

Monitoring and Data Collection Plan

Sabic Innovative Plastics
Back Pressure Steam Turbine
NYSERDA Contract # 10802
NYSERDA Contact: Mike Razanousky

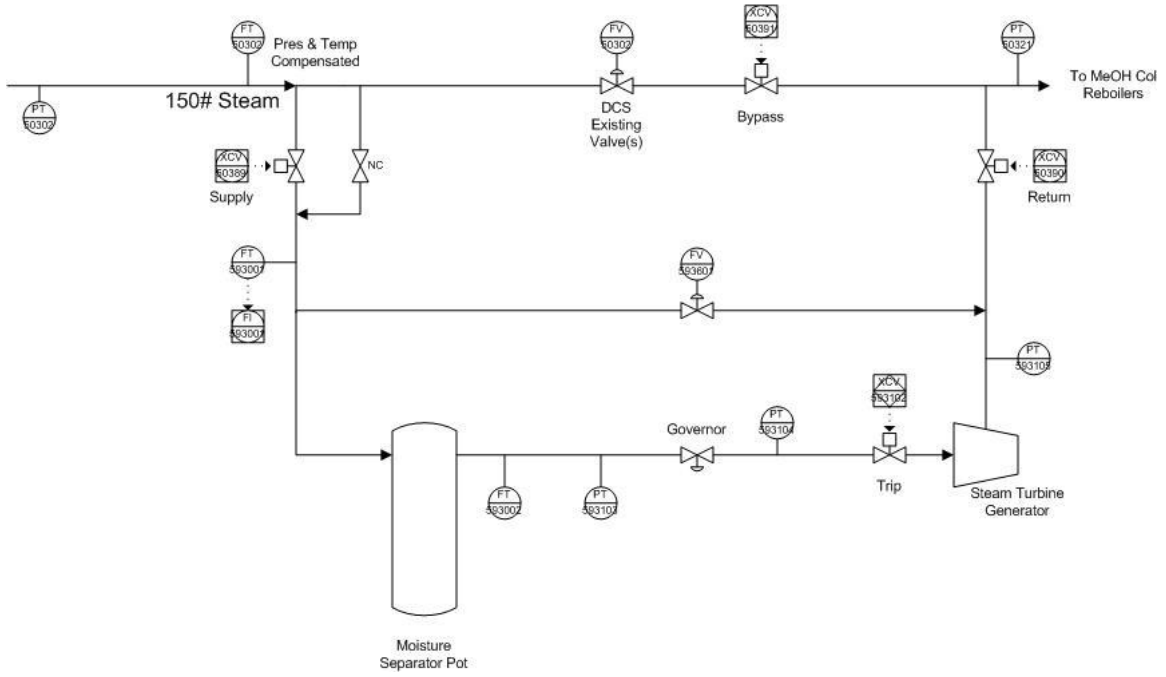
Submitted by:

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Below are the items we discussed are necessary for the Monitoring Plan for our project.
Please let me know if there is any more data or clarification needed.

Schematic:

Resin STG Control Logic Diagram



Equipment:

- Steam Turbine Generator (STG) Skid:
 - o Manufacturer: Turbosteam
 - o Job#: 08203
 - o Description: Turbine, Reduction Gear, Generator
- Steam Turbine:
 - o Manufacturer: Dresser Rand
 - o Model: Frame 703HLPE
 - o RPM: 3600
 - o Max Flow: 70,000 lbs/hr
- Generator:
 - o Manufacturer: Marathon
 - o Model: 1020FDH5790
 - o RPM: 1800
 - o KW: 1280
 - o Other: 60 Hertz, 3-Phase, Power Factor = 0.8

Narrative:

- Process:
 - o Current Process:
 - Currently the Selkirk Facility utilizes steam to heat a reboiler on one of its distillation columns in the process. This steam flow is currently regulated through a flow control valve.
 - o Future Process:
 - This project will install a Steam Turbine Generator at the Selkirk Facility. Steam flow to the distillation column will be diverted to the Turbine. The Turbine will regulate the flow of steam to the column, and in doing so; will spin a generator to create electricity. The electricity generated will be utilized on the plant site.
 - o Steam System:
 - The steam used for the process is 160 PSIG saturated steam
- How it Works:
 - o Typically, a control valve is used to control steam flow to the distillation column. The steam flow requirement is based on the duty needed to maintain temperature at the bottom of the column.
 - o When the steam turbine is brought online, the steam flow will be diverted to the steam turbine generator skid. The steam will pass through the turbine, spinning a generator, creating electricity for plant use.
 - o The governor valve on the turbine will regulate the correct amount of steam flow to the distillation column.
 - o If the required steam flow to the distillation column exceeds the maximum steam flow for the turbine, a bypass valve will open to allow the remainder of the required steam flow to pass to the distillation column.

Instrument Table:

Data	Instrument #	Type	Manufacturer	Model	Range
Steam Flow Through Turbine	FT593002	Annubar	Rosemount	3095MFAS080CC-HLS1A100T32CA1-AE5M5Y1	0 - 70,000 lbs/hr
Turbine Inlet Steam Pressure	PT593103	Diaphragm	Yokogawa	EJA530A- ECS4N-02EE/FU1/D1	0 – 500 PSIG
Turbine Outlet Steam Pressure	PT593105	Diaphragm	Yokogawa	EJA530A- ECS4N-02EE/FU1/D1	0 – 200 PSIG
Power Generation	JI019226	Power Meter	Nexus	1252-S-120-D2-60hz-V1-INP200	-1275 - +1275 kW

Data Transfer:

The data (listed above) for the Selkirk Steam Turbine system will be transferred to CDH Energy in the following manner:

- Selkirk will obtain an account on the CDH server for data transfer
- Selkirk will create a daily CSV formatted text file for the appropriate data
- The CSV file will be automatically populated with the appropriate timestamps and data
- The CSV file will automatically be pushed to our account on the CDH server
 - o Pending verification of site data transfer systems, Selkirk will utilize a secure file transfer protocol to push this data to the server.