

## 300 Central Park West

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New York, NY 10024

### Site Contact

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### Overview

CDH was on site 3/13/2017 to install a datalogger, terminate sensor wiring, install temperature sensor, setup communications, and verify installed metering. Data collection begins.

### Monitoring Notes

Total facility power meter was replaced on 8/9/2017. The Gross Energy Imported (WB\_kW) and Gross Energy Imported (WB) data points were both zeroed out for the period prior to the changeout.

### M&V Instrumentation Installation

CDH provided the data logger and enclosure, supplemental temperature sensor, dump radiator current sensor, and necessary wire pulls. Aegis provided and installed the power, gas, and Btu meters. Aegis installed the CDH enclosure, supplied 120V power, and provided communications. The cogen system, including all HX's, metering, and the CDH panel are located in the basement boiler room. The following table shows the data points measured by the M&V system.

### Monitored Data Points

Logger Channel	Data Point	Description	Eng Units	Instrument / Transducer	Output
MB-005	WB	Total Facility Power	kWh	Veris E51	Modbus RS-485
MB-002	WT	Gross Generator Power Output	kWh	Veris H-8035-300	Modbus RS-485
MB-001	WP	Parasitic Loads	kWh	Veris H-8035-100	Modbus RS-485
-	WG	Net Power Output	kWh	-	Calculated
IN-1	FG	Cogen Gas Consumption	cf	Romet RM2000	Pulse
MB-004	FHW	Recovered Heat Loop Flow	gpm	Badger Series 380	Modbus RS-485
MB-004	THW1	Recovered Heat Loop - Supply Temp.	°F	Badger Series 380	Modbus RS-485
MB-004	THW2	Recovered Heat Loop - Temp. After HX2 (DHW)	°F	Badger Series 380	Modbus RS-485
IN-2	THW3	Dump Radiator Loop - Return Temp.	°F	Veris 10k Type II Thermistor (insertion)	Resistance
IN-4	IVFD	Dump Radiator Current	Amps	Veris H921	4 - 20 mA
-	QR	Rejected Heat Recovery	Mbtu/h	-	Calculated
-	QU	Total Useful Heat Recovery	Mbtu/h	-	Calculated

### IP Information

External IP:	100.12.10.202:4081
Internal IP:	10.0.21.141
Netmask:	255.255.255.0
Gateway:	10.0.21.1
DNS #1:	8.8.8.8
DNS #2:	8.8.4.4
MAC Address:	00:1E:C6:00:27:5E

### Procedure

- Power data was verified by comparing the engine controller displayed power to the Veris H8035 power measurement displayed on the Obvius data logger.
- Hot water loop flow was verified by comparing the Badger 380 flow reading on the Obvius to measurements taken using a portable Portaflow ultrasonic flowmeter.
- Temperatures were verified by comparing Obvius readings (Badger 380 and supplied insertion temperature sensor) to the readings on temperature gauges built into the system.

**Verification Data - March 13, 2017**

Generator Power:

	<b>Obvius (kW)</b>	<b>Cogen Display (kW)</b>
<b>WT</b>	20	21
	20	21

*Avg:*                      20.0                      21.0

Recovered Heat Loop Flow:

	<b>Obvius (gpm)</b>	<b>Portaflow Meter (gpm)</b>
<b>FHW</b>	26.3	28.2
	26.3	28.1

*Avg:*                      26.3                      28.2

<b>Portaflow Ultrasonic Flow Meter Configuration</b>	
Sensor Spacing	0.735 in
OD	1.625 in
Thickness	0.060 in
1.5 in Type L Copper	

## 300 Central Park West - Site Information

### System Temperatures:

	<b>Obvius (°F)</b>	<b>Gauge (°F)</b>
<b>THW1</b>	179.5	181.0
	192.0	196.0
	200	201

*Avg:*                      190.5                      192.7

<b>THW2</b>	175.0	177.0
	187.0	190.0
	192	192

*Avg:*                      184.7                      186.3

<b>THW3</b>	195.0	195.0
	200.0	200.0

*Avg:*                      197.5                      197.5

### Gas Use and Electrical Efficiency:

System was not operational for a long enough time period during onsite verification to calculate efficiencies using measured gas use.

