The Lara

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Site Contact

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Project Engineer

Aegis Energy Services Inc.

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- CDH was on site December 7, 2015. Panel was not yet installed so metering and wire pulls were verified.
- CDH was on site February 11, 2016. Downstairs flow and temp sensors were wired and confirmed.
- CDH was on site March 3, 2016. Remaining sensors were wired and confirmed where possible.
- CDH was on site November 22, 2016. Wired Romet gas meter and re-configured physical network connections and updated network configuration on Obvius.

Summary

CDH provided the data logger and enclosure. Aegis provided and installed the gas, power, and BTU meters. Aegis installed the CDH enclosure and performed all of the necessary wire pulls while CDH terminated wiring to the data logger and sensors.

Monitored Data Points

Logger Channel	Data Point	Description	Eng Units	Instrument / Transducer	Output
MB-001	WT1	Gross Generator Power Output - Cogen #1	kWh	Veris H-8035-300	Modbus RS-485
MB-002	WT2	Gross Generator Power Output - Cogen #2	kWh	Veris H-8035-300	Modbus RS-485
-	WG	Net Power Output	kWh	-	Calculated
1	FG	Cogen Gas Consumption	cf	ConEd Meter w/ Pulse	Pulse
MB-005	FHW1	Recovered Heat loop Flow	gpm	Badger Series 380	Modbus RS-485
MB-005	THW1	Recovered Heat Loop - Supply Temp.	°F	Badger Series 380	Modbus RS-485
2	THW2	Recovered Heat Loop - Temp. After HX1 (Low Zone DHW)	°F	MAMAC 10k Type II Thermistor	Resistance
MB-005	THW3	Recovered Heat Loop - Temp. After HX2 (Space Heating)	°F	Badger Series 380	Modbus RS-485
MB-006	FHW2	Riser Heat Loop Flow	gpm	Badger Series 380	Modbus RS-485
MB-006	THW4	Riser Heat Loop - Temp. Before HX4	°F	Badger Series 380	Modbus RS-485
MB-006	THW5	Riser Heat Loop - Temp. After HX4 (High Zone DHW)	°F	Badger Series 380	Modbus RS-485
3	THW6	Riser Heat Loop - Temp. After Dump Radiator	°F	MAMAC 10k Type II Thermistor	Resistance
4	IVFD	Dump Radiator Current	Amps	Veris H921	4 - 20 mA
-	QR	Rejected Heat Recovery	Mbtu/h	-	Calculated
-	QDHW1	Low Zone DHW Heat Recovery	Mbtu/h	-	Calculated
-	QDHW2	High Zone DHW Heat Recovery	Mbtu/h	-	Calculated
-	QB	Boiler Hear Recovery	Mbtu/h	-	Calculated
-	QU	Total Useful Heat Recovery	Mbtu/h	-	Calculated

IT Information (updated 11/22/2016)

Datalogger IP:	108.30.225.166:9180
Netmask:	255.255.255.0
Gateway:	10.0.3.1
Primary DNS:	8.8.8.8
Secondary DNS:	8.8.4.4

Procedure

- Hot water loop flow (FHW1) was verified by comparing the Badger 380 flow reading on the Obvius to measurements taken using a portable Portaflow ultrasonic flowmeter.
- ICCP3 was verified by comparing the reading from the Hawkeye H921 Current Sensor to the reading on a handheld Fluke 39 Power Meter
- It was not possible to verify FHW2 or ICCP1.

Verification Data – February 11, 2016

FHW1 Verification:

Ultrasonic	Badger
59.1	62.27
59.5	63.2
59.8	63.53
59.4	62.59
58.5	61.93
58.8	62.04
59	62.33
59.8	62.62

Average:	59.2	62.6
% Diff:	6%	

Verification Data – March 3, 2016

ICCP3 Verification:

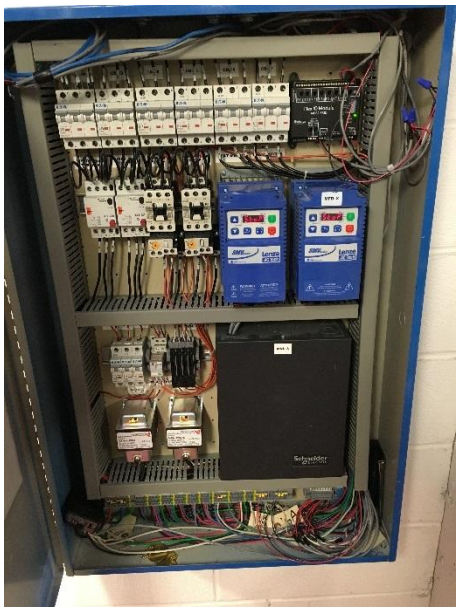
Hawkeye H921	Fluke 39
9.08	9.11
9.1	9.1
9.1	9.11

Site Photos

Aegen TP75-LE cogen units located in basement mechanical room.

Basement mechanical room HX skid, with Badger 380 BTU meter (CDH to install Veris 10k Type 2 thermistor in well).

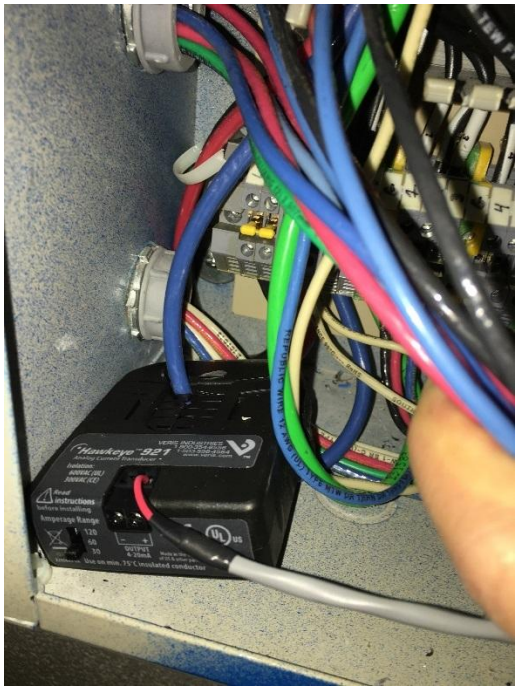
Upstairs HX skids, BTU meter on back skid. THW6 Sensor placement on Cogen Riser Return pipe.



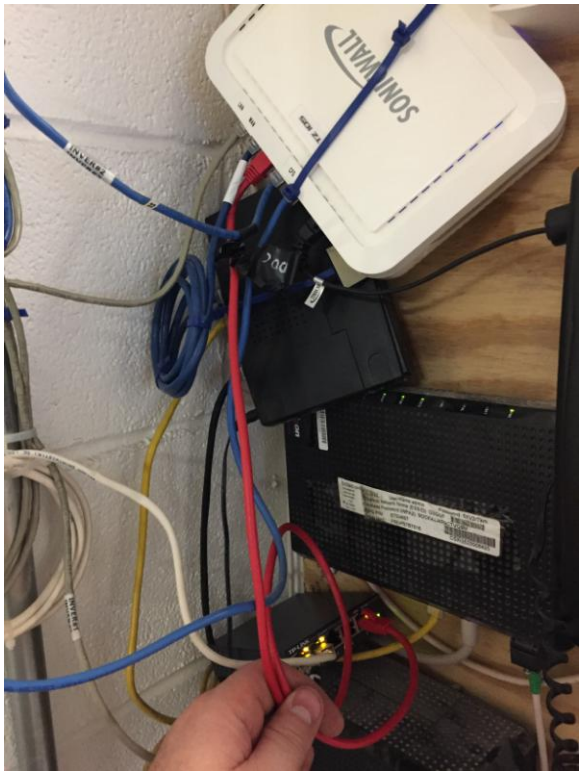
Upstairs Aegis panel. ICCP3 added in bottom left corner, expansion board on top right

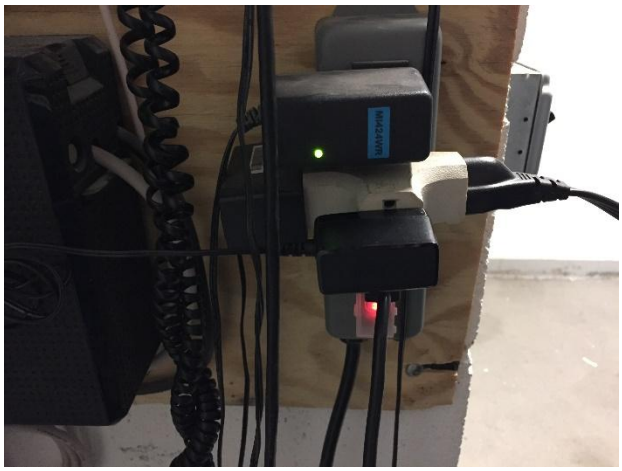
Generator 2 Power Transducer

Generator 1 Power Transducer



ICCP1 – Located in Cogen Control Panel 1


SONICWALL



PUMP SCHEDULE

PUMP NO.	SERVICE	FLOW	HEAD	PUMP H.P.	PHASE	PUMP MODEL
P-1	COGEN CIRCULATOR	22 GPM	70 FT	3/4 HP	3 PH	BELL & GOSSETT SERIES 1535 353T
P-2	COGEN CIRCULATOR	22 GPM	70 FT	3/4 HP	3 PH	BELL & GOSSETT SERIES 1535 353T
P-3A & 3B	COGEN PRIMARY LOOP	50 GPM	60 FT	1 HP	3 PH	BELL & GOSSETT SERIES 1535 354T
P-4A & 4B	LOW-ZONE DOMESTIC HOT WATER	40 GPM	15 FT	3/5 HP	1 PH	BELL & GOSSETT SERIES PL-55B
P-5A & 5B	BOILER LOOP HEATING	50 GPM	30 FT	3/4 HP	3 PH	BELL & GOSSETT SERIES 60-615T
P-6A & 6B	RISER CIRCULATOR	55 GPM	85 FT	2 HP	3 PH	BELL & GOSSETT SERIES 1535 356T
P-7A & 7B	HIGH-ZONE DOMESTIC HOT WATER	40 GPM	15 FT	3/5 HP	1 PH	BELL & GOSSETT SERIES PL-55B
P-8A & 8B	DUMP RADIATOR LOOP	50 GPM	30 FT	3/4 HP	3 PH	BELL & GOSSETT SERIES 60-615T

CONTROL VALVE SCHEDULE

VALVE NO.	SERVICE	FLOW TYPE	SIZE	VOLTAGE	VALVE MODEL	ACTUATOR
V-1	BOILER LOOP HEATING	MIXING	2"	24 V	TAC VS2313-526-9-63	MS40-7043M MODULATING
V-2	LOW-ZONE DOMESTIC HOT WATER	MIXING	2"	24 V	TAC VS2313-526-9-63	MS40-7043M MODULATING
V-3	HIGH-ZONE DOMESTIC HOT WATER	MIXING	2"	24 V	TAC VS2313-526-9-63	MS40-7043M MODULATING

PLATE HEAT EXCHANGER H.X.-2

DESIGN MANUFACTURER		API HEAT TRANSFER
MODEL		SBM7M-60
TYPE		BRAZED PLATE
MATERIAL		316SS/COPPER
SERVICE		BOILER HEAT
SIDE	HOT	COLD
FLUID TYPE	WATER	WATER
FLUID FLOW	50 GPM	50 GPM
TEMP IN	225 DEG F	172 DEG F
TEMP OUT	179 DEG F	206.74 DEG F
PRESSURE DROP	0.93 PSI	1.71 PSI
INLET SIZE	2" NPT	2" NPT

PLATE HEAT EXCHANGER H.X.-1,4

DESIGN MANUFACTURER		API HEAT TRANSFER
MODEL		SBM7L-40
TYPE		BRAZED PLATE
MATERIAL		316SS/COPPER
SERVICE		DHW HEATING
SIDE	HOT	COLD
FLUID TYPE	WATER	WATER
FLUID FLOW	50 GPM	50 GPM
TEMP IN	225 DEG F	172 DEG F
TEMP OUT	179 DEG F	206.74 DEG F
PRESSURE DROP	0.93 PSI	1.71 PSI
INLET SIZE	2" NPT	2" NPT

PLATE HEAT EXCHANGER H.X.-3

DESIGN MANUFACTURER		API HEAT TRANSFER
MODEL		SBM7M-80
TYPE		BRAZED PLATE
MATERIAL		316SS/COPPER
SERVICE		RISER LOOP
SIDE	HOT	COLD
FLUID TYPE	WATER	WATER
FLUID FLOW	50 GPM	55 GPM
TEMP IN	225	169
TEMP OUT	176	212.5
PRESSURE DROP	0.45 PSI	0.55 PSI
INLET SIZE	2" NPT	2" NPT

PLATE HEAT EXCHANGER H.X.-5

DESIGN MANUFACTURER		API HEAT TRANSFER
MODEL		SBM7M-60
TYPE		BRAZED PLATE
MATERIAL		316SS/COPPER
SERVICE		GLYCOL DUMP LOOP
SIDE	HOT	COLD
FLUID TYPE	WATER	40% PROP. GLYCOL
FLUID FLOW	22 GPM	30 GPM
TEMP IN	225 DEG F	172 DEG F
TEMP OUT	176 DEG F	206.74 DEG F
PRESSURE DROP	0.93 PSI	1.71 PSI
INLET SIZE	2" NPT	2" NPT

