Silver Towers – Database Notes

Table 1 Database Notes

Data Collection	Data Logger: Data Collection Interval: Collection Method: Timestamp Reference:	Obvius Aquisuite (CDH) 1-minute Obvius Upload Eastern Standard Time
Site Information	Cogeneration Units: Nameplate Capacity: Heat Recovery Medium: Heat Recovery Uses: Excess Heat Use:	3 Tecogen Inverde-100 300 kW Hot water and Glycol/water Domestic Hot Water, Space Heating Rejected from garages unit heaters connected to exhaust plenum
DG/CHP Generator Electrical Output	Engineering Units: Energy Measurement (net/gross): Measurement Type: Generator Power Measurements: Parasitic Power Measurements:	kWh Net calculated: Gross minus parasitic Accumulated energy per interval 3 - one for each generator from engine controller, Modbus RTU 2 – one for each for North and South parasitic load
DG/CHP Generator Electrical Output Demand	Engineering Units: Measurement Type:	kW From energy measurement, based on peak 1-minute power
DG/CHP Generator Fuel Input	Engineering Units: Measurement Type:	CF Pulse utility meter
DG/CHP Useful Heat Recovery	Engineering Units: Heat Measurement Type:	MBtu (calculated value) Two thermal loops with a flowmeter and two temperature sensors per loop. Data is sum of heat transfer on both loops. Flow meter failure in April 2015.
DG/CHP Unused Heat Recovery	Engineering Units: Heat Measurement Type:	MBtu (calculated value) Flowmeter - DHW loop flowmeter and 2 temperature measurements across dump HX.
DG/CHP Status/Runtime	Engineering Units:	0 – 1, System ON/System Off
Facility Purchased Energy	Engineering Units:	Not collected

Facility Purchased Demand	Engineering Units:	Not collected
Other Facility Gas Use	Engineering Units:	Not collected

Note: See addendum for further details

Table 2 Event Timeline

Date	Event
February 1, 2013	Logging begins.
February 12, 2013	CDH on site to verify flow (FL1) and temperature sensor measurements and collect instantaneous WPAR output data. Flow meter FL2 was not verified; possibly due to particulate in the flow.
April 10, 2013	WPAR power transducer failed. Estimates for WPAR data is being based on heat rejection status.
May 6, 2013	WPAR1 data is being received again.
April 28, 2015	FL1 flow meter failure. FL1 is required to calculate useful heat recovery.

Range Checks

Table 3. Range Checks

Data Point	Hourly Data Method	Units	Sensor Lower Range	Sensor Upper Range	Database Lower Range	Database Upper Range	Notes
DG/CHP Generator Output	Sum	kWh/int	0	300/int	-1	10	Database range account for parasitic loads
DG/CHP Generator Output Demand	Max	kW	0	300	-1	400	Database range account for parasitic loads
DG/CHP Generator Gas Use	Sum	cf/int	0	2000	-1	2000	
Total Facility Purchased Energy	Sum	kWh/int	-	-	-	-	Not installed
Total Facility Purchased Demand	Max	kW	-	-	-	-	Not installed
Other Facility Gas Use	Sum	cf/int	-	-	-	-	Not installed
Useful Heat Recovery	Sum	MBtu/int	-1	50	-1	50	Calculated Value
Unused Heat Recovery	Sum	MBtu/int	-1	50	-1	50	Calculated Value
Status/Runtime of DG/CHP Generator	Sum	On/Off	0	1	0	1	0 – 1, System On/System Off
Ambient Temperature	Avg	°F	-30	130	-30	130	WUG Airport Code - LGA

Notes:

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

Relational Checks

Table 4. Relational Checks

Evaluated Point	Criteria	Result

Notes: