

# STATE OF COLORADO

Roy Romer, Governor  
Patricia A. Nolan, MD, MPH, Executive Director

*Dedicated to protecting and improving the health and environment of the people of Colorado*

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Colorado Department  
of Public Health  
and Environment

September 27, 1994

Dietmeyer, Ward & Stroud  
P.O. Box 323  
Vashon Island, Washington 98070

Re: Approval Status of Masonry Heater

We have received and examined the required information regarding the masonry heater, **model Envirotech Radiant**. It has been determined that the information satisfies the requirements of Colorado Air Pollution Control Regulation No. 4, Section IV, and that the model in question is hereby listed as a Colorado approved masonry heater.

Sincerely,

Gary W. Finiol  
Environmental Protection Specialist  
Colorado Air Pollution Control Div.

September 20, 1994



David Ouimette, Manager  
Stationary Source Program  
Colorado Department of Health; APCD-SS-B1  
4300 Cherry Creek Drive South  
Denver, Colorado 80222-1530

Dear Mr. Ouimette:

This letter has been prepared by **OMNI Environmental Services, Inc** (OMNI) in support of the attached application for obtaining an **"approved"** designation from the Colorado Department of Health for the Envirotech Radiant model masonry heater manufactured and/or designed to be site-built by Dietmeyer, Ward & Stroud of Vashon Island, Washington 98070. This letter has been prepared to meet the application requirements set forth in Section IV.B.3 of Colorado's Revised Regulation 4, adopted by the Colorado Air Quality Control Commission on April 21, 1994 and made effective June 30, 1994.

Section IV.B.3 of Regulation 4 requires the President of a masonry heater testing laboratory, which has tested a masonry heater for the purpose of obtaining the **"approved"** designation from the Colorado Department of Health, to verify that (interpretive and explanatory language has been added by OMNI):

1. his or her laboratory is presently accredited and was accredited by the U.S. Environmental Protection Agency (EPA) pursuant to Federal Regulations in 40 CFR Part 60 Subpart AAA at the time when in-field testing for this application was performed;
2. the methods used to field test the masonry heater for which **"approved"** designation is being sought, were conducted according to procedures audited by the EPA;
3. test results for the masonry heater for which "approved" designation is being sought less than 6.0 grams per kilogram (g/kg), and;
4. the masonry heater model or masonry heater design, for which **"approved"** designation is sought, meets the specifications of the Regulation 4 **"Masonry Heater"** definition (Section I.A.12). Regulation-4-stipulated design specifications for a masonry heater are as follows:

It is OMNI's understanding that to be a masonry heater pursuant to Regulation 4, the appliance must meet all of the following design criteria: It must:

- a) be designed for, or capable of, burning wood for the purpose of domestic space heating and/or domestic water heating;
- b) be constructed primarily of masonry materials (ie, stone, cemented aggregate, clay, tile, or other non-combustible, non metallic, solid materials);

**OMNI Environmental Services, Inc.**

Consulting + Engineering + Testing

Mailing: Post Office Box 743 + Beaverton, Oregon 97075 USA  
Street: 5465 SW Western Avenue + Suite M + Beaverton, Oregon 97005 USA

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- c) weigh at least 800 kilograms (1762 pounds);
- d) have a firebox-effluent, horizontal- and/or downward-travel distance of at least the length of the largest, single, internal firebox dimension before leaving the appliance.

**Horizontal- and/or downward-travel distance** is defined as the net horizontal and/or downward, internal duct length, measured from the top of the uppermost firebox door opening(s) to the exit of the masonry heater as travelled by any effluent on a single pathway through duct channel(s) within the heater (or average net internal duct length for multiple pathways of different lengths, if applicable).

**The net internal duct length** is measured from the center of the internal side or top surface of a duct, horizontally or vertically to the center of the opposite side or the bottom surface of the same duct, and summed for multiple ducts or duct channel(s) traversing horizontal angles of less than ninety degrees from vertical, only the net actual horizontal distance travelled is included in the total duct length.