AIR COOLED RADIATOR H.X.-6,7

DESIGN MANUFACTURER	IEA
FLOW RATE	25 GPM
GROSS HEAT LOAD	500 MBH
INLET WATER TEMP	197 DEG F
OUTLET WATER TEMP	160 DEG F
BLOWER FAN	2 HP
NUMBER OF FANS	1
DESIGN BASE MODEL	HCR-M35
FAN SPEED	1160 RPM
MEDIUM	60% WATER / 40% P.G.
AMBIENT AIR TEMP	95 DEG F
NOISE LEVEL DBA @25 FT	72

EXPANSION TANK ET-1

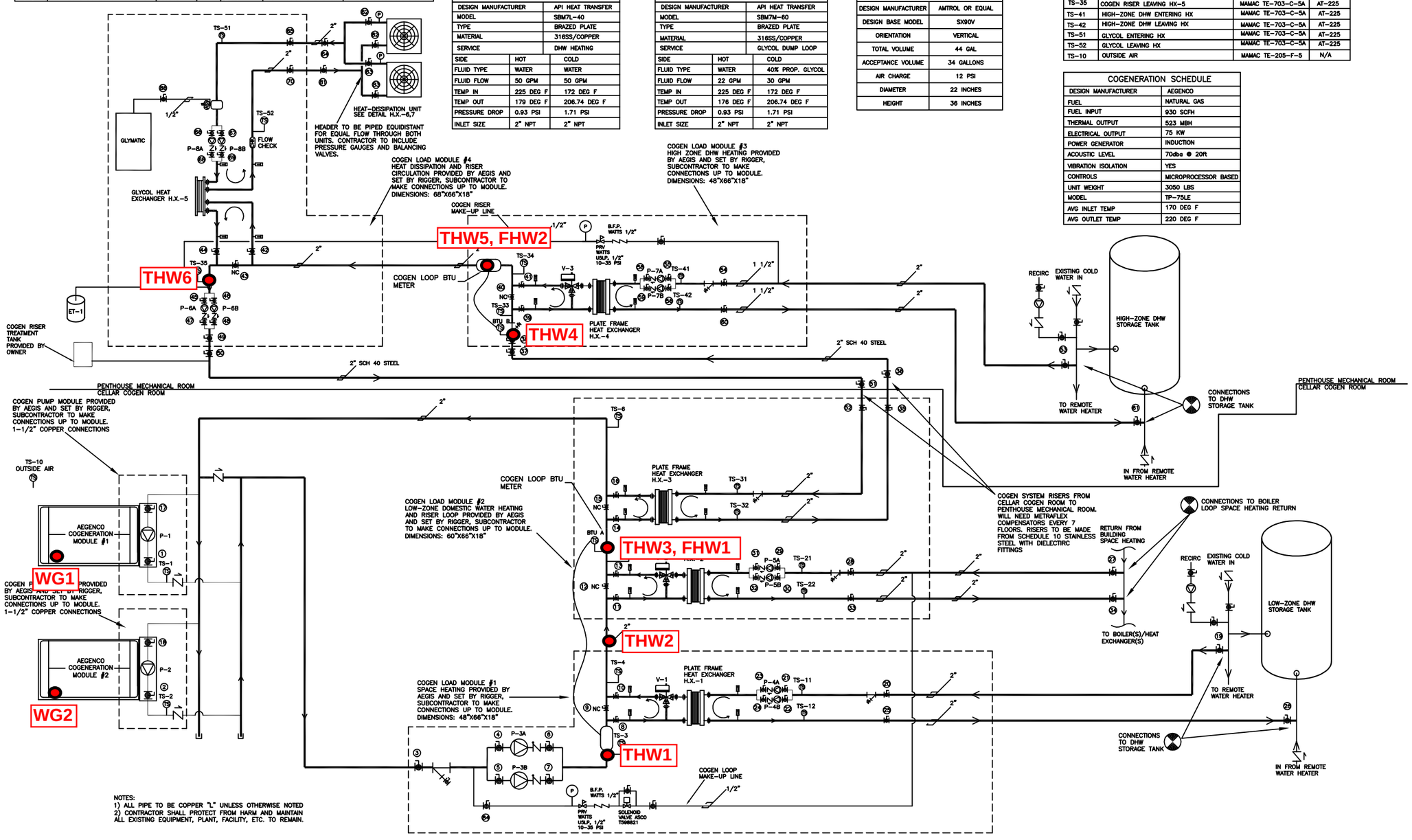
DESIGN MANUFACTURER	AMTROL OR EQUAL
DESIGN BASE MODEL	SX90V
ORIENTATION	VERTICAL
TOTAL VOLUME	44 GAL
ACCEPTANCE VOLUME	34 GALLONS
AIR CHARGE	12 PSI
DIAMETER	22 INCHES
HEIGHT	36 INCHES

