SECTION 1 - OPERATING INSTRUCTIONS

1.4 DESIGN CONCEPT of the JETSTREAM

THE PROBLEM OF BURNING WOOD

A series of very complex time and temperature dependent chemical reactions accompany the burning of wood. To supply the correct amount of air is difficult; to control the output to match a particular heating load is even more difficult. This difficulty in carburetion and control is compounded by difficulties in ignition. The pyrolysis gases (unburned gases formed when wood is burnt at low temperatures) generated from heating wood have ignition temperatures ranging from 385 degrees C. (725 degrees F.) (methanol) to 637 degrees C. (1178 degrees F.) (carbon monoxide). Since conventional stove or furnace surface temperatures do not operate in this range, many of the gases distilled from wood are vented to the chimney. This results in a loss of energy and the potential for condensation of tars which leads to chimney fires.

The Jetstream approaches the complex issue of wood combustion by providing proper carburetion and by keeping the combustion zone at a temperature well above that required to oxidize the complex products of pyrolysis. The introduction of a high speed jet of air under these conditions provides good mixing of oxygen and pyrolysis products. Analysis of stack gases has confirmed that the Jetstream achieves complete combustion of wood, and thus achieving its very low level of harmful emission release.