

BUILDING MATERIALS EVALUATION COMMISSION AUTHORIZATION REPORT

DATE OF AUTHORIZATION
BMEC AUTHORIZATION
BMEC APPLICATION
DATE OF AMENDMENT
DATE OF AMENDMENT (Contact Information Update)

AUGUST 31, 2003
BMEC # 03-07-286
#A2003-08
OCTOBER 30, 2004
January 31, 2013

RenewABILITY Energy Inc. Commercial Drainwater Heat Recovery Systems

1. Applicant

Renewability Energy Inc.
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Kitchener, Ontario
N2G 3S9

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2. Manufacturing Facilities

Renewability Energy Inc.
136 Ottawa Street South, Unit 3
Kitchener, Ontario
N2G 3S9

3. Description

RenewABILITY Energy Inc. has two types of Commercial Drainwater Heat Recovery Systems (Heat Recovery System), which are the gravity fed systems and the pumped systems. Both Heat Recovery Systems consist of a heat exchanger which transfers waste heat from the grey drainwater to the colder potable water stream. Required venting is installed onto the heat exchanger on-site and the diverted drainwater flow is returned to the standard drain system.

Gravity System: The Heat Recovery System has a flow splitting manifold, which is designed to maintain an engineered cross sectional area as the drainwater flows through it.

Pumped System: The Heat Recovery System also consists of a tank, a pump and a pressurized flow splitting manifold. The tank gathers grey drainwater and then pumps it into the pressurized manifold which feeds the vertical heat exchanger.

4. Authorization requested

The applicant sought a Building Materials Evaluation Commission (BMEC) authorization for the Heat Recovery System as an innovative system designed for use as a wastewater heat recovery system on drainage pipes that are installed in commercial buildings and convey wastewater that is free from solids and does not contain sewage derived from sanitary units.

5. Assessment

Reports and assessments provided by the applicant show that if the Heat Recovery System is designed, performance tested and installed in accordance with the manufacturer's instructions and limitations and the specific terms and conditions stated in this authorization, the level of performance required by the OBC will be provided.

Reports submitted, and reviewed:

1. Letter correspondence dated March 12, 2003, from the Code Development and Training Section of the Ministry of Municipal Affairs and Housing.
2. GFX Floor Mounted System Installation Documentation, dated April 2003.
3. Pumped System Installation Documentation, dated February 2003.
4. Correspondence dated March 13, 2003, from the City of Kitchener.
5. Correspondence dated April 7, 2003, from the City of Toronto.
6. Correspondence dated February 6, 2003 from the Alberta Government.
7. Natural Resources Canada, CANMET Energy Technology Centre "Energy Credits for the Use of the Drainwater Heat Recovery System for Houses."
8. F.E.M.P. United States Department of Energy "Heat Recovery from Wastewater Using Gravity-Film Heat Exchangers."
9. UL Notice of Authorization and Testing, "Notice of Authorization to Apply the UL Mark", March 8, 2001.
10. United States Department of Energy "New technologies Keeps Companies and Consumers in Hot Water", April 2000.
11. Oak Ridge National Laboratory "United States Department of Energy: GFX Evaluation", August 24, 2000.

12. Installation Instruction for GFX Multiple-Pipe Gravity Fed Systems for Wall Mounted Units.”
13. Doucette Industries, Quality Manual.

6. Authorization

Use of the Heat Recovery System is authorized for use as an innovative system designed for use as a wastewater heat recovery system on drainage pipes that are installed in commercial buildings and convey wastewater that is free from solids and does not contain sewage derived from sanitary units; all other requirements pertaining to the installation of the Heat Recovery System shall conform to the requirements of Part 7 and all other Parts of the 1997 Ontario Building Code as amended (OBC), and subject to the following terms and conditions:

A. Specific Terms & Conditions

1. This authorization is valid only for the RenewABILITY Energy Inc. Commercial Drainwater Heat Recovery System.
2. The design and general review of the Heat Recovery System shall be carried out by a Professional Engineer as defined in the *Professional Engineers Act*, (Ontario); the Professional Engineer shall provide the chief building official with a document certifying that the installation conforms with this authorization.
3. The Commercial Drainwater Heat Recovery System shall not be considered in contravention to OBC Article 7.4.9.1. when used on drain pipes that carry wastewater from showers, dishwashers, clothes washers or other similar applications where the wastewater is free of solids and shall not contain sewage derived from sanitary units.
4. In addition to the to the related standards and requirements as outlined in Subsection 7.2.7. and Article 7.2.9.2. of the OBC, the Heat Recovery System shall conform to the following standards:
 - (a) the copper drainpipe shall conform to ASTM B306, and
 - (b) the copper freshwater pipe shall be type L tube conforming to ASTM B88.
5. The drainage system shall be provided with cleanouts that will permit the cleaning of the Heat Recovery System and the entire drainage system.
6. In addition to the requirements of the *Building Code Act, 1992*, RenewABILITY Energy Inc. shall supply the owner and Chief Building Official with the following:

- (a) detailed mechanical drawings and documents denoting the installation of the Heat Recovery System with respect to possible future renovation and retrofit of the system, and
 - (b) the necessary manuals and documents outlining maintenance responsibilities and defining the system's maintenance protocol.
- 7. Permanently located on the Heat Recovery System in a minimum of 3 separate locations, and one on the upstream portion of the drainage system in a conspicuous location, shall be a mark or label indicating a minimum of the following information:
 - (a) Commercial Drainwater Heat Recovery System,
 - (b) Contact Information: company name, and telephone number, and
 - (c) "Not approved for solids or sanitary unit discharge"
- 8. The Heat Recovery Systems shall not be enclosed in a wall, floor, or ceiling assembly, and shall be readily accessible for maintenance inspection.

B. General Conditions

- 1. The use of the Renewability Energy Inc. Commercial Drainwater Heat Recovery System as described in 6. A. Specific Terms and Conditions No. 1. must comply with the *Building Code Act, 1992* as amended or re-enacted from time to time and except as specifically authorized herein, with the Ontario Building Code as amended or remade from time to time.
- 2. A copy of this Authorization shall accompany each application for a building permit and shall be maintained on the site of the construction with the building permit.
- 3. The Applicant named in Part 1 hereof shall promptly notify the BMEC of:
 - (a) the failure of the Applicant, or of the material, system or building design that is the subject matter of this Authorization, to comply with any of the terms and conditions set out in 6. A. above; or
 - (b) the occurrence of any of the events described in Conditions 6. B. 4. (a) and (b) (ii) below.
- 4. The BMEC may amend or revoke this Authorization where it determines that:
 - (a) any change has been made to:

- i. the material, system or building design that is the subject matter of this Authorization;
 - ii. the address of the applicant specified in Part 1 of this Authorization; or,
 - iii. the ownership of the applicant specified in Part 1 of this Authorization.
 - (b) the use of the material, system or building design authorized herein;
 - i. does not comply with the *Building Code Act, 1992* or any relevant legislation as they may be amended or re-enacted from time to time; or
 - ii. provides an unsatisfactory level of performance, in situ.
 - (c) the Applicant, or the material, system or building design that is the subject matter of this Authorization, has failed to comply with any of the terms and conditions set out in this Authorization; or
 - (d) any Ontario Building Code provision relevant to this Authorization has been amended or remade.
5. Where the Commission receives additional information concerning the material, system or building design authorized herein, the Commission may review this Authorization and the Commission may after the review amend or revoke this Authorization as in the opinion of the Commission may be necessary.

Amended at Toronto on this 30th day of October 2004

BUILDING MATERIALS EVALUATION COMMISSION

per: Rashmi Nathwani, Chair