

Energy Reduction Potential in Lab Equipment

HARVARD GREEN LABS CASE STUDIES

Overview

Bench top equipment in Harvard Medical School's Kirschner Laboratory was monitored using Modlet devices over a ten-day baseline and five-day post-intervention period to determine how much energy could be saved through basic energy conservation practices. Results identified a significant energy reduction potential averaging more than fifty percent for the laboratory equipment assessed.

Baseline Monitoring

Modlet devices were connected to equipment over ten work days to gather baseline data on pre-intervention energy usage. Equipment that was analyzed included a water bath, pipette charger, rocker, four centrifuges, a thermocycler, heat block, and PC. Energy use data was measured in watts and updated every 15 minutes to determine the daily total use and daily average use for each type of equipment.

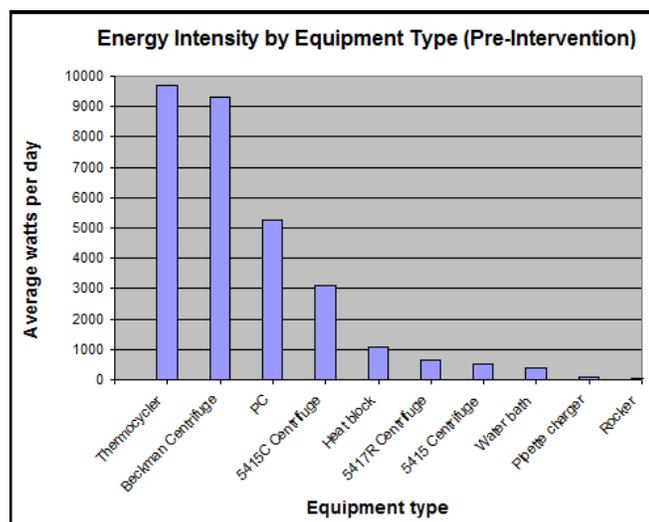
Intervention Strategies

During the third week of the assessment, the following intervention strategies were implemented over five work days to encourage energy conservation practices in the Kirschner laboratory:

- 1: Signs were put up on equipment of interest, stating that the equipment is being monitored as part of an energy study.
- 2: The lab manager communicated with all lab members, asking for their thoughtful participation in the study.
- 3: The lab manager checked all equipment of interest at the end of the work day, and turned off any equipment that was left powered on.

Results and Lessons Learned

Over the five-day post-intervention period, bench top instruments in the Kirschner lab reduced their energy use by an average 51.6%. Some equipment yielded larger energy savings than others, such as the thermocycler which reduced its energy use by 70%, while other instruments showed no significant difference because they were only turned on when needed, according to the lab manager. The results of this Modlet study show that significant energy savings are possible when a lab is fully engaged in energy conscious practices.



Equipment type	Average watts per day	
	pre-intervention	post-intervention
Water bath	390.2	578.6
Pipette charger	96	53.6
Rocker	59.8	57.8
5415 Centrifuge	510.2	321.6
Thermocycler	9677.8	2917.2
Heat block	1056.8	659.4
PC	5240.6	4253.4
5417R Centrifuge	627.2	334.6
5415C Centrifuge	3087.2	339.4
Beckman Centrifuge	9307.6	5011.4

Resources and Contacts:

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The program may be eligible for funding