

Energy efficiency measures – Boiler replacement



Scope

- This training module is aimed at **HomeWorks** registered tradespeople who are acting as Low Carbon Ambassadors (LCAs) to provide basic energy efficiency advice to homeowners
- It is one in a series of training modules aimed at LCAs:
 - Introduction to domestic retrofit
 - What is **HomeWorks**?
 - Understanding an EPC (Energy Performance Certificate)
 - Energy efficiency measures (EEMs):
 - Low/no cost measures
 - Loft insulation
 - Draught-proofing
 - Cavity wall insulation
 - Solid wall insulation
 - Replacement windows
 - **Boiler replacement**





EEMs – Boiler replacement - Learning outcomes

- The learning outcomes of this training module are to summarise:
 - What is meant by condensing boiler and how to identify one
 - The factors affecting the choice of a new boiler
 - The improvements that could be made to a heating system at the same time
 - The cost, savings and other benefits associated with replacing a boiler
- This module focuses on **gas boilers** rather than oil, LPG or solid boilers, or electric heating



Condensing boilers

- Condensing boiler uses bigger heat exchanger to convert more heat to hot water which makes it more efficient
- Flue gases can be cooled such that white vapour plume formed
- Signs that existing boiler is condensing one:
 - Pipe running from boiler to outside drain
 - Plastic flue
 - White plume coming out of flue in cold weather
 - Looking at home's EPC may help - see ***Understanding an EPC***
- Gas boilers must be fitted by installer on Gas Safe Register (<https://www.gassaferegister.co.uk/>) - installer will usually provide boiler



Choosing a new boiler

Issue	Notes
Timing	<ul style="list-style-type: none">• New boiler often bought when existing boiler breaks down but can make sense to purchase earlier
Fuel type	<ul style="list-style-type: none">• Gas cheaper than oil, LPG or coal so can switch to gas boiler if supply available• If not, can switch to low-carbon heating (e.g. heat pump or biomass boiler) and RHI (https://www.gov.uk/domestic-renewable-heat-incentive) payments can reduce cost• Also option for electrically heated homes
Regular vs Combi	<ul style="list-style-type: none">• Older gas boilers usually have separate cylinder to store hot water so replace with:<ul style="list-style-type: none">• <i>Regular boiler</i> and retain hot water cylinder, or,• <i>Combi boiler</i> - does not need cylinder as provides hot water directly• Factors to consider:<ul style="list-style-type: none">• <i>Hot water use</i> - Large families probably need regular boiler + cylinder, combi more suited to smaller households• <i>Space</i> – Combi boilers require less space



