

Adirondack Farms – Database Notes

Table 1 Database Notes

Data Collection	<u>Data Logger:</u> <u>Data Collection Interval:</u> <u>Collection Method:</u>	Envitec Digester Control System / Martin Machinery Carbon Catcher 15-min Intervals, daily intervals (gas data before 11/2/2018) Frontier Energy pulls data from site FTP server (Envitec),and pulls data from data logger (Martin Machinery).
Site Information	<u>Cogeneration Units:</u> <u>Nameplate Capacity:</u> <u>Heat Recovery Medium:</u> <u>Heat Recovery Uses:</u> <u>Excess Heat:</u>	Jenbacher JGS312 Engine / Emerson LSA 49.1 – 440 VAC Generator 633 kW Hot Water Digester, milking parlor and calving area water Rejected to atmosphere using dump radiator
DG/CHP Generator Electrical Output	<u>Engineering Units:</u> <u>Energy Measurement (net/gross):</u> <u>Measurement Type:</u>	kWh Gross generator power Accumulated kWh from engine controller / Shark 200 power meter
DG/CHP Generator Electrical Output Demand	<u>Engineering Units:</u> <u>Measurement Type:</u>	kW Calculated from generator electrical output; max kW / int * # intervals
DG/CHP Generator Fuel Input	<u>Engineering Units:</u> <u>Measurement type:</u>	CF Sage thermal mass flow meter.
Flare Gas	<u>Engineering Units:</u> <u>Heat Measurement Type:</u>	- -
H₂S Entering Scrubber	<u>Engineering Units:</u> <u>Measurement Type:</u>	ppm Sampled by INCA 4000 gas analyzer
H₂S Leaving Scrubber	<u>Engineering Units:</u> <u>Measurement Type:</u>	- -

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CH₄ in Biogas	<u>Engineering Units:</u> <u>Measurement Type:</u>	% Sampled by INCA 4000 gas analyzer
Generator Status	<u>Engineering Units:</u> <u>Measurement Type:</u>	Hours 0 to 1, system on / system off. Generator output must be above 50 kW to be considered on.
Ambient Temperature	<u>Engineering Units:</u> <u>Measurement Type:</u>	Deg. F Weather Underground airport code PBG.

Table 2 Event Timeline

Date	Event
11/2/2018	Shark 200 power meter installed. Power data prior to this date provided by engine controller
8/1/2020	Issue with Shark power meter caused ~ 1-month of missing data. When data resumed power measurements were inaccurate. Power data reported after this date provided by engine controller.

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Range Checks

Table 3. Range Checks

Data Point	Units	Hourly Data Calculation Method	Database Lower Range	Database Upper Range	Notes
DG/CHP Generator Output (WG_d)	kWh/int	Sum	0	700	<i>Pulse output</i>
DG/CHP Generator Output Demand (WG_KW_d)	kW	Max	0	700	$WG_KW_d = WG_d * \# \text{ Intervals}$
DG/CHP Generator Gas Use (FG_d)	Cfh/int	Sum	0	20,000	$FG_d = 0$ if $WG_KW_d \leq 10$
H ₂ S Entering Scrubber (WT_d)	ppm	-	0	2,500	
Flared Biogas (FT_d)	cf/int	-	0	20,000	
CH ₄ in Biogas (QD_d)	MBtu	-	0	100	
Status/Runtime of DG/CHP Generator (SG_d)	hr	-	0	1	0-1, System On/System Off if $WG_kW_d > 50$ kW
Ambient Temperature (TAO)	°F	Avg	-20	130	WUG Airport Code: PBG

Notes:

1. This table contains values from *adirondack_farm.csv*

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Relational Checks

Table 4. Relational Checks

Evaluated Point	Criteria	Result

Notes:

1. This table contains values from *relational_checks.pro*