TEMPERATURE SENSOR SCHEDULE

TS NO.	SERVICE	SENSOR MODEL NO.	WELL TYPE
TS-1	COGEN #1 SUPPLY	MAMAC TE-703-C-5A	AT-225
TS-2	COGEN #2 SUPPLY	MAMAC TE-703-C-5A	AT-225
TS-3	COGEN SUPPLY TO SPACE HEAT HX	MAMAC TE-703-C-5A	AT-225
TS-4	SPACE HEAT HX TO LOW-ZONE DHW HX	MAMAC TE-703-C-5A	AT-225
TS-5	LOW-ZONE DHW HX TO RISER HX	MAMAC TE-703-C-5A	AT-225
TS-6	COGEN RETURN WATER	MAMAC TE-703-C-5A	AT-225
TS-11	BOILER LOOP ENTERING HX-1	MAMAC TE-703-C-5A	AT-225
TS-12	BOILER LOOP LEAVING HX-1	MAMAC TE-703-C-5A	AT-225
TS-21	LOW-ZONE DHW ENTERING HX-2	MAMAC TE-703-C-5A	AT-225
TS-22	LOW-ZONE DHW LEAVING HX-2	MAMAC TE-703-C-5A	AT-225
TS-31	COGEN RISER ENTERING HX-3	MAMAC TE-703-C-5A	AT-225
TS-32	COGEN RISER LEAVING HX-3	MAMAC TE-703-C-5A	AT-225
TS-33	COGEN RISER ENTERING HX-4	MAMAC TE-703-C-5A	AT-225
TS-34	COGEN RISER HX-4 TO HX-5	MAMAC TE-703-C-5A	AT-225
TS-35	COGEN RISER LEAVING HX-5	MAMAC TE-703-C-5A	AT-225
TS-41	HIGH-ZONE DHW ENTERING HX	MAMAC TE-703-C-5A	AT-225
TS-42	HIGH-ZONE DHW LEAVING HX	MAMAC TE-703-C-5A	AT-225
TS-51	GLYCOL ENTERING HX	MAMAC TE-703-C-5A	AT-225
TS-52	GLYCOL LEAVING HX	MAMAC TE-703-C-5A	AT-225
TS-10	OUTSIDE AIR	MAMAC TE-205-F-5	N/A

COGENERATION SCHEDULE

DESIGN MANUFACTURER	AEGENCO
FUEL	NATURAL GAS
FUEL INPUT	930 SCFH
THERMAL OUTPUT	523 MBH
ELECTRICAL OUTPUT	75 KW
POWER GENERATOR	INDUCTION
ACOUSTIC LEVEL	70dba @ 20ft
VIBRATION ISOLATION	YES
CONTROLS	MICROPROCESSOR BASED
UNIT WEIGHT	3050 LBS
MODEL	TP-75LE
AVG INLET TEMP	170 DEG F
AVG OUTLET TEMP	220 DEG F



NOTES:
1) ALL PIPE TO BE COPPER "L" UNLESS OTHERWISE NOTED
2) CONTRACTOR SHALL PROTECT FROM HARM AND MAINTAIN ALL EXISTING EQUIPMENT, PLANT, FACILITY, ETC. TO REMAIN.

COGENERATION MECHANICAL FLOW DIAGRAM

SCALE: NOT TO SCALE

NOTES:

FOR:
BID/REVIEW

CONTRACTOR:

AEGIS ENERGY SERVICES INC
55 JACKSON ST
HOLYOKE, MA 01040
PH: 413-536-1156
FX: 413-536-1104

ENGINEER:

PROJECT:
113 NASSAU STREET
COGENERATION PROJECT
113 NASSAU STREET
NEW YORK, NY 10038

SHEET TITLE:
SYSTEM MECHANICAL FLOW DIAGRAM

SEAL & SIGNATURE

DATE: 4-7-2014
PROJECT NO:
DRAWING BY: BW
CHECKED BY: TBD
DWG NO:
M-101.00