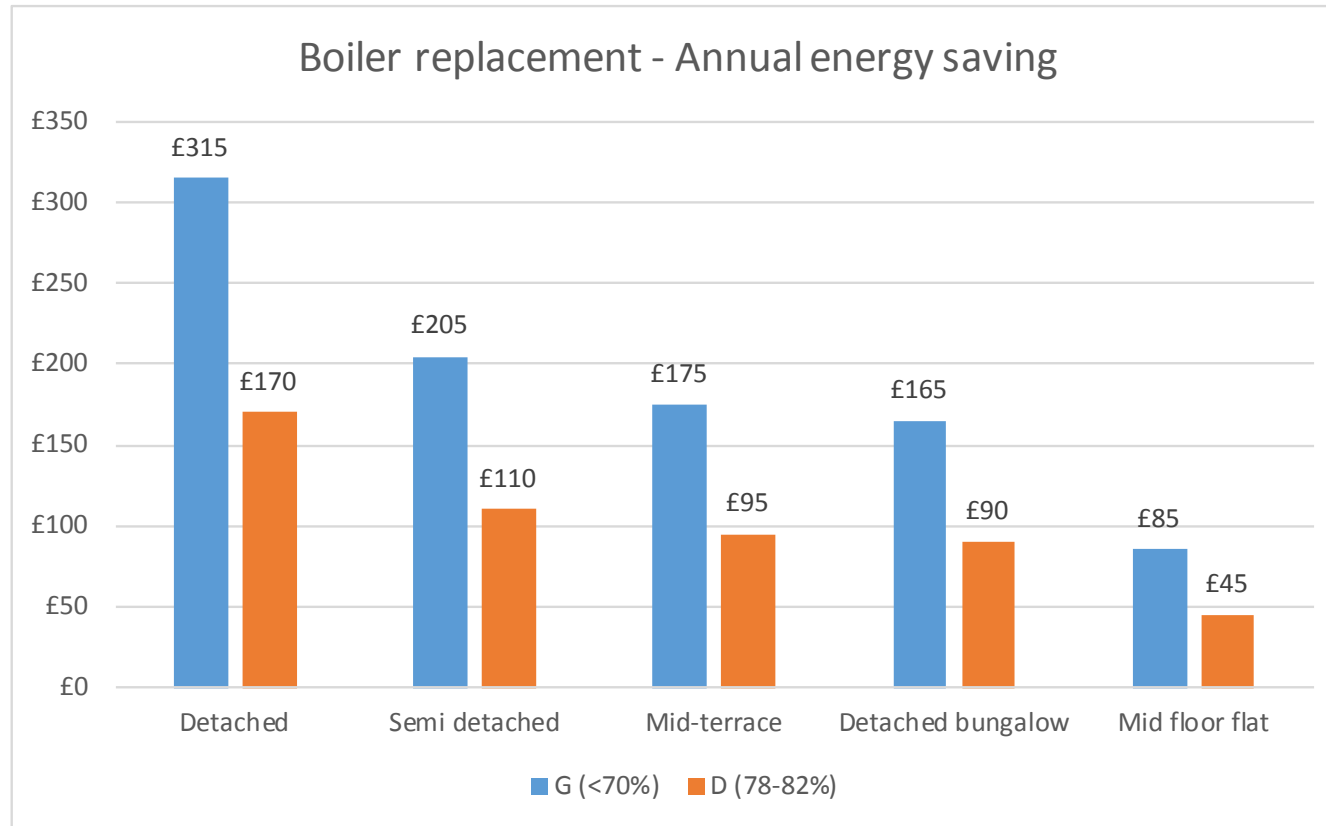
Other heating system improvements

Improvement	Description
Heating controls	<ul style="list-style-type: none">• Controls to install: boiler thermostat, timer or programmer, room thermostat and thermostatic radiator valves (TRVs)• Householders need to understand how to use them - see <i>Low & No Cost Measures</i>• See EST website (https://energysavingtrust.org.uk/home-energy-efficiency/thermostats-and-controls)
Hot water cylinder	<ul style="list-style-type: none">• New hot water cylinders are factory insulated to help maintain hot water temperature• If existing cylinder retained then top-up insulation to 80mm
Heat recovery systems	<ul style="list-style-type: none">• Passive flue gas heat recovery devices capture heat lost through flue to pre-heat cold water supplied for hot water• Heat recovery systems for mixer showers capture heat from waste hot water to pre-heat shower water• See SEA website (https://www.simpleenergyadvice.org.uk/your-home/heating-and-hot-water)



Replacement boiler – Annual energy saving

- Typical cost to install new gas boiler is about £3,200
- Annual energy saving installing condensing boiler:

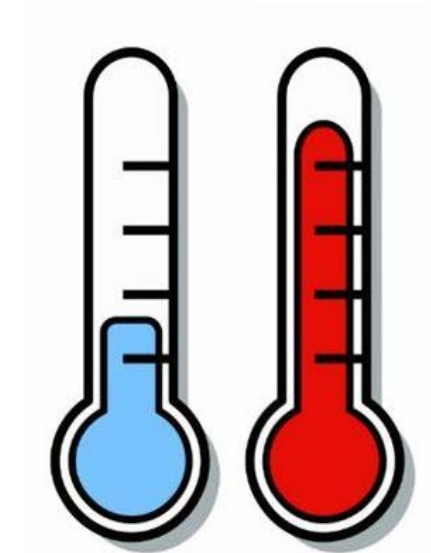
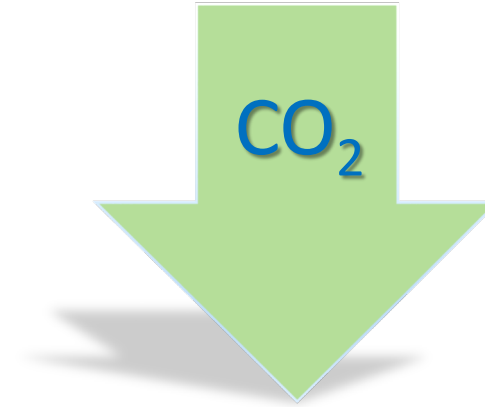


Figures taken from Energy Saving Trust (EST)



Boiler replacement – Other benefits

- Reduced carbon dioxide emissions
- Improved thermal comfort



Boiler replacement – Further information

- Further information on boiler replacement can be found on:
 - Energy Saving Trust (EST) website at: <https://energysavingtrust.org.uk/home-energy-efficiency/boiler-replacement>
 - Simple Energy Advice (SEA) website:
https://www.simpleenergyadvice.org.uk/measures/meta_replacement_condensing_boiler
- Registered installers can be found at: <https://www.competentperson.co.uk/>