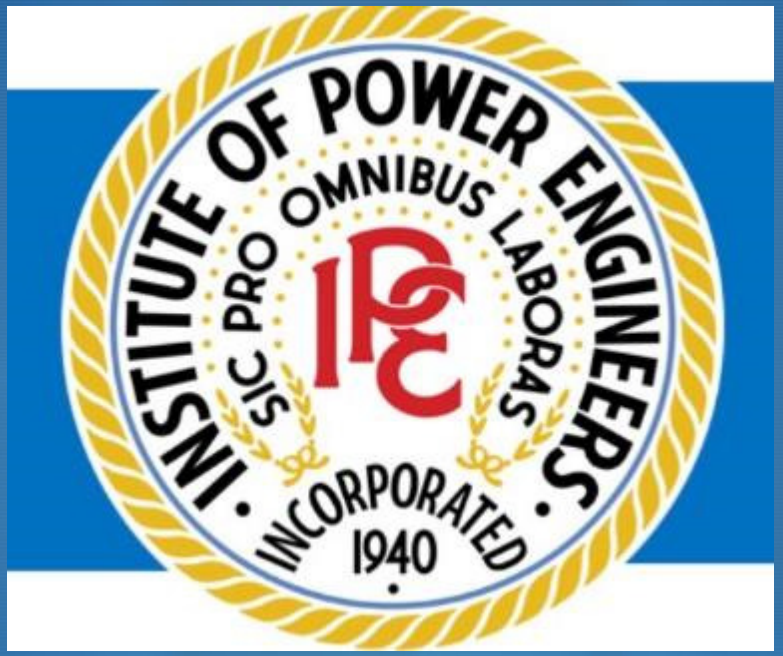
Institute of Power Engineers
Montreal Branch
Thermal Power Plant


INSTITUTE OF POWER ENGINEERS
SIC PRO OMNIBUS LABORAS
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1940

MONTRÉAL

Phase I

- Initial Build

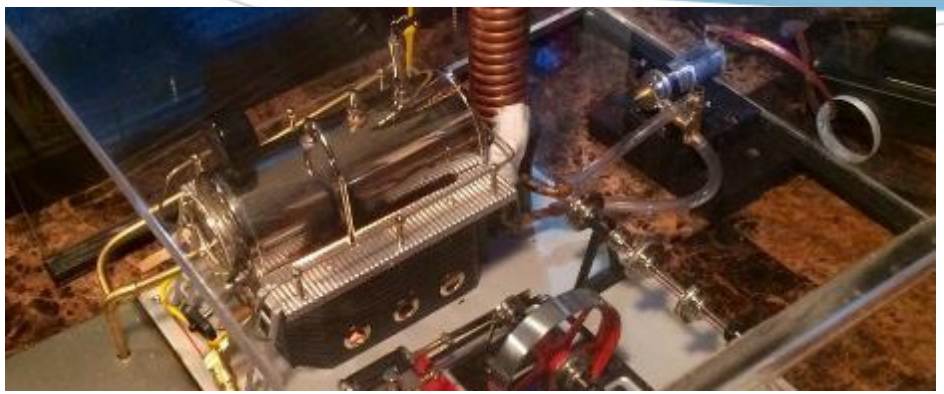
- Super heated steam (Red)
- Steam/Liquid Condensate (Blue)

