



*Guide to  
Good Practice*

**Heating and  
Ventilating  
Contractors'  
Association**

# **Installation of Biofuel Heating**



# **TR/38**

# Guide to Good Practice

# Installation of Biofuel Heating

# TR38

## Acknowledgments

---

Many thanks to the following for their valued input and time: -

Dick Bradford, Robert Burke, Dave Hardwicke, Gerald Israel, Chris Miles, Martin Murrish, Terry Seward, Kevin Stones and Peter Wilkins.

This publication has been written by Chris Laughton on behalf of HVCA and has been reviewed by BSRIA, CIBSE, BRE, FETA, HETAS, REA and the HVCA Technical Committee.

Biofuel is an increasingly important technology space heating and hot water in all types of buildings. This guide will underpin the development of a Competent Person Scheme and Inspection and Assessment regime for HVCA Members

---

Consultant: Chris Laughton

---

Secretary: Alan Keating

---

*This publication is printed on revive 50:50 silk paper, which is certified by the Forest Stewardship Council (FSC) as a mixed source grade containing 50% recovered waste and 50% virgin fibre*

ISBN 0-903783-60-6

First Issued June 2008

©2008 HVCA

*NOTE - This document is based on knowledge available at the time of publication and is meant for general purposes, not for reliance on in relation to specific technical or legal issues, in which case you should always seek independent advice on such issues. No responsibility of any kind for any injury, death, loss, damage or delay however caused, resulting from the use of the advice recommendations contained herein, is accepted by the authors or others involved in it's publication (including the Heating and Ventilating Contractor's Association).*

## HVCA

**HVCA Publications Department**

Old Mansion House

Eamont Bridge

Penrith CA10 2BX

01768 860405

hvcapublications@welplan.co.uk

[www.hvca.org.uk](http://www.hvca.org.uk)

## FOREWORD

---



The need to address energy usage and in particular the associated carbon emissions created by its generation and consumption, has caused those responsible for the design, installation and operation of buildings to review many of the traditional methodologies.

Regulations and in some cases client requirements, are demanding more innovative solutions to the provision of heating, hot water generation, cooling and electricity generation. Invariably such solutions lie in new applications of existing and proven technologies, but the skill is in knowing when they are appropriate and how to make them efficient.

The low carbon rating of biomass is very attractive for meeting emission targets but its suitability has to be carefully evaluated. Whilst using Biomass as a fuel has had limited application in the UK in the past, its development has continued in Europe where there is less dependency on a gas infrastructure.

Consideration of the use of biomass should now be made in the knowledge of the current developments and requirements which this Guide is intended to provide. Although independent of any manufacturer, this guidance is not intended to supersede design data or instructions provided by suppliers, whose recommendations should always be followed.

The Guide is intended to be part of a suite of publications covering generic installation requirements for a range of renewable energy systems including solar hot water, heat pumps and CHP. It draws on the wide range of existing HVCA publications covering good practice in building engineering systems.



**Graham Manly**

*Technical Committee Chairman  
Heating and Ventilating Contractors Association*

# CONTENTS

<b>ACKNOWLEDGEMENTS</b>	<i>Page 1</i>
<b>FOREWORD</b>	<i>Page 3</i>
<b>1.1 Objective</b>	<i>Page 9</i>
<b>1.2 Standard of workmanship</b>	<i>Page 9</i>
<b>1.3 Quality assurance</b>	<i>Page 9</i>
<b>1.4 Scope</b>	<i>Page 9</i>
<b>1.5 Operating Conditions</b>	<i>Page 10</i>
<b>1.6 Description of service</b>	<i>Page 10</i>
<b>1.6.1 Conventional Feed and Expansion Tank Systems</b>	<i>Page 10</i>
<b>1.6.2 Pressurised Closed Circuit System</b>	<i>Page 10</i>
<b>1.6.3 Gravity Circulation Systems</b>	<i>Page 11</i>
<b>1.6.4 Fully Pumped Systems</b>	<i>Page 11</i>
<b>1.7 Publication review</b>	<i>Page 11</i>
<b>2 OUTLINE CONSIDERATIONS</b>	<i>Page 12</i>
<b>2.1 Types of fuel</b>	<i>Page 12</i>
<b>2.2 Types of applications</b>	<i>Page 13</i>
<b>2.3 The combustion of wood fuels</b>	<i>Page 14</i>
<b>2.4 Types of appliances</b>	<i>Page 14</i>
<b>2.5 Methods of wood fuel delivery and storage</b>	<i>Page 15</i>
<b>2.6 Fuel delivery Vehicles</b>	<i>Page 16</i>
<b>2.7 Methods of wood fuel transmission to appliances</b>	<i>Page 16</i>
<b>2.8 Connecting flue pipes</b>	<i>Page 16</i>
<b>2.9 Chimneys</b>	<i>Page 17</i>
<b>2.10 Ash disposal</b>	<i>Page 19</i>
<b>2.11 Buffer tanks</b>	<i>Page 19</i>
<b>2.12 Controls</b>	<i>Page 19</i>
<b>2.12.1 Combustion controls</b>	<i>Page 19</i>
<b>2.12.2 System controls</b>	<i>Page 20</i>
<b>2.12.3 Safety controls</b>	<i>Page 20</i>

