



## OVERVIEW

Greenleaf Advisors, LLC assisted Pfingsten Partners, LLC with its investment in Hy-Bon Engineering Company in 2009 by advising on how climate science would drive regulatory changes in its favor. This regulatory thesis has proven true in Hy-Bon’s traditional oil and gas markets. Hy-Bon’s low pressure gas collection and storage technology converts methane gas (a major GHG) into high value revenue streams. Greenleaf is investigating opportunities to expand Hy-Bon’s work in the waste water treatment markets as discussed below.

### HY-BON MANAGES BIOGAS FOR:

- gas burning electric generators
- boiler systems for steam turbines
- boiler systems to generate heat
- rerouting gas to churn digester tanks

### BENEFITS

- saves money
- reduces greenhouse gas emissions
- improves biosolids management
- improves safety

### EXPERTISE / DIFFERENTIATION

- 55 years of delivering customized gas collection solutions
- stainless steel piping and valve trims
- suction filtration system
- liquid knockout system
- trouble free service
- methane gas collection leader in oil & gas and wastewater industries
- exclusive supplier to leading brands: FMC and US FILTER

### HY-BON METHOD

#### Identify

HY-BON pioneers the use of FLIR technology for the identification and visualization of low pressure gas leaks.

#### Quantify

HY-BON focuses on the gas stream and uses scientific approach to analyze gas flow to design most effective solution.

#### Rectify

HY-BON applies its 55 years of experience and technology leadership to customize solutions for gas streams.

#### Value Creation

HY-BON products and services save money, capture greenhouse gases, improve safety, and generate a quick return on capital.



## RECENT HY-BON PROJECTS

HY-BON projects help clients save money and meet greenhouse gas emissions goals while improving or simplifying operations. HY-BON projects range from 5 cubic feet per day to 2.5 million cubic feet per day. Their largest project saved the carbon equivalent of taking 817,000 cars off the road annually; another project saved the equivalent of \$150,000 per month in fugitive gas. Furthermore, HY-BON products improve site safety by reducing exposure to noxious gas, and reducing the risk of accidental combustion.

### WHERE HY-BON IS WORKING

#### Bay Park (NY) WWTP

- 4 units, each with a capacity of 260 cf/m
- 10" W.C. inlet, 15 psig discharge pressure

#### Coney Island (NY) WWTP

- Gas collected generates electricity for Coney Island Amusement Park
- 4 units generate electricity
- 3 units churn digesters
- 160 cf/m from 5" W.C. inlet pressure to 20 psig discharge pressure

#### Pima County (AZ) WWTP

- 500 cf/m
- 0" W.C. inlet, 48 psig discharge pressure

#### Valley Creek (AL) WWTP

- 7 units, 160 cf/m capacity each
- 10" W.C. inlet, 18 psig discharge pressure
- Supplying low BTU gas to boilers

#### Rivanna (VA) WWTP

- 5 units, each with a capacity of 190 cf/m
- 10" W.C. inlet, 25 psig discharge pressure

#### Infilco Degremont (VA) WWTP

- 4 units, 290 cf/m each
- 0" W.C. inlet, 15 psig discharge pressure

#### Cedar Creek (NY) WWTP

- 4 units, 190 cf/m capacity each
- 8" W.C. inlet, 15 psig discharge pressure

### WHY COLLECT DIGESTER GAS

There are significant opportunities to save costs and meet environmental goals.

**Energy cost reductions** can be met through the generation of electricity and/or the offset of natural gas.

**Environmental goals** can be met by collecting biogas: 3% of the USA anthropogenic methane and 2% of total Nitrous Oxide emissions is generated from WWTPs.

### WE CAN HELP WITH

- Evaluating the potential for methane from new or retrofit digesters.
- Accessing thought leaders in digester design and operation.
- Meeting energy and cost reduction goals.
- Reducing your carbon footprint.
- Improving biosolids management.

Contact **Pete Mulvaney** of Greenleaf Advisors, former Sustainability Leader for the Chicago Department of Water Management and consulting engineer. Currently he assists a wide range of renewable energy companies to meet their environmental and financial goals through the application of appropriate technology and the ability to raise investment and growth capital.