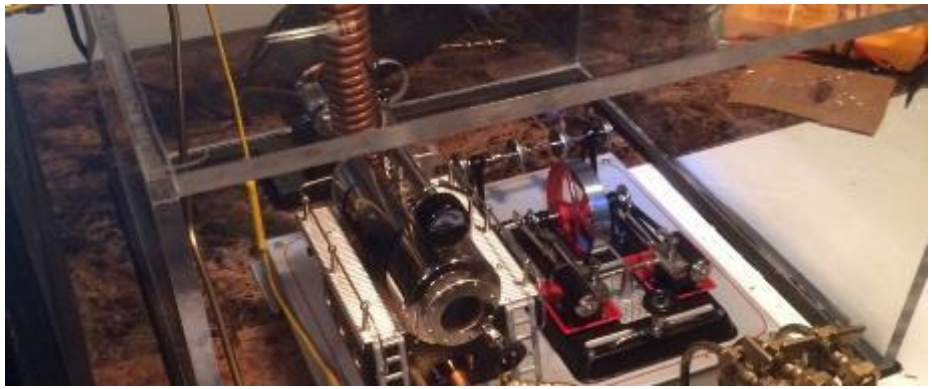
Phase II

- Process of soft water in the heat exchanger

- Installation of valves:
- Feed water
- Mud drum purge
- City cold water
- and purge reservoir to drain system

Phase III





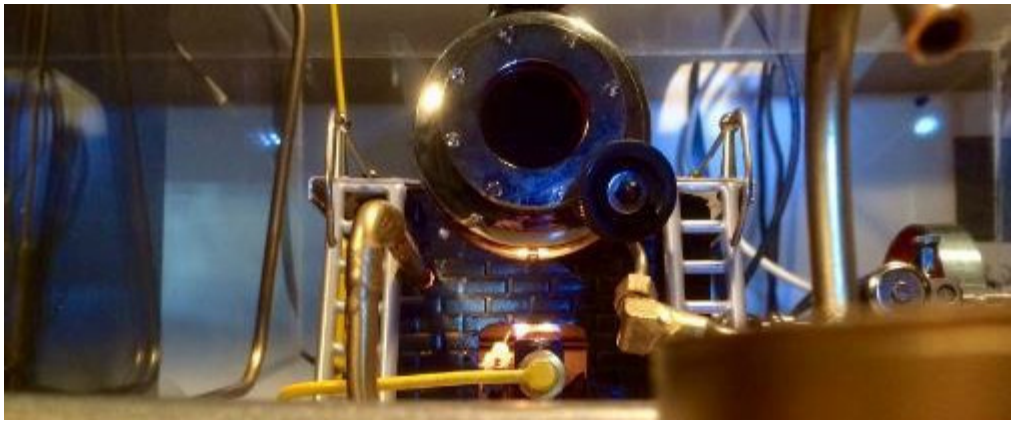
- Installation of shatter proof plexi-glass
- Installation of water reservoir
- Installation of butane gaz system

Water Equipment

- Softened water/ion exchange
- Anode and cathode

- Piston Feed water pump
- Works with a double check valve system

Gas Equipment



- Butane gas and gas control,with Flame-Kick system
- In the event of flame returns pressure differential will disengage butane bottle.
- Calibration for butane burner

Ventilation Equipment

- Intake CO2 Ventilation
- Proper removal of combusted gas to allow proper air/gas mix

- CO2 exhaust
- With variable speed control
- If used in poorly ventilated or small room recommended speed of 85% of higher.

Control Equipment

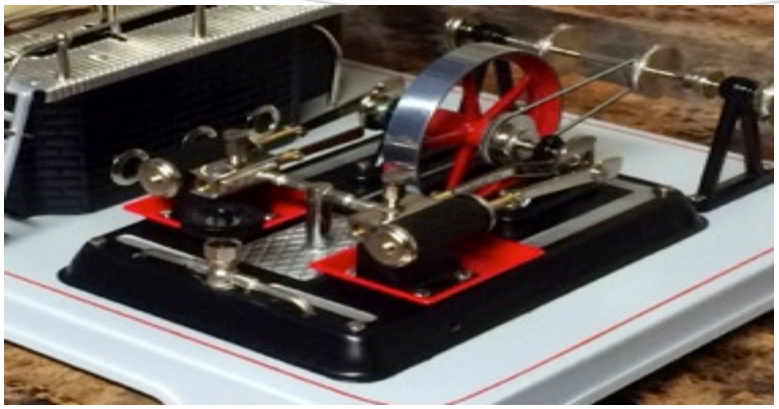
- Variable speed control for ventilation
- On/Off ventilation of CO2
- On/Off feed water pump

Electrical Equipment

- 24 VDC Genorator
- Rewired Motor from HP Laser Jet Printer.

