



# Green Chef

## Energy Efficiency for Commercial Kitchens

### APPLIANCE CASE STUDY COFFEE MACHINES



Coffee machines are one of the most widespread appliances in the hospitality industry. Most are never turned off! They are literally on - 24 hours a day, 7 days a week. In the majority of cases this represents an unnecessary waste of energy and money<sup>1</sup>. Why aren't these machines turned off? Is there any logical reason why they need to stay on overnight? Discussions with baristas and restaurant managers identified a number of reasons why turning them off each night may adversely impact the machine.

Green Chef decided to investigate a little further by reviewing the available literature<sup>2</sup> and speaking to both machine manufacturers and coffee distributors. The results are outlined below.

**Myth:** Coffee machine group heads must stay hot to produce a good coffee.

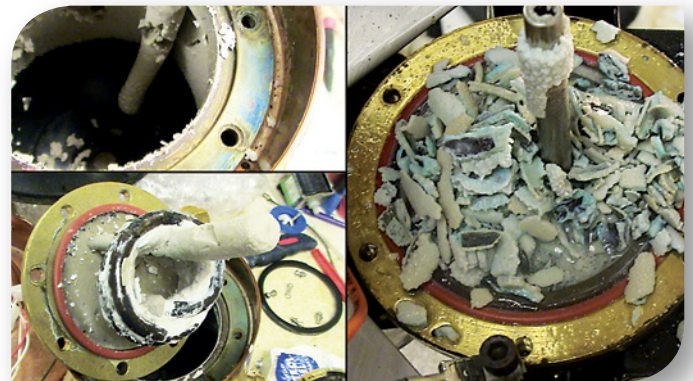
True - machine group heads must be hot, but they do not need to STAY hot to produce good coffee. Warming the machine for 20 minutes in the morning and then seasoning the heads by pouring a few shots through before service should be adequate to heat the heads. It is also a good idea to put the group handles into the coffee machine as it is heating up<sup>2</sup>.

**Myth:** The heating elements will burn out faster if they are required to heat up each morning.

In a properly maintained machine, with adequate water supply, turning the boiler off overnight actually decreases the workload of the heating elements. Reduced workload should have the effect of increasing machine longevity and reducing maintenance requirements.

**Myth:** It takes too long to heat the machine up from cold each morning.

If your coffee machine takes longer than 15-20 minutes to heat up there is most likely a problem with the machine and it is probably in need of a service. One problem could be a build-up of lime scale on the element. If you feel that 20 minutes is too long, have a timer installed and let the machine turn itself on 20-30 minutes before service.



An example of limescale build-up on a coffee machine element (Photo Courtesy 1st line equipment)



**Myth:** Coffee machines use a lot of energy when heating up, so it is more economical to maintain the heat by leaving them on overnight.

Let's look at this myth a little more closely. The following example provides a comparison between the amount of energy consumed by a 2 head coffee machine left to run over night vs. one heated from cold each morning. The graph below shows how the machine uses energy whilst idling. When the element is on the machine consumes 5 kW of energy per hour:

a. Heating up each morning =  $20/60 \times 5 \text{ kW} = 1.67 \text{ kWh}$

b. Idling overnight =  $12/60 \times 8 \text{ h} \times 5 \text{ kW} = 8.00 \text{ kWh}$

This is a difference of 6.33 kWh per day. In a restaurant or cafe operating a single coffee machine for 360 days a year and paying an average of 12 cents per kilowatt hour (kWh) for electricity, turning your machine off over night will save you around \$270/year.

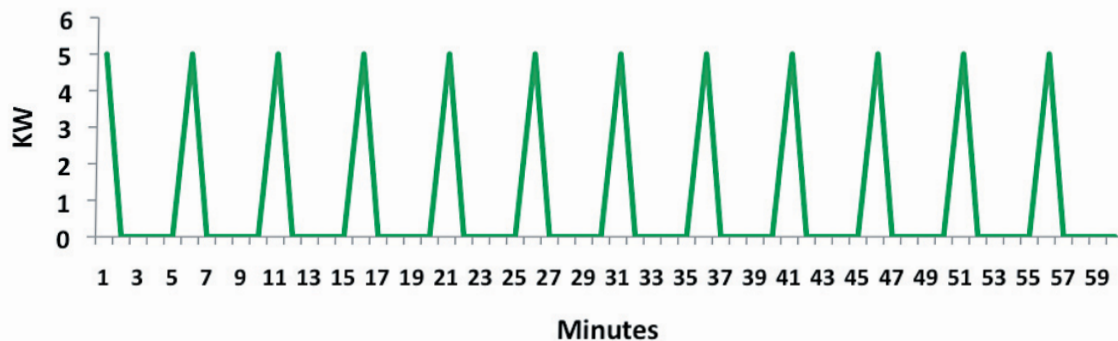
## Reasons to Turn Your Coffee Machine Off at Night

1. Reduce equipment workload and maximise the longevity of your machine and its heating elements.
2. Reduce maintenance costs.
3. Avoid accidents - flooding caused by pipe blockages or pipes failing overnight has been known to cause considerable damage<sup>2</sup>.
4. Reduce energy use and save money.

### References

1. Smartnow (2010) Turn Off Your Coffee Machines... <http://smartnowenvironmental.blogspot.com/2010/05/turn-off-your-coffee-machines.html>
2. Watermark Coffee Technology (2011) Should Coffee Machines Be Left On Overnight? <http://www.watermark.uk.com/training-centre>

### Energy Consumption Pattern For An Idling Coffee Machine (1 hour)



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