**The largest, single, internal firebox dimension** is defined as the longest of either the length or the width of the firebox hearth and the height of the firebox, measured from the hearth to the top of the uppermost firebox door opening(s);

- e) have one or more air-controlling, fuel-loading doors which must be designed to be closed during normal operations (ie, the combustion of fuel in the firebox). "**Air-controlling**" means mechanism(s) or adjustable openings to firebox air inlet ducts which are designed for the purpose of controlling the quantity of combustion-air supplied to the firebox and fuel load;
- f) be constructed in conformance with any applicable safety listing, applicable building code, and the appliance manufacturer's specifications for its assembly. If the core is constructed under license and/or on-site with a *substantial* proportion of the construction materials not being supplied by the manufacturer (ie, owner of the manufacturing rights) the appliance must be certified to be substantially in conformance with those specifications by a legal representative of the manufacturer and;
- g) have a *permanent label* affixed to the appliance identifying its manufacturer (with address) and the model name and/or number.

OMNI has reviewed the Colorado Regulation 4 masonry heater requirements and hereby makes the following affidavit:



The Model Envirotech Radiant masonry heater, manufactured by:

Dietmeyer, Ward & Stroud  
PO Box 323  
Vashon Island, Washington 98070

was tested by: OMNI Environmental Services, Inc  
5465 SW Western Avenue, Suite M  
Beaverton, Oregon 97005  
(503) 643-3788

between (dates) December 6 and December 12, 1991 at Battleground, Washington.

NOTE: The Envirotech Radiant Model Masonry Heater was tested by OMNI using the model name "Grundofen."

OMNI's EPA accreditation history is: EPA Accredited Laboratory Pursuant to 40 CFR Part 60 Subpart AAA:

- a) Certificate Number 1 from March 5, 1987 to June 30, 1990, and
- b) Certificate Number 3 from July 1, 1990 through June 30, 1995.

OMNI is also accredited for woodstove testing by the State of Colorado (Certificate Number 001) pursuant to CRS 25-7-401 to 405. There is no expiration date on this accreditation.

The location of testing, the sampling methods and the data quality assurance/quality control methods used, and all references for establishing the method audit results are included in the test report submitted to the Department of Health with the approved-designation application package. EPA has performed both Technical Systems Audits (TSAs) and Performance Evaluation Audits (PEAs) on OMNI's Automated Emission Sampling (AES) test protocols. The audit reports which apply to in-field masonry heater and related in-field testing performed by OMNI are:

Publishing - Draft Audit Report. Auditors: Richard Shores and William Yeager. April 20, 1994 (final on all technical requirements). Under EPA Contract Number 68-D2-4291 with Research Triangle Institute (RTI), Research Triangle Park, North Carolina, Project ID 3967/56-18D.

Final Audit Report. Auditors: Richard Shores and William Yeager. November 25, 1987. Under EPA Contract Number 68-02-3973 with Research Triangle Institute (RTI), Research Triangle Park, North Carolina, Project ID 86009/II.

These audit reports found OMNI's sampling system and protocol to be "acceptable" (Note: There are only the "acceptable" "unacceptable" audit result categories provided by EPA's audit procedures.)



The most recent EPA audit of OMNI's in-field test method (using the AES sampler, formerly the AWES) for residential solid-fuel burning appliances was performed during January, 1994. This audit has not been published yet but results can be discussed with:

Robert McCrillis  
Organic Control Branch  
U.S. Environmental Protection Agency  
Research Triangle Park, NC 27711  
919-541-2733

or

William Yaeger/Richard Shores  
Research Triangle Institute  
Research Triangle Park, NC  
919-541-6287

OMNI hereby verifies that the Envirotech Radiant model masonry heater:

1. was tested in accordance with the requirements of Regulation 4 at the above referenced dates and location, with a 1.36 grams per kilogram (g/kg) emission factor (In-Home Evaluation of Emissions from a Grundofen Masonry Heater; OMNI Environmental Services, Inc., January 8, 1992);
2. is designed to burn cordwood;
3. is designed to be constructed from all or substantially all masonry materials;
4. has a horizontal- and/or downward-firebox-effluent travel distance of at least the length of the single longest firebox dimension:
  - a) Single Longest Firebox Dimension: 35 inches
  - b) Total horizontal- and/or downward-firebox-effluent travel distance: 231 inches
5. has air-controlling door(s) for the purpose of controlling the amount of combustion-air supplied to the firebox and fuel load.

