



Natural Resources
Canada

Ressources naturelles
Canada



C E T C CANMET ENERGY TECHNOLOGY CENTRE

INTEGRATED ENERGY SYSTEMS

CLEAN ENERGY TECHNOLOGIES

INSTANTANEOUS WATER HEATING

Background

There is an increasing concern over global climate change especially concerning man-made emissions of greenhouse gases. Carbon dioxide, CO₂, is a product of fossil fuel combustion and it is one of the most significant greenhouse gas contributors. With a continued increase in the demand for fossil fuels, the emissions of CO₂ have increased dramatically.

One approach to mitigating these CO₂ emissions is to improve energy efficiency where possible. This can be accomplished through industry changes, product regulation, or through the use of new energy efficient technologies.

The Office of Energy Efficiency at Natural Resources Canada has an interest of promoting more efficient residential water heating technologies; one of these includes the instantaneous water heater (also known as a tankless water heater).

An instantaneous water heater does not store a significant volume of water and it therefore does not have a very high standby heat loss in comparison to a storage water heater. This results in an efficiency benefit of 15% to 20%.

While the efficiency benefit is clear, the IES laboratory is investigating other features of this relatively new (to North America) technology, in anticipation of its wider use.



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The IES laboratory has performed tests on seven different models of instantaneous water heater. The tests included the DOE Energy Factor, simulated residential use tests and simulated commercial use tests.

Other Issues Identified

- Water Flow Limitations (Residential & Commercial Use) - Low Flow Limit & High Flow limit in Winter.
- When high a volume of water is used, when in a recirculation loop, or when in a combo application, a separate water filter may be prudent.
- If tankless is used in a circulation loop, extended use at low firing rates may cause vent corrosion problems in winter. Concentric Venting may lead to vent corrosion problems or icicle formation.
- Typical Electric Power Use (Standby – 8W, On – 60W, Post Purge – 30 W)
- Room Depressurization – Freeze Protection Can Activate (100 W)
- Water Quality & Liming (Yet to be evaluated)

Your Invitation to Work with Us


We are interested in collaborating with you. Please contact the Business Office to discuss your particular needs.

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