



New Energy Solutions, Inc.

"Changing the outlook for green energy systems"

BioGas Clean-Up Unit



- Removes Water and Particulates
- Reduces Sulfur Compounds to 2 to 6 ppm
- Removes Siloxanes
- Fully Automated



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Tel # (413) 822-1155 Fax # (413) 448-2149

BioGas Clean-Up Unit

NESI's **BioGas Clean-Up Unit** is designed to work with digester gas from many sources:

- Wastewater Treatment Plants
- Animal Wastes
- Food and Beverage Industry Wastes



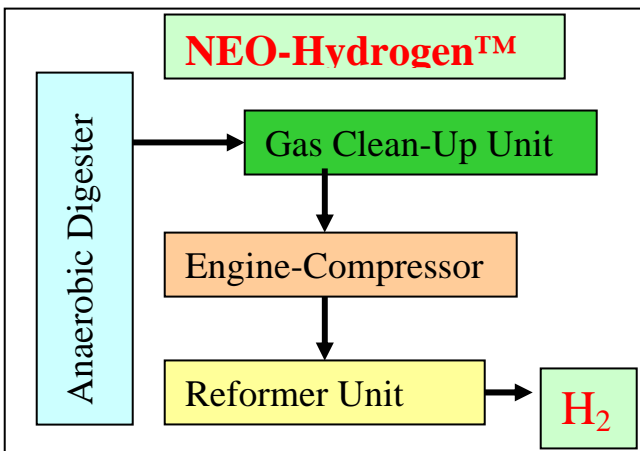
Our base unit is easily transported and placed on site. The picture to the left shows our unit being unloaded at a dairy farm in western New York State.

The design and operation of the **BioGas Clean-Up Unit** is supported by the NESI technical team. The team has over 200 people-years of experience in design, installation and operation of on-site energy systems.

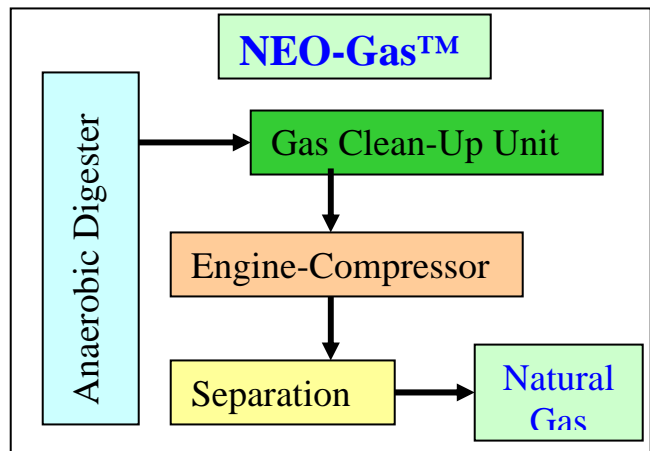
The **BioGas Clean-Up Unit** is the base unit for our other two products:

- Our **NEO-Hydrogen™** Plant takes the gas from our **BioGas Clean-Up Unit** and further processes it into high purity Hydrogen.
- Our **NEO-Gas™** Plant takes the gas from our **BioGas Clean-Up Unit** and further processes it into pipeline quality Natural Gas.

Both the **NEO-Hydrogen™** and **NEO-Gas™** Plants can be added at later date.

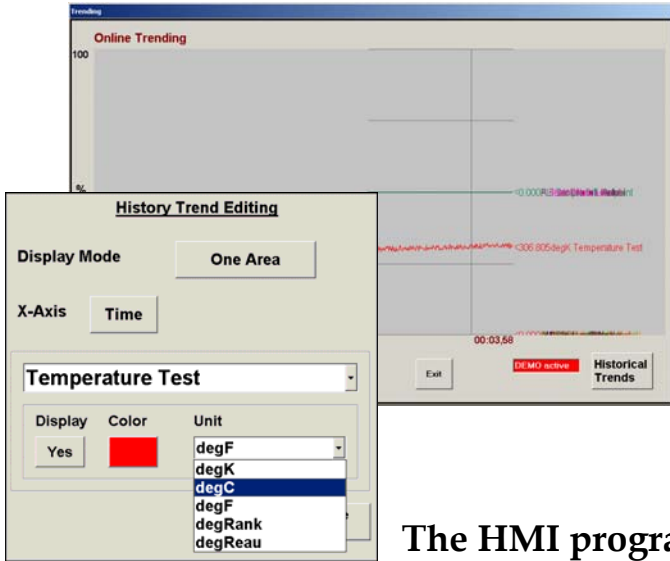


US Patent No. 7,033,822



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The NESI **BioGas Clean-Up Unit** contains two absorption beds, which can be operated in parallel, series or individually. NESI typically recommends operating the beds in series. When the primary bed has been saturated, the flow in the primary and secondary beds is reversed. The bed media supplier, US Filter, can be contacted to exchange the spent media. US Filter replaces the media on site and removes the spent material.

