

Boiling Technology: electricity consumption and THM removal performance



Purity models contain two heating elements, one at 1750 W and the other at 450W. When the "Purify" button is pressed both are activated. When boiling point is reached a sensor switches the larger element off.

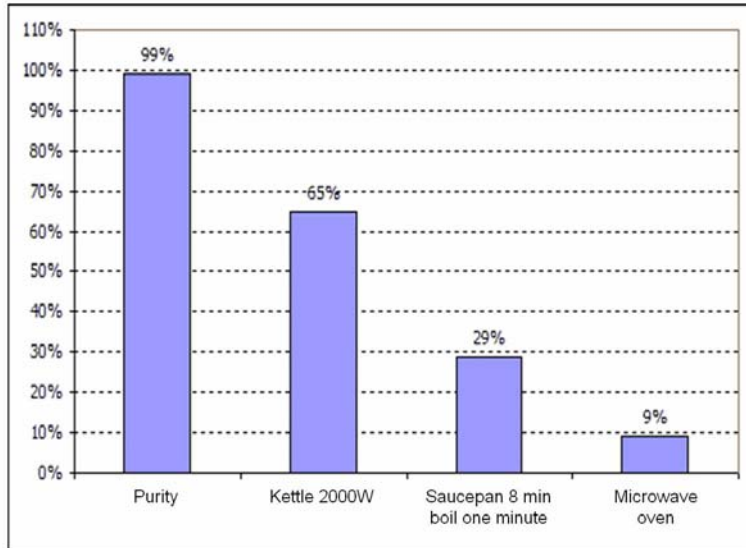
After reaching boiling point there is a short period of vigorous boiling due to a time delay of a few seconds to ensure boiling is reached in all conditions (initial water temperature, altitude, variation in electricity supply, etc).

The purify cycle continues for three minutes to be sure of achieving the minimum boiling time needed to:

- Kill bacteria, parasites and viruses
- Boil away THMs (trihalomethanes) and other potentially harmful volatile organic compounds (VOCs).

Technical Briefing

THM removal: comparisons between methods

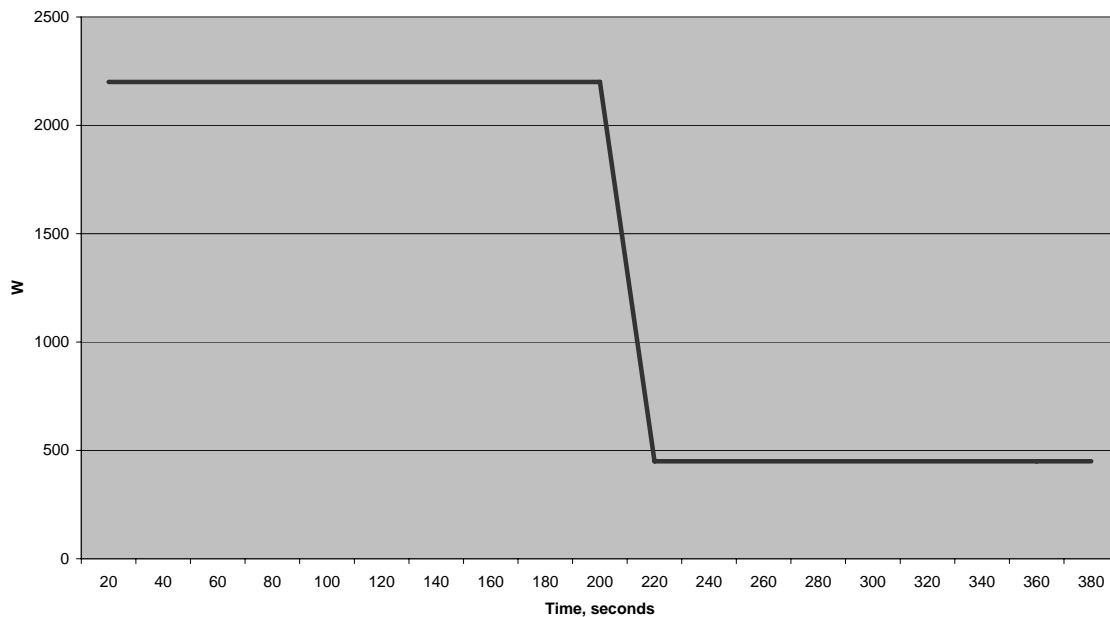


Purity is much more effective at removing THMs than other methods. According to the tests carried out by various laboratories, heating in a micro-wave oven removes only 9% whilst an ordinary kettle removes 65%. Purity removes to 99%.

