This exercise in boiler replacement was based on both the heat pump and CHP options achieving a reduction in weighted Primary Energy requirement, from 17.4 kW to 14.2 kW. This effectively placed the two options on a level playing field. This continued to be the case, when calculating plant efficiencies under the existing method (EN 50465), when both options were assessed at 148%. However, when applying the new proposed method of efficiency assessment to the CHP, a large difference opened up between the two options, with the CHP appearing to be noticeably worse (121% only, against 148%). Unless this new approach be re-considered, heat pumps will get preferential treatment and CHP will lose out every time these technologies go head-to-head. The two options should be labelled with the same efficiency.

**Base case**

- 4,5 kW Electricity supply
- 8 kW gas supply
- -2,25 kW

Results in a primary energy consumption of:

\[ P = CC \times P_{electric} + P_{gas} = 2,1 \times 4,5 kW + 8 kW = 17,2 kW \]

**Heat Pump**

COP 3,1

**Combined Heat and Power**

Electrical efficiency 27% Heating efficiency 63%

**Option 1:** Heat Pump

- 6,75 kW Electricity supply
- -2,25 kW

Results in a primary energy consumption of:

\[ P = 2,1 \times 6,75 kW = 14,2 kW \]

Efficiency of HP according to proposal is 148 %

**Option 2:** CHP

- 1,5 kW Electricity supply
- -2,25 kW

Results in a primary energy consumption of:

\[ P = 2,1 \times 1,5 kW + 11 kW = 14,2 kW \]

Efficiency of CHP according to Commission proposal is 121 %

Efficiency of CHP according to EN 50465 is 148 %