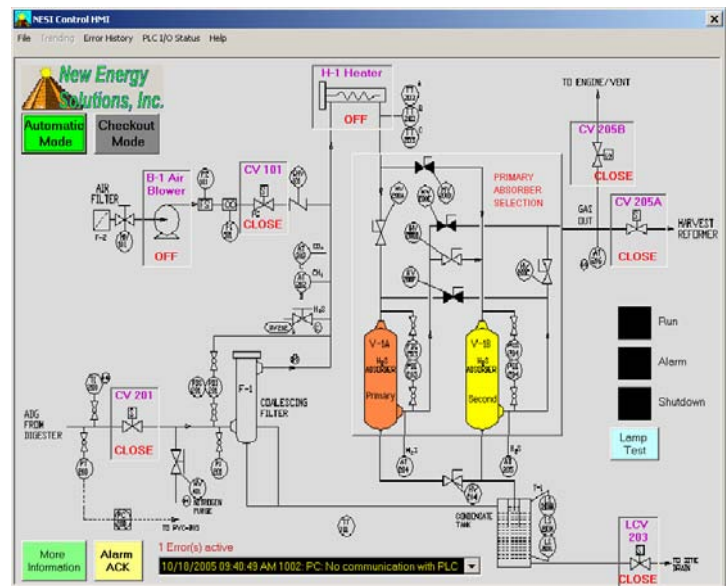


All of NESI's plants have fully automated control systems. We employ the Allen Bradley SLC 500 series PLC. The series interface is used to feed NESI's Human Machine Interface (HMI). The HMI is tablet style laptop. The laptop records all the data and contains all the trending logs. The picture to the left is an example of the trending screen.

The HMI program provides detailed information about the operation of the unit. It shows the status of all inputs and outputs on a detailed flow diagram of the unit. The screen shot of the HMI is shown to the right. It also displays all warning and error messages. The HMI also has a checkout mode, where when the unit is not running, all outputs can be operated to determine any problems and during maintenance.

The outside of the electrical box has both a **Start** and **Stop** button. There are four lights on the top of the box that indicate the unit status:

- **Blue - Power On**
- **Green - Running**
- **Yellow - Alarm**
- **Red - Shutdown**



At customer request, NESI can include an additional software package to allow for remote communications and data gathering.



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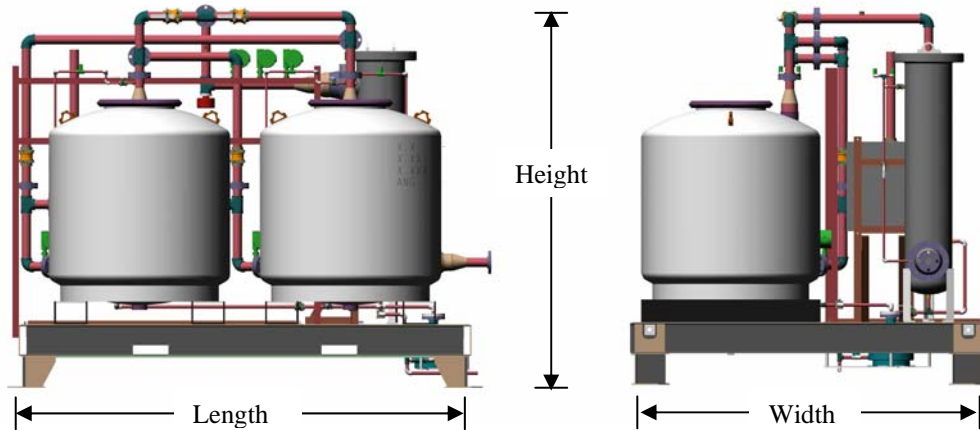
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BioGas Clean-Up Unit Dimensions for Open Skid



Product Specifications
Height
Length
Width
ADG Flow Range, scfd
Minimum flow
Maximum flow
Minimum Inlet Pressure, iwc
Maximum Operating Pressure, psig
Electrical Requirement, Amps/Voltage
Inlet/Outlet Pipe Size, inches
Estimated Water Drainage, gph
Estimated Bed Change Out, months

GPU 50/100
8' – 6"
10' – 0"
8' – 0"
20,000
100,000
10 iwc
2 psig
20 amps / 120 VAC
2 inch
1 gph
6 to 12 months

GPU 150/200
9' – 0"
10' – 0"
8' – 0"
110,000
200,000
10 iwc
2 psig
30 amps / 3 Phase
4 inch
2 gph
3 to 6 months

OPTIONS
<ul style="list-style-type: none"> • Enclosure • Inlet Blower • Remote Communications

Contact NESI to discuss the financial rewards of adding a BioGas Clean-Up Unit to your digester system.



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