Power consumption

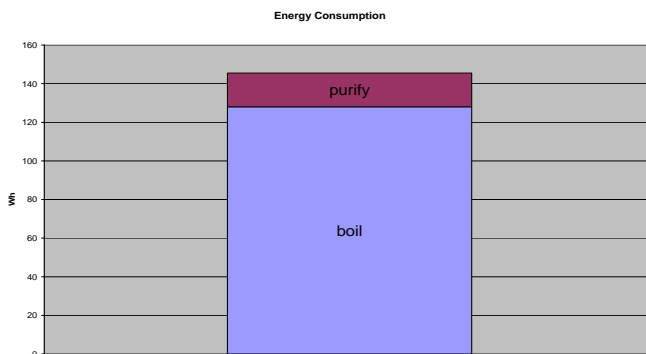
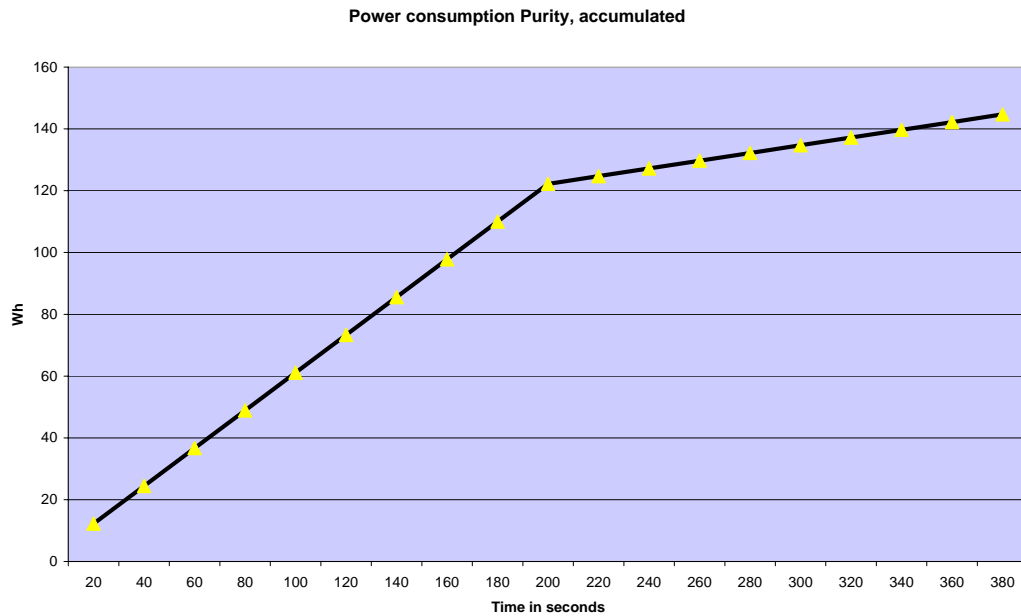
The diagram below shows electricity use over the whole boil and purify cycle. About half way through, the large heating element shuts down, and the smaller one keeps the water at a steady boil.

Power consumption during purification



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The diagram below shows the accumulated energy consumption over time. As you see from the curve, the continued boiling uses very little energy compared to that required to bring the water to a boil. Please note these figures vary depending on starting temperature, altitude, variances in current, etc.



Costs for purifying water in Purity are therefore quite low compared with the purchase of bottled water, which costs anything from 0,4 Euros upwards a liter, and comes with the inconvenience of having to both transport it and deal with the empty container afterwards.

Electricity Price Euro/kWh	Price per Liter	Extra for purification
0,044	0,01 €	0,001 €
0,144	0,02 €	0,002 €
0,244	0,03 €	0,004 €
0,344	0,04 €	0,005 €
0,444	0,05 €	0,006 €
0,544	0,07 €	0,008 €
0,644	0,08 €	0,009 €
0,744	0,09 €	0,011 €
0,844	0,10 €	0,012 €
0,944	0,11 €	0,014 €

Purity is highly effective at removing THMs quickly. Least effective is heating in the micro-wave oven.

Of course it is possible to boil water on the electric stove, but it takes longer (and three times as much electricity) to bring the water to a boil. Apart from requiring close monitoring and timing it also gives uncertain results for THM removal.