- Electrical Junction box for future modifications

Steam Equipment



- Single action, two piston turbine
- Alternating Piston Action
- Piston 1= Front / Piston 2= Back

- Steam Boiler
- Optimal working pressure 2.5 bars = 36.25 Psi
- Safety valve 3 bars = 43.51 Psi
- Whistle = Manual steam relief

Steam Equipment

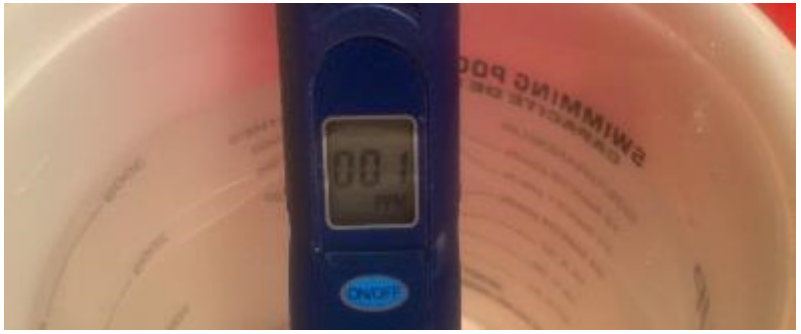
- Condensate reservoir
- Needs to be cleaned at every usage due to the build up of oil from the condensate train after the steam passes through the pistons.
- Purge reservoir/ Flash tank when emptying boiler can also be used to cool down steam/hot water with city water for proper temperature disposal.

Water Analysis – Ville de La Prairie, QC

- Ph 8.2
- Br 0.4
- Cl 0.2

- PPM 146

Water Analysis – Soft Water

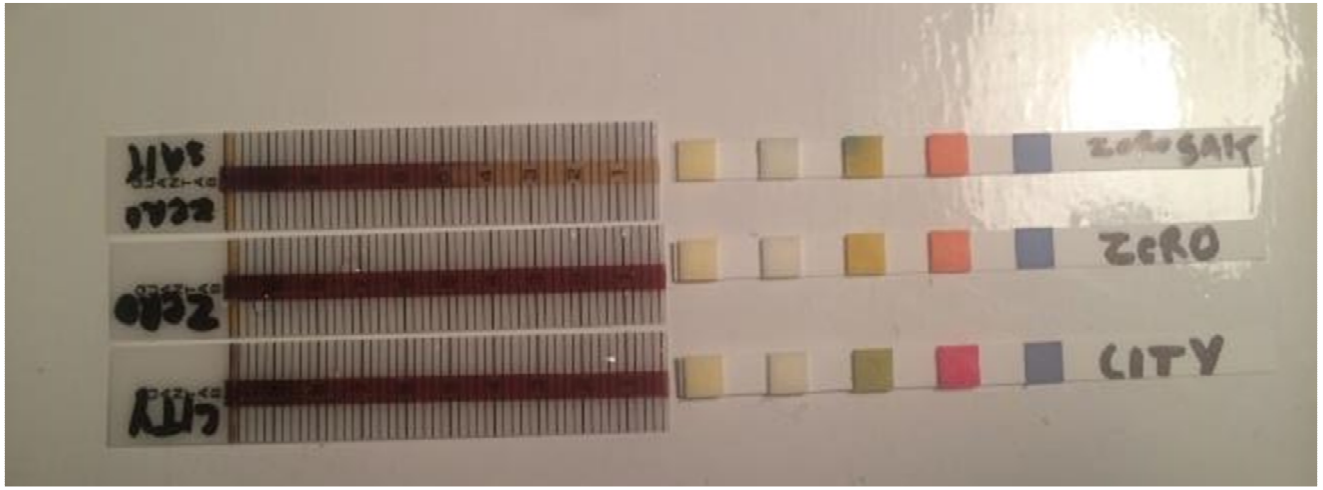


- Ph 7
- Br 0.1
- Cl 0.1
- PPM 001

Water Analysis – Soft Water + KNO3 (Salt Bridge)

