and the other two with 64-ft diameters, are part of an anaerobic digestion process which breaks down organic matter into biogas to be used in generating power. Menard designed and installed Bi-Modulus Columns (BMC)™ to improve bearing capacity, control settlement, and to allow for easier excavation of the cone-down tank bottoms.

## Ground conditions

The site soils are characterized by an upper layer of topsoil 3 ft deep. Underlying the top soil, a layer of medium stiff clayey silt with trace of fine sand is at 3 to 12 ft, underlain by a layer of 12 to 22 ft of fine saturated loose to medium dense sand. Underneath all these layers at 22 to 46 ft is moist, stiff silty clay.

## Solution

The anaerobic digestion process produces considerable quantities of methane and other volatile gases. Due to the presence of these flammable substances, Menard crews were required to pass specialized safety training including wearing monitors to measure the amount of gases in the air.

The soft working platform also made it challenging for Menard rigs to move around the working pad and slowed installation. The addition of steel plates and extra stone helped Menard crews stabilize the ground for the equipment so that it could move across the working pad in a safe manner.

A total of 263 BMCs were installed to a maximum depth of 45 ft. When the upgrades are complete, the Liverpool WWTP will save an anticipated $1.5 million annually in operations expenditures (www.bv.com).