Research & Development Highlights

93-209 Technical Series

A Guide to Residential Wood Heating

Introduction

At present 20 percent of Canadian households use wood as primary or supplementary fuel for home heating. Advances in wood burning appliances have made this type of heating fuel safer, cleaner and more efficient than ever before.

Design, location or installation problems can lead to inefficient wood burning appliances which can in turn cause chimney fires or the emission of exhaust gases into the home. At the same time, new, tighter housing requires that today's wood burning appliances be clean burning and resistant to spillage.

This guide is intended to aid the homeowner in having an appliance successfully installed and safely use it in any type of home. h should not be considered a do-it-yourself manual. Basic guidelines, including building code requirements and useful recommendations, are given to inform the homeowner about:

- appropriate selection of the wood burning appliance,
- effective appliance and chimney location, and
- scope of a proper installation.

Further information is given on proper wood burning techniques, including maintenance, firewood seasoning and energy content in comparison to other fuels.

Description of publication

New technologies have reduced smoke and other pollutant emissions from wood burning by burning off the smoke before it leaves the firebox. Most low emission appliances will use either advanced combustion, catalytic or densified pellet combustion technology (see Fig. 1) to achieve this.

A full description of various installations for wood burning appliances (or space heaters) is given (see Fig. 2) as well as their relative advantages and disadvantages. These systems include:

- conventional wood stoves and fireplaces,
- pellet stoves,
- hearth mount stoves,
- masonry heaters,
- fireplace inserts, and
- central heating units.

Planning considerations will include choosing a space heater to balance appliance output and room size, installing it for maximum heat output to the busiest part of the house and employing adequate heat distribution systems.

Installation safety considerations are touched on for each of the appliances, as well as for flue pipe assemblies, shielding, and floor pads.

Chimney design and location are especially important factors in reducing chimney fires and the back drafting of smoke into the house. The extremely high temperatures of efficient wood burning systems demand the selection of appropriate chimney types and ongoing maintenance of the wood burning system. Installation considerations and various chimney options are examined in detail.

Creosote buildup, which can lead to chimney fires, is most effectively minimized through correct fire starting techniques and the use of properly seasoned wood. Tips for choosing appropriate wood types, purchasing and seasoning the wood, as well as building efficient non-smoldering fires are given. A number of quick observations will indicate fire efficiency. For instance, blackened firebricks, glass doors, and metal parts in the firebox indicate poor combustion. While most people enjoy that "nice woodsy smell," this actually indicates that smoke is not fully exhausting through the chimney but rather entering the home.

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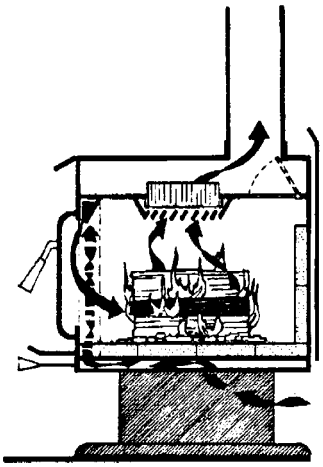
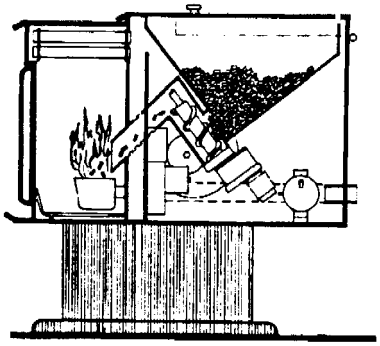
Advances in wood burning systems and more energy-efficient homes make wood buming a viable home heating option. The information within this booklet will enable householders to make informed decisions when considering wood burning appliances as a form of home heating.

Project Manager: Cris Ives
Research Report: A Guide to Residential Wood Heating (1993) NHA 5178
Research Consultant: Canadian Wood Energy Institute

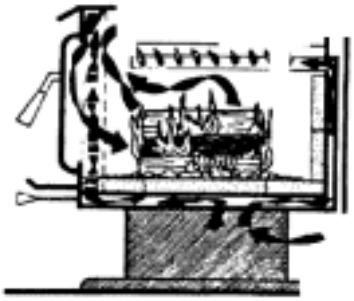
Fig. 1. Examples of Low emission technologies



CATALYTIC

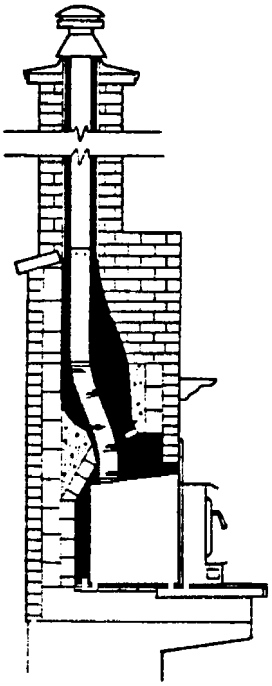


Ddensified
PELLET



ADVANCED COMBUSTION

Fig. 2 Example of Fireplace Insert installation



CROSS-SECTION OF A FIREPLACE INSERT INSTALLATION

Installation codes now require that a stainless steel liner be installed from the insert flue collar to the top of the chimney. The result is better performance and a safer system.

A full report on this research project is available from the Canadian Housing Information Centre at the address below.

*The **Research and Development Highlights** factsheet is one of a wide variety of housing-related publications produced by CMHC.*

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Cette publication est aussi disponible en français.

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Under Part IX of the National Housing Act, the Government of Canada provides funds to CMHC to conduct research into the social, economic and technical aspects of housing and related fields, and to undertake the publishing and distribution of the results of this research,

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