<b>2.13</b>	<b>Replacement and conversion appliances</b>	<i>Page 22</i>
<b>3</b>	<b>APPLIANCES</b>	<i>Page 23</i>
<b>3.1</b>	<b>Appliance Types</b>	<i>Page 23</i>
<b>3.2</b>	<b>Appliances Locations</b>	<i>Page 23</i>
<b>4</b>	<b>SPECIFICATION DETAILS</b>	<i>Page 24</i>
<b>4.1</b>	<b>Detailed storage requirements</b>	<i>Page 24</i>
<b>4.2</b>	<b>Detailed Wood Pellet Specification</b>	<i>Page 25</i>
<b>4.3</b>	<b>Detailed Wood Briquette Specification</b>	<i>Page 25</i>
<b>4.4</b>	<b>Detailed Wood Chip Specification</b>	<i>Page 26</i>
<b>4.5</b>	<b>Detailed Wood Log Specification</b>	<i>Page 26</i>
<b>4.6</b>	<b>General pipework requirements</b>	<i>Page 27</i>
<b>4.7</b>	<b>Accessories and pipeline ancillaries</b>	<i>Page 27</i>
<b>5</b>	<b>COMPLETION</b>	<i>Page 27</i>
<b>5.1</b>	<b>Testing - chimneys and connecting flue pipes</b>	<i>Page 27</i>
<b>5.2</b>	<b>Testing - combustion</b>	<i>Page 28</i>
<b>5.3</b>	<b>Testing - hydraulic</b>	<i>Page 28</i>
<b>5.4</b>	<b>Flushing, cleaning and water treatment</b>	<i>Page 28</i>
<b>5.5</b>	<b>Thermal insulation</b>	<i>Page 28</i>
<b>5.6</b>	<b>Commissioning and hand over</b>	<i>Page 28</i>
<b>6</b>	<b>BIBLIOGRAPHY AND SOURCES</b>	<i>Page 30</i>
<b>6.1</b>	<b>HVCA Publications</b>	<i>Page 30</i>
<b>6.2</b>	<b>CIBSE Publications</b>	<i>Page 30</i>
<b>6.3</b>	<b>BISRIA Publications</b>	<i>Page 30</i>
<b>6.4</b>	<b>Standards specific to wood fuel heating</b>	<i>Page 30</i>
<b>6.5</b>	<b>Standards for solid fuel appliances with boilers</b>	<i>Page 30</i>
<b>6.6</b>	<b>Standards for other solid fuel appliances</b>	<i>Page 30</i>
<b>6.7</b>	<b>Standards for flues or chimneys</b>	<i>Page 30</i>
<b>6.8</b>	<b>General Standards for heating</b>	<i>Page 31</i>
<b>6.9</b>	<b>Standards for wood Fuel</b>	<i>Page 31</i>
<b>6.10</b>	<b>Abbreviations</b>	<i>Page 32</i>
<b>6.11</b>	<b>Miscellaneous</b>	<i>Page 33</i>

**TABLES**

<b>Table 1</b>		<i>Page 10</i>
<b>Table 2</b>	<b>Key Qualities - Guidance</b>	<i>Page 12</i>
<b>Table 4</b>	<b>Vehicle Dimensions - Guidance</b>	<i>Page 14</i>
<b>Table 5</b>		<i>Page 15</i>
<b>Table 6</b>		<i>Page 16</i>
<b>Table 7</b>		<i>Page 16</i>
<b>Table 8</b>		<i>Page 23</i>
<b>Table 9</b>		<i>Page 23</i>
<b>Table 10</b>		<i>Page 24</i>