For each model line (core system) to be constructed and/or produced, and for which an application for designation as an "approved" masonry heater under Regulation 4 has been submitted to the Colorado Department of Health, the manufacturer (ie, the owner of manufacturing rights) verifies that:

1. the appliance core is substantially identical in all firebox dimensions, firebox-effluent travel distance, and all firebox loading-door and flue-configuration geometry as the



appliance tested by OMNI Environmental Services, Inc at the times and location(s) referenced above;

2. the weight of the appliance, excluding foundation, is greater than 800 kilograms (1762 pounds);
3. each appliance of the model line being submitted for "**approved**" designation here is to be constructed in conformance with any and all applicable safety listings, applicable building codes, and the appliance manufacturer's (owner of manufacturing rights') specifications for its assembly and;
4. each appliance of the model being submitted for "**approved**" designation here has a permanently affixed label identifying the model designation, the manufacturer (ie, owner of manufacturing rights), and the manufacturer's address.

This letter is respectfully submitted jointly by:

Paul E. Tiegs  
President  
OMNI Environmental Services, Inc

Paul E. Tiegs  
Signature

9/20/94  
Date

and

Tom Stoud  
Dietmeyer, Ward & Stroud  
PO Box 323  
Vashon Island, Washington 98070

Tom Stoud  
Signature

9/21/94  
Date

Valid only with signatures of both parties.



December 19, 1996

Mr. Gary Finiol  
Colorado Department of Health  
Air Quality Division  
APCD SSB1  
4300 Cherry Creek Drive South  
Denver, Colorado 80222-1530

Dear Mr. Finiol:

It has come to my attention that some clarification is needed regarding the affidavit that is signed by OMNI and our clients and submitted to your office as an application for Colorado clean-burning masonry heater approvals. The specific point that needs clarification is in subparagraph 1 of the paragraph beginning "For each model . . ." on page 4 of the affidavit letter. The paragraph is a verification that the manufacturer will produce or construct each appliance for which Colorado approval applies such that; 1. "the appliance core is substantially identical in all firebox dimensions, firebox-effluent travel distance, and all firebox loading-door and flue-configuration geometry as the appliance tested by *OMNI-Test Laboratories, Inc.* at the times and location(s) referenced above;"

to be more concise, this subparagraph should more appropriately read:

"1. the appliance core is substantially identical in all firebox dimensions and all firebox loading-door geometry as the appliance tested by *OMNI-Test Laboratories, Inc.* at the times and location(s) reference above;"

and another subparagraph should be added which reads:

"2. the appliance firebox-effluent travel distance, as a minimum, shall conform to the distances verified by OMNI and specified in paragraph 4.b above.

Note: This added paragraph changes the numbering of the following subparagraphs.

These changes more clearly reflect the fact that the firebox of an approved masonry heater must be built "substantially identical" to firebox contained in the tested appliance and that the flue-gas travel distance can be longer but not shorter than the minimum distance which defines a masonry heater in Regulation 4. In addition, the flue-gas travel distance must meet this minimal specification regardless of the travel distance of the tested appliance.

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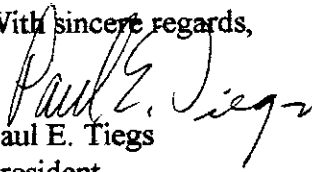
Mr. Gary Finiol  
December 19, 1996  
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In particular this clarification more clearly provides for chimneys that are higher than the chimney used on the tested appliance. It will offer more flexibility in chimney height for various installation requirements not provided in OMNI's previous affidavit letter form.

These changes in the language of OMNI's affidavit letter should have no effect on the results or stringency of Regulation 4.

Let me know if these changes need any further updating.

With sincere regards,

  
Paul E. Tieg  
President

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cc: Walter Moberg, Firespaces, Inc.  
Tom Stroud, Dietmeyer Ward & Stroud  
Jim Buckley, Buckley Rumford  
Jerry Frisch, Lopez Quarries  
John Lagamba, Temp-Cast Enviroheat Ltd.