

BS 15287-1 and the 20 % Rule

In November 2008 the BS EN 15287-1 came into effect in UK. This standard is the first that mentions the concept of exhaust fans on solid fuel appliances

What does the standard say (excerpt)?

Exhaust fans may be mounted in or on a chimney to assist the evacuation of products of combustion provided that:

For natural draught solid fuel heating appliances which have rapid response combustion, e. g. gravity fed boilers; the chimney without the fan running has the capacity to evacuate 20 % of the nominal heat output of the heating appliance.

The excerpt explained:

- The chimney, when working naturally, creates its own updraught and draws in the air required for the combustion process, the fire burns at 100 % of the heat load and the smoke goes up the chimney.
- Looking at the candle flame (*picture 1*), we can see that it is full (100 % of heat load) because it is getting all the air required for combustion.
- When the chimney fan stops then the only draught available is what the chimney creates naturally.
- If you cover the candle with a glass only leaving a small gap (*picture 2*) then the flame is smaller (say 20 % of the heat load) because less combustion air is getting to it.



Picture 1



Picture 2

Why 20 %?

The value of 20% has been derived from work done in German combustion technology laboratories and the German fire brigades knowledge and experience of smoke extraction in fires. This means that any smoke (and therefore CO) is removed from the room keeping the occupants safe.

So what does this mean **exodraft** for fans?

- Our fans offer very low resistance to air flow and spin freely in warm air.
- The warm chimney will generally have natural buoyancy in excess of the 20 % requirement.
- Most installations will comply with the BS 15287-1 20 % requirement.
- The **exodraft** calculation programme can prove if the installation meets the draft requirement.