

EFFICIENCY STUDY OF A CONTRAFLOW MASONRY WOOD-BURNING HEATER

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Abstract

Hypothesis:
 The contraflow masonry stove operates at 90% efficiency.

This study determines the efficiency of a finish contraflow masonry wood-burning heater in a typical residential setting in Pleasant Hill Oregon.

Data concerning the thermal properties of the home were collected between February 15th and February 23rd of 2009. This data was then used in conjunction with calculations of heat gain and loss to determine an operating efficiency of 79.5 % for the contraflow masonry wood-burning heater.

Fuel Data

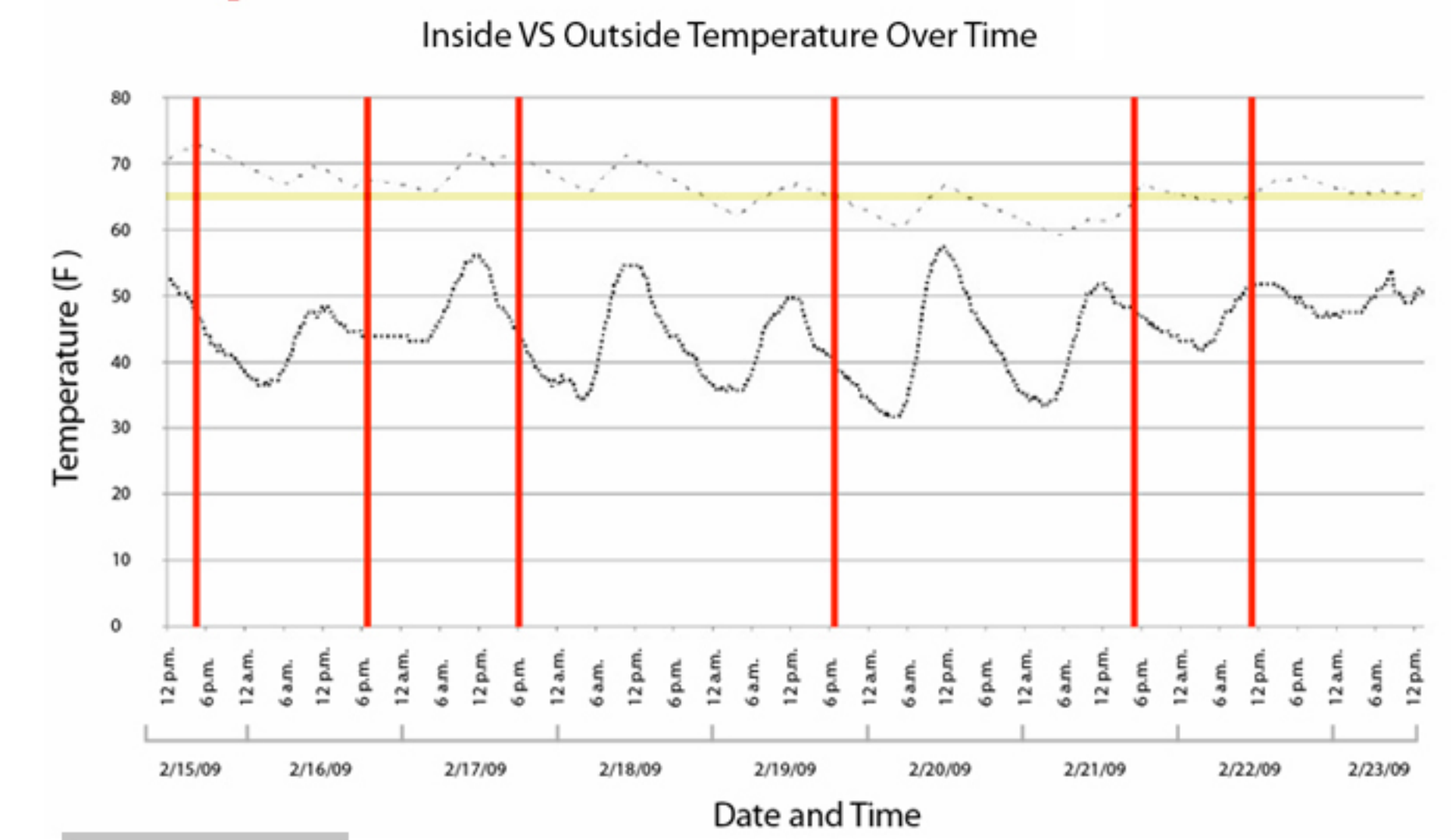
Date	Time of Burn	Amount of Fuel
2.15.09	3:25 pm – 5:53pm	54 lbs
2.16.09	8:40 pm – 9:35pm	27 lbs
2.17.09	6:17 pm – 8:40 pm	35lbs
2.18.09	NO BURN	NO BURN
2.19.09	7:50 am – 10:30 am	56 lbs
2.20.09	NO BURN	NO BURN
2.21.09	4:20 pm – 7:00 pm	43 lbs
2.22.09	11:30 am – 1:15pm	24 lbs



