

Optimisation of Permanent Energy Elements in the Restaurant Sector – Green AC&DC Energy™

In the restaurant sector of the European Union, numerous permanent energy elements remain active continuously, regardless of operating hours or actual energy demand. This includes equipment and systems that often operate far beyond business hours, representing an invisible yet constant source of energy loss in the hospitality industry. Optimising these permanent energy elements represents a crucial step toward reducing energy consumption and CO₂ emissions in restaurants, cafés, and similar establishments.

1. Situation Assessment

Across the European Union, there are several hundred thousand restaurants, cafés, and bars. For reference calculations, it is assumed that there are approximately 500,000 restaurant establishments. If each of them operates on average 20 permanent energy elements of 250 W, this equals about 10 million active units functioning most of the day, throughout the year.

For a conservative estimate, we assume these elements operate an average of 16 hours per day.

Annual consumption per unit:

$$0.25 \text{ kW} \times 16 \text{ h} \times 365 = 1,460 \text{ kWh/year}$$

Total annual consumption of all units:

$$10,000,000 \times 1,460 \text{ kWh} = 14.6 \text{ TWh/year}$$

2. Financial Impact

At an average electricity price of €0.12/kWh:

$14.6 \text{ TWh} \times €0.12 = \approx €1.75$ billion in annual electricity consumption, which could be partially avoided through the implementation of energy-optimised solutions and intelligent management systems.

3. Environmental Impact

At an average emission factor of 0.25 kg CO₂/kWh:

$14.6 \times 10^9 \text{ kWh} \times 0.25 = \approx 3.65$ million tons of CO₂ per year, representing a significant potential for reducing the environmental footprint of the restaurant sector.

4. Energy Equivalent

1 GW of power generation produces approximately 8.76 TWh/year. Consumption of 14.6 TWh/year corresponds to about 1.67 GW, equivalent to more than one and a half large power plants — solely from permanent energy elements in the restaurant sector.

5. Conclusion

The optimisation of permanent energy elements in the restaurant sector represents one of the greatest opportunities to reduce electricity consumption in hospitality. Through intelligent management systems, replacement of outdated equipment, and improved control

of operational times, substantial savings can be achieved without compromising service quality.

Result:

- ≈ €1.75 billion potential annual energy consumption that can be partially avoided
- ≈ 3.65 million tons less CO₂
- Energy effect equal to more than one and a half large power plants
- More sustainable operation of restaurants, bars, and cafés across the European Union.

6. Energy Reflection

“Every kilowatt saved in the kitchen is a step closer to fair energy for all.”

— Lirim Muharemi, Green AC&DC Energy™