- Ph 7.2
- Br 0.4
- Cl 0.2
- PPM 760

PH Results

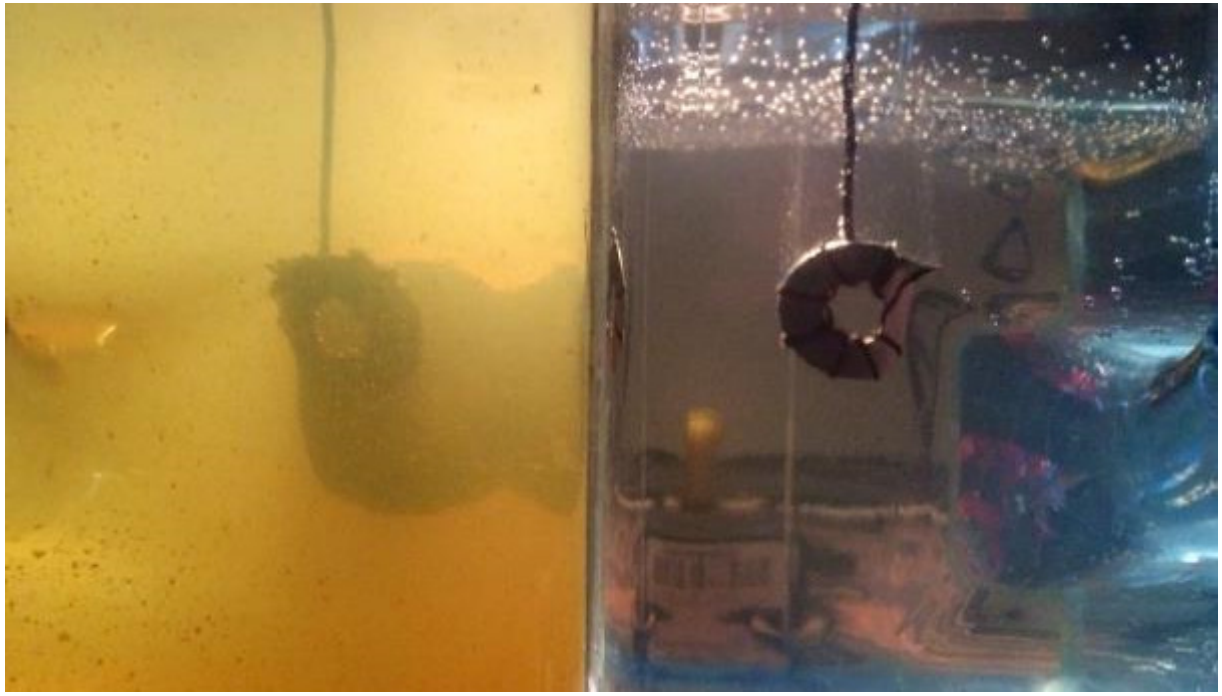


Ion Exchange

- Positive Electrode
- Cathode
- Reduction

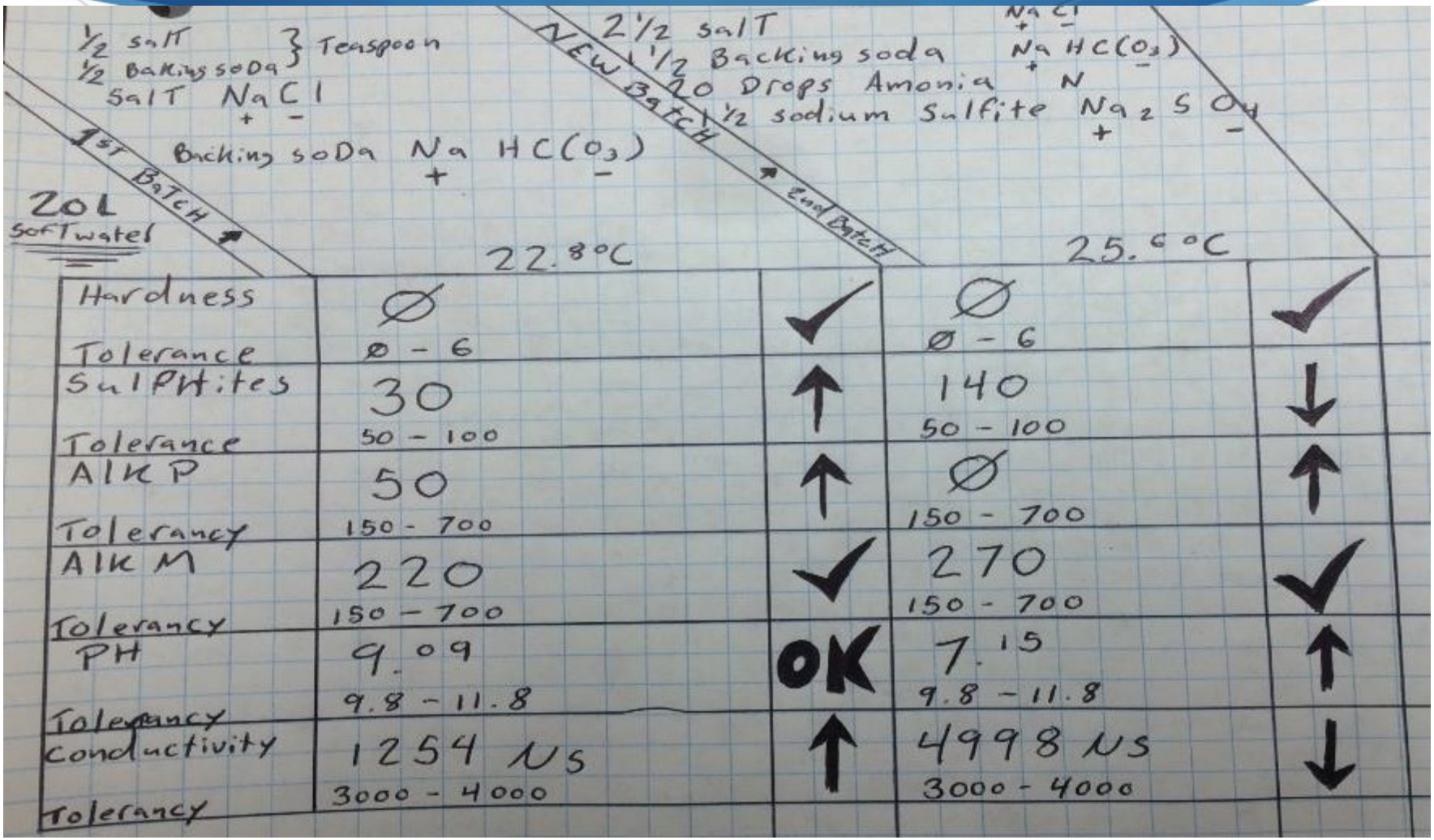
- Negative Electrode
- Anode
- Oxydation

Final Result for Ion Exchange



- Cathode (+)
- Anode (-)

Water Test After Ion Exchange



Final Results

- The convertion from the Compound H2O to the common use of electricity is easily obtained with proper machinery and proper maintenance required for the ultimate goal. Thus, delivering energy in all forms to clients around the world whether it be electricity, humidity or temperature control. Realising that somebody is constantly thinking and working at improving your working environnment whether it be the room temperature or the quality of the air that we all take for granted.

Final Goal

- Happy Clients!

Special Thanks

I would like to take this final Section to thank everyone that helped me during the school year.

Especially my teachers as well as all the Power Engineers I've met through my internship.

Thank you

Angelo Jr. Quici