Mapping & Benchmarking of refrigerated beverage vending machines

The IEA's 4E Mapping and Benchmarking Annex provides policy makers with evidence-based comparisons of the performance of products sold in various national markets. This allows benchmarking of the success of national policies in managing product energy consumption and efficiency and enables identification of opportunities to further encourage the uptake of energy efficient products.

This briefing describes the outcomes of an international comparison of the energy consumption of refrigerated vending machines. The full report shows data from Australia, Canada, EU and USA (USA represented via ENERGY STAR and California Energy Commission data).

Observations for Policy Makers

- **The European market has a much higher proportion of glass front units** compared with the almost ubiquitous opaque fronted units in North America/Australia. This, and the fact that European units are typically 20% smaller, means that the average European machine is less efficient.\(^1\) Differences in efficiencies between regions reflect the different mix of product types in each market.

- **Despite the existence of minimum energy performance standards (MEPS) in several regions, historic trends show no evidence that these regulations are leading to improvements in product performance.**

- **There is considerable scope to apply and tighten MEPS across all markets,** although there may be cost implications. The variation in daily energy consumption between best and worst performing units for all sizes is 200% or over (except for the ENERGY STAR set). The best machines use between one third and half of the energy per bottle/can when compared to the average in each market.

- **USA ENERGY STAR confirms the availability of better-performing products.** The average energy consumption of qualifying machines is 25% lower than the Australian average, despite having similar machine capacities. Furthermore, USA ENERGY STAR machines consume just over half the energy per can compared to EU machines.

- **There are significant differences in the relative stringency of energy efficiency requirements** for indoor rated compared to outdoor rated machines. While indoor rated products are allowed to consume 40% more energy than outdoor products in California and Canada (consumption limit is the same for both, despite very different ambient temperatures during test), the latest USA ENERGY STAR requirements do not differentiate, which indicates that such allowances are not appropriate.

\(^1\) This is assessed using the same capacity metric of ‘number of cans/bottles’ for both dedicated beverage machines and flexible glass-fronted machines for all regions.

More Information

All publicly available Annex mapping and benchmarking outputs are available on the Annex website at [http://mappingandbenchmarking.iea-4e.org](http://mappingandbenchmarking.iea-4e.org).

For further information email: contact@mapping.iea-4e.org
Key Findings

**Significant difference in vending machine capacities**

The average EU machine on sale is 20% smaller than those available in the USA, Canada and Australia. The average capacity for these EU units is 450 cans while the average capacity of Australian and USA ENERGY STAR machines is above 600.

**EU machines are inherently less efficient**

EU machines have the worst average consumption per 300 cans internal capacity and are half as efficient as USA ENERGY STAR qualified machines. However, 60% of the European units analysed are glass front spiral vend machines which are less efficient than the better insulated, opaque-front, can/bottle machines used in the USA, Canada and Australia. To match USA efficiencies, the typical functionality of the EU machine would have to change (e.g. opaque front rather than glass), or more expensive measures deployed to boost efficiency, such as triple glazing and/or much improved refrigeration efficiency.

**Average energy consumption has changed little in eight years**

New ENERGY STAR criteria in 2006 had a noticeable impact; otherwise the performance of machines has changed very little over eight years across all markets. The next ENERGY STAR criteria take effect in 2013.

**Significant scope for improvement in efficiency in all markets**

Since the best performing models of all sizes and in all markets consume around one third of the energy of the worst, there is significant scope for improvement. Also, the best USA machines consume 20% less energy than the best machines from the EU, Canada and Australia.