



Energy Efficiency Solutions

High efficiency boilers

The energy efficiency of boilers available on the present market is much better than it used to be. If your boiler is old (>15 years old) or needs to be replaced, it is highly recommended to switch to a high efficiency boiler: A-rated boiler, condensing boiler, or low-temperature boiler.

What makes a boiler efficient?

When choosing a new boiler for your hotel, efficiency is important. An efficient boiler is one that turns as much of its fuel into useful energy with as little as possible wasted. Overall system efficiency is dictated by many different factors, which including the type of boiler, radiator size, system controls (pumps, programmers, thermostats), regular servicing, and so on.



Condensing boiler

Related criteria of the EU Eco-label:

- The energy efficiency of heat generating capacity is considered in criterion #3 (mandatory) and in criterion #32 (optional).
- NO_x emissions of boilers are considered by criterion #33 (optional).
- Maintenance and servicing of boilers are considered in criterion #23 (mandatory).

How difficult is it to change an old boiler for a new more efficient one?

High Efficiency boilers are designed to fit as easily onto an existing system as a standard efficiency boiler, with no changes to radiators.

What is an A-rated boiler?

Energy labelling, usually lettered from A to G, is available for boilers. This labelling indicates the energy efficiency of the boiler: an A-rated boiler is more efficient than a B rated boiler so if you change your boiler, make sure that it is an A-rated one. Energy labelling is not yet mandatory but it is used in some countries as a voluntary action.

Labelling schemes available for boilers

- The main energy label used in Europe was introduced by Council Directive 92/42/EEC. It is applicable to hot water boilers fired with liquid or gaseous fuels. Make sure your new boiler has a 90% or even 95% energy efficiency according to this Directive.
- In the UK, the presence of the 'energy saving recommended' logo (*labelling scheme managed by the Energy Saving Trust*) indicates an A-rated boiler.
- In the UK, many new boilers carry a SEDBUK rating (*SEDBUCK=Seasonal Efficiency of a Domestic Boiler in the UK*). The SEDBUK label looks like the European energy label you find on domestic appliances. It has lettered ratings from A to G.





What is a condensing boiler?

Condensing Boilers are high efficiency boilers, recapturing heat that would otherwise be lost. This boiler has been used more and more by hotels in order to save on their monthly bills and protect the environment. Although condensing boilers are slightly more expensive, you will end up saving more money in the long run.

Condensing boilers are similar to non-condensing boilers, except that they extract more heat from the hot flue gases because they have a larger heat exchanger.

Because of their larger heat exchanger, condensing boilers are more efficient than non-condensing boilers.

Typical models offer efficiency of around 90%, so most brands of condensing gas boiler are in the highest categories for energy efficiency (i.e. they are usually A-rated boilers).

A newer generation of condensing boilers are called 'modulated control' boilers. They are more efficient than non-modulated control units.

What is a low-temperature boiler?

A low-temperature boiler is designed to work with a water temperature lower than 40°C (whereas standard boilers work with a water temperature between 70°C and 80°C). Low temperature heating systems give a lower heat loss in the distribution system, lower standby losses in the boiler, and a higher efficiency.

Low-temperature boilers can only be installed if the water distribution system and the heat emitters (radiators...) are changed because they need to be sized accordingly. That is why they can only be installed during extensive renovation of the hotel.

Are there any other interesting alternative boiler systems to be considered?

Solar-assisted systems and biomass-fired boilers can be interesting alternatives to conventional boiler systems.

Installing a "staged" multiple-boiler system instead of one large boiler may also be an interesting option. Indeed, one large boiler that is frequently operating at less than its peak load will certainly be less efficient, while a staged boiler gives the hotel the option of running only some of its boilers at a time, thus reducing the amount of time a given boiler is running at less than peak load.

How should I proceed to choose and install a new boiler?

Given the technical complexity of this solution, we advise you to consult a qualified heat installer to choose the right boiler for the specific needs of your hotel.

How should I proceed to choose a heating installer?

In many countries, certification schemes are available to certify qualification of installers. You should contact energy agencies or professional associations in your country to get information on the existing certification schemes.

In the case of the UK, gas heating systems must be installed and serviced by a heating engineer registered with the Council for Registered Gas Installers (CORGI). Oil and solid fuel systems should be installed and commissioned by a member of the Oil-Firing Technical association (OFTEC) or Heating Equipment Testing and Approval Scheme (HETAS) respectively.





What else should I care about to ensure that my hotel's heating system is efficient?

If you have a condensing boiler installed, it is important that the heating installer makes sure that the rest of the heating system is designed and implemented to return temperatures to the boiler that are not too warm. Indeed, the actual operating efficiency of a condensing boiler depends on the temperature of the return water stream: if it is too warm, there will be little condensation.

Boiler heating controls are also key to system efficiency. A good control package for a boiler system should include:

- a programmer capable of timing the space heating and hot water separately.
- room and hot water thermostats (see solution n°XV),
- motorised valves to provide independent control of heating and hot water,
- controls so that the boiler only operates when required.

If your hotel has grown over time with extensions and conversions to add new rooms, it means the heating and hot water connection pipes have got longer and longer and heat loss has increased. To avoid this it is often best to consider a number of separate smaller boilers for each zone, sized to provide the precise requirement of each.

How is the maintenance for new efficient boilers?

It is highly recommended that your boiler receive proper maintenance on a regular basis in order to make sure that it operates with both efficiency and conservation. Have your boiler serviced at least once a year.

How much energy can my hotel save by installing high efficiency boilers?

The extra cost of an A-rated boiler, compared to a B-rated one, is usually very small and energy savings are important.

Condensing boilers are more expensive than non-condensing boilers but their enhanced efficiency saves money from the day you start to use them. Overall, extra costs should be recovered in 2-5 years.

Switching to a high efficiency boiler can save energy up to 25-35% on heating.

Link with other solutions in the database

Regulation of space heating (solution n°XVI) and thermal insulation of boilers and water systems (solution n°XVIII) should also be considered to reduce energy consumption for space heating and hot water production.

If you are planning to upgrade the thermal insulation of your building (solution n°VII), it makes more sense economically and technically to choose and replace your boiler (solution n°XVII) after the insulation work is done. Indeed, the insulation work will reduce your energy needs for space heating and you will certainly need a lower power boiler!

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