Internal Heat Gain [4 Occupants]
 920 Btu/hr

Internal Heat Gain [Equipment]
 1400 Btu/hr

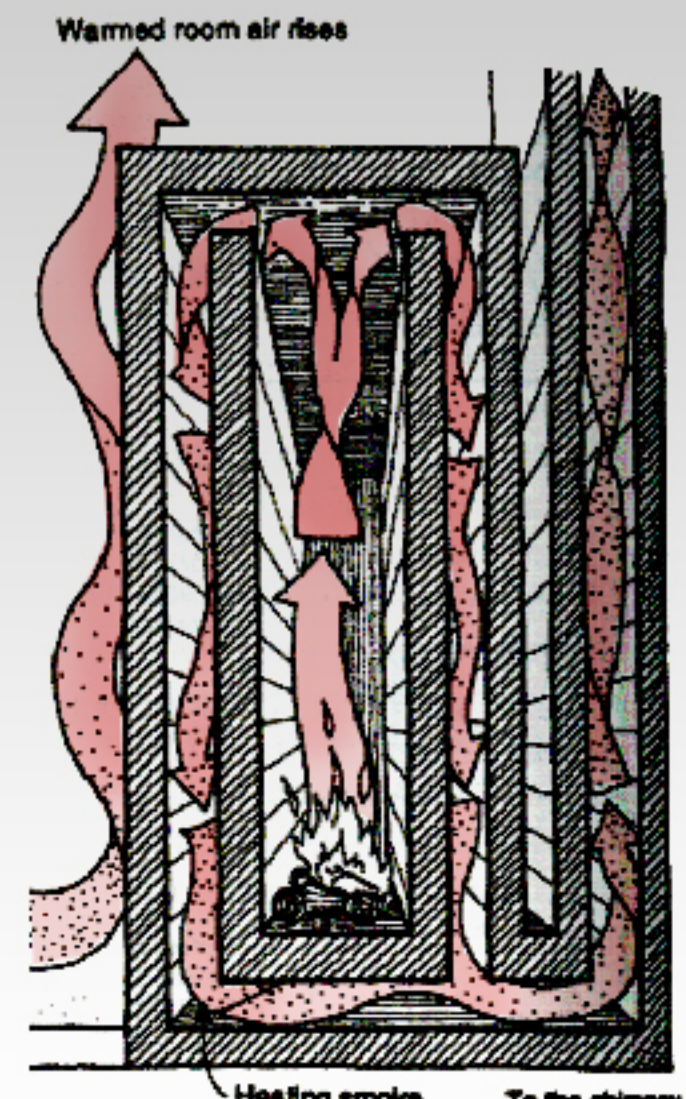
Temperature Data



Analysis

Heat Loss through Envelope: 14608 Btu/hr
 Heat Gains: - 7628 Btu/hr
 Net Heat Loss: 6980 Btu/hr

Potential available energy from wood: 8776 Btu/hr
 Efficiency of Stove: 79.5%



Modified from Stein, et al. 2005 p. 334

Heat Flow Diagram