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RECIRCULATING MICROBIOLOGICAL SAFETY CABINETS (CLASS 2)

ENERGY EFFICIENCY IN THE LABORATORY, UNIVERSITY OF BRISTOL

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INTRODUCTION

Microbiological safety cabinets (MSC's) are an integral part of biological research. They ensure protection for the operator and the contents within them. Over recent years there have been improvements in the energy efficiency of MSC's. These improvements include the use of efficient fan motors and the replacement of fluorescent light bulbs with light emitting diodes (LED's). BY replacing older technology units with the new, modern units, energy consumption may be reduced by ≥80% (older units have been recorded as having energy consumptions of > 0.750 kWh/h), based upon the figures published by manufacturers. This case study tested 3 MSC's, all of which are recirculating using a double High Efficiency Particulate Air (HEPA) filter. These units were tested in the lab environment at the University of Bristol (figure 1).

Figure 1. The Envair, Scanlaf and Thermo units tested.

THE LAB ENVIRONMENT

The 3 models tested were all tested in the Biomedical Sciences Building, Floor G. All the units had been installed and commissioned, passing their KI tests. The energy consumption was measured with each unit with its sash open at 20cm, lights on and operational. Each model had internal width of ~1200mm.

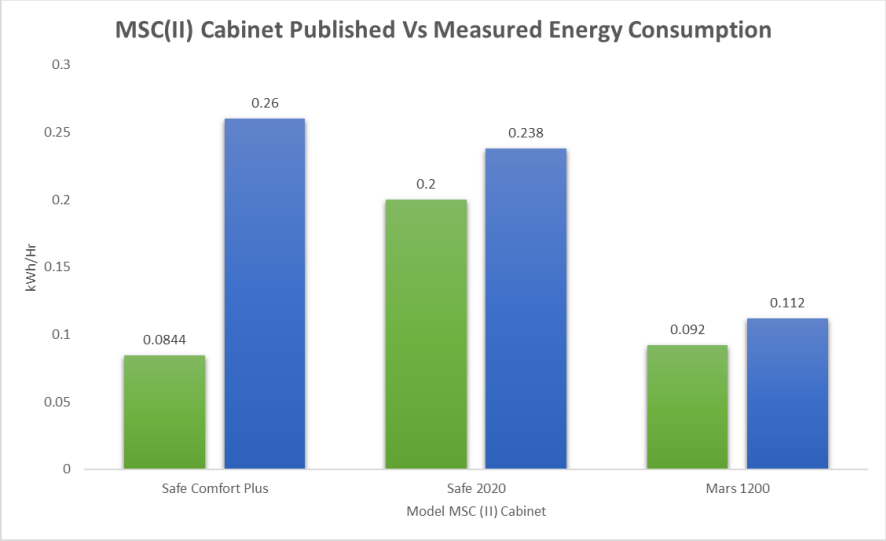

Figure 2. Measure Energy compared to the published figures for the MSC (II) Cabinets

DISCUSSION

From the data shown in figure 2, all three models had a higher measured energy consumption compared to their published figures. In the case of the Thermo unit and the Scanlaf unit their measured energy consumption were 19% and 22% higher respectively. In the case of the Envair unit the measured energy consumption was 208% higher than the published consumption figure. It must be noted that these energy figures are only representative of those models, each in their unique place in the lab. In the case of the Scanlaf unit, this was the lowest energy consumption data measured over 24 hours. The Scanlaf unit was also energy monitored with only a single HEPA filter (installed, commissioned and KI test passed). The kWh/h data for this configuration was 0.113kWh/h – there was no significant difference following the addition of a second HEPA filter.

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For further information on this study, or lab sustainability in general please contact **Andy Evans**, office@greenlightlabs.co.uk. 07833 494727

PUBLISHED RUNNING COSTS DATA

https://pdfs.wolflabs.co.uk/Envair_Class_II_Cabinets_Comfort_Plus.pdf

https://www.thermofisher.com/order/catalog/product/51026637#/51026637
https://www.labogene.com/Class-2-Cabinets--Mars