

BCIT SoCE Factor Four Hot Water Metering Project Charter

1 Revision history table

Version Number	Version Date	Added By:	Revision Description
1	December, 6 th , 2012	John Wawrysh	First Draft
2	January 16 th , 2013	John Wawrysh	Second Draft (comments from stakeholders added.)
3	January 16 th , 2013	John Wawrysh	Revisions based on feedback from Alex and Clay, Eric and Jennie.
4	March 4 th , 2013	Alexandre Hebert	General review
5	March 25 th , 2013	Eric Hawthorn and Alexandre Hebert	Addition to Scope section and change to costing section

2 Intro

The Factor Four Project has the goal of realizing a fourfold decrease in material and energy throughput in buildings NE1-8 at the BCIT Burnaby Campus, without compromising service levels. This project charter is related to the energy piece of Factor Four. In order to reduce energy by 75%, a baseline of energy consumption for each building in the Factor Four Project must be developed. Real-time monitoring at the building level is also an asset for good energy management. This project builds on the previous Phase 1; "BCIT Factor Four Metering Project" that focused exclusively on electricity metering. Electricity represents only a portion of the energy consumption in the area.

Without recording hot water consumption (coming from the existing district energy system and delivered to the Factor 4 area from the SE8 central heating plant located outside of Factor 4) and natural gas consumption (as consumed inside the Factor 4 buildings) we do not have the full Factor Four energy picture. NE1, the largest of the buildings in the Factor Four area, is heated with hot water coming from the SE8 boiler plant (located outside of the Factor 4 area). Currently, there is no isolated district energy hot water measurement data recording for NE1.

Problem:

You can't manage what you don't know. The Factor Four project aims at a 75% reductions and tracking of progress is impossible without meters that cover the buildings within the project boundaries. Currently, there is:

- no measurement of hot water consumption in NE1;

Opportunity:

Adding hot water measurement will help complete the picture of energy consumption in the Factor IV area. Knowing where and when all Factor Four energy is consumed is necessary to achieve a 75% reduction in consumption. Adding remote meter reading will allow for granular real time tracking of the hot water and will complement electricity data.

Examples of such opportunities from such metering include:

- creating a baseline to track progress and measure success
- assigning a budget in order to drive change through cost accountability
- implementing behavioural change campaigns
- improve reporting granularity (internally, externally: SMARTtool)
- identifying high energy users (opportunities)
- benchmark and prioritize energy saving areas
- creating simple awareness and external exposure
- providing building operators alarms (could be added to job description - performance oriented)
- support full building continuous recommissioning
- alert facilities of maintenance problems before a small problem becomes bigger (e.g. leaking hot water pipes or cracked heat exchanger)

3 Goal

The goal of this project is to monitor the hot water consumption delivered from the central heating plant (building SE8 located outside the Factor 4 area) to NE01 Building.

Building	BTU Meter (Hot Water)	Communication needed
NE01	Yes	BTU meter to connect to Ion 7350 electric meter located in NE1. Data will be sent to the Schneider Ion Enterprise system and retrieved from there by the GAIT EMS system.

There are three points of measurement from this BTU meter: Supply Temperature, Return Temperature and Flow. These three measurements are used to provide for the calculation of the heat used in the building. Although the primary purpose of the BTU meter is to calculate heat, the supply and return temperature and flow measurement are also of value. If possible, we will try to record separately:

- Supply temperature
- Return temperature
- Flow
- Heat

Priority will be given to recording heat and all other three records are considered “nice to have”.

4 Scope Inclusions and Exclusions

Included in Scope

The building(s) in-scope for this project charter is:

- a. NE01

This project will include the installation of a BTU meter at the following site:

Retrofit or Meter Type	Location
Siemens SITRANS FUE1010 clamp-on BTU meter with connection to Ion 7350 meter	NE01 Mechanical Room

This project includes the integration of the meter data to the GAIT EMS system. In more details, it includes:

- a) Connecting the meter to the GAIT EMS system so that there is easily accessible granular data for the hot water [i.e.: set-up and configuration of data replication from Facilities Ion Enterprise system];
- b) Integration to the EMS so that all the features available to the Factor IV electrical meters are also available for the hot water [i.e.: EMS metadata configuration for new device and measurement types];
- c) The user will be able to access separately the electrical (kWh), hot water (GJ) and natural gas (GJ) consumption (separate project charter) for each building located in the Factor 4 area via an initial click on an online map of the area [i.e.: EMS user interface customization and extension].
- d) Final report summarizing EMS integration effort, including documenting any algorithms or other relevant technical information.

Not included in scope

All the works associated with the natural gas smart metering. It was agreed that this other work would be documented in a separate project charter.

GAIT is not responsible for installation, maintenance, or working order of meters.

GAIT is also not responsible for the RF connectivity of the Tantalus system (Tantalus to setup/configure/troubleshoot).

5 Costing and Responsibilities

Item	Cost	Who	Lead Department	Mode of Payment
Siemens SITRANS FUE1010 clamp-on BTU meter (Standard)	\$9,955 +Tax	E.B. Horsman & Son	SoCE	SoCE directly Quote #QT12105JC-01 Rev1
Installation Calibration/commissioning of the BTU meter	\$ 1296 +Tax	Turn Key Controls	SoCE	SoCE directly Quote #Q50303
Ion 7350 Meter configuration.	\$995+Tax	Schneider Electric	SoCE	SoCE directly Quotation Reference # Ref. #: CSA-040236-SB
Installation of Communication wire between BTU and Ion 7350 meter	\$~600	N/A	Facilities	Facilities to cross charge SoCE
Pipe re-insulation	\$~200	N/A	Facilities	Facilities to cross charge SoCE
Providing power to the heat meter	\$~200	N/A	Facilities	Facilities to cross charge SoCE
GAIT EMS upgrade phase 1	10-15 person-days	GAIT	GAIT	GAIT keep track of time for internal purposes (no cross charge)
Contingency (+/- 10%)	\$2,300	N/A	SoCE or Facilities	Included in PO or cross charge
Total:	\$15,546+Tax			

6 Main Stakeholders to consider

- a) School of Construction and the Environment Factor Four Project team members: Jennie Moore, Pal Moses, and Alexandre Hebert.
- b) The GAIT Group: Joey Dabell, Clay Howey, Eric Hawthorne, Alan Stewart.
- c) The Facilities department: Adrian Lee, Marvin Rogers and any staff involved
- d) External contractors for installation, mainly Turn Key solutions and Schneider Electric

7 Deliverables by group

See all responsibilities in section 5.



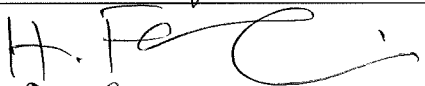
Icons for user interface, if required, will be provided by Alexandre Hebert.

8 Timeline

Equipment must be installed and paid for by March 31, 2013.

EMS Integration must be completed by July 1, 2013.

9 Stakeholders Approval

Stakeholder	Name	Signature
School of Construction and the Environment	Jennie Moore	
School of Construction and the Environment	Alexandre Hebert	
GAIT Group	Hassan Farhangi	
Facilities department	Adrian Lee	