## Site Photos



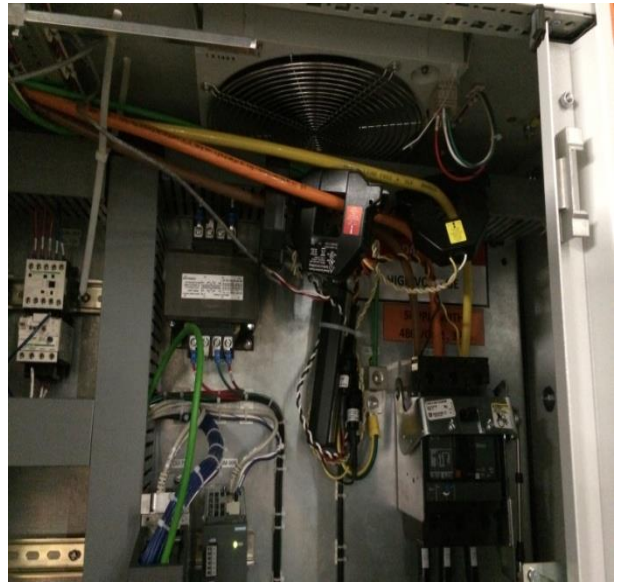
Aegen PowerVerter 75 kW cogen unit located in the boiler room.



CDH panel containing data logger and CDH network switch located next to unit in the boiler room.



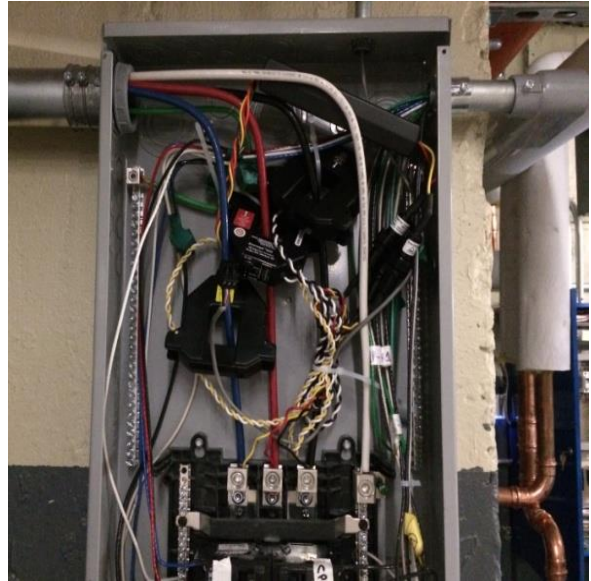
Romet RM2000 gas meter (FG) located in the boiler room next to cogen unit.



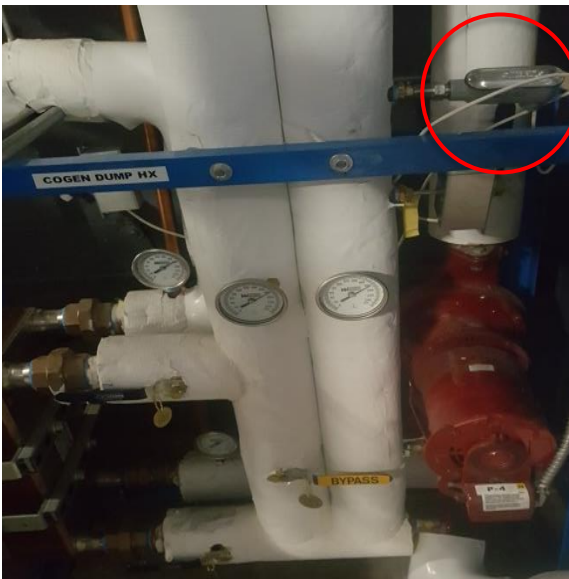
Gross generator power meter (WT) located in the inverter in the boiler room.



Veris H921 dump radiator current sensor (IVFD) located in Aegis cogen control panel.



Parasitic power meter (WP) located in SBDP-CG subpanel in the boiler room.



Veris 10K Type II Thermistor (THW3) on dump radiator skid after HX3.



DHW Skid - Located in boiler room  
Left - Supply BTU temp. sensor (THW1).  
Right - BTU meter and temp. sensor after useful HX1 and HX2 (FHW ,THW2).