# e.quinox Datalogging Summer Trip Experiences

During installation of the datalogger, it became evident that the mechanical design of the structure of the box was not good enough. It was increasingly difficult to install and had some loose connection issues. Improvements need to be made on the mechanical design and on some of the connectors used to make the box easier to install, debug and maintain. The following guidelines should be followed:

1. Use a box that can open with a key similar to meter boxes.
2. The box should have an LCD display allowing for better remote debugging but we need to see if this will have good power management.
3. The box should have easy access to the mbed for quick programming and the sd card slot and therefore justifying the use of a faceplate and a box that can open with a key.
4. Use a faceplate PCB design for the main board to reduce the unreliability in the connections.
5. Do not use terminal blocks for the sensor input connections. This is because we found that when making the connections especially for the battery voltage, it could sometimes be very dangerous as the wires could short with the sensor PCB ground plane. Use molex connectors used in the battery boxes instead.
6. We should try to have the PCBs slot loaded into the power and bus lines so that connections are minimal.

# Improvements that need to be made to the datalogger specification

1. The current sensors should be made more sensitive.
2. The DC voltage sensor needs some redesign to ensure that only one power supply is needed since using 2 supplies is wasteful.
3. The main board should have provisions for controlling the modem so that minimum power is wasted.
4. The AC voltage sensor should be tweaked to allow measuring frequency and should also be noise insensitive.
5. The AC algorithm needs to be better and more accurate especially for the current.
6. Look into migrating out of the GAE (Google App Engine) since it isn’t very friendly when trying to download data. Also, the app is using too many resources and is filling up its quotas so it may be useful trying to use the blobstore instead or use a different service. Or even a self-made datastore server application.
7. Design other sensors to focus on the Hydro site.

# Other suggestions and improvements that can be made

1. Try to have barcode scanners implemented within the datalogger
2. Keep a provision for a RJ45 decoder so that we can use the existing cable for the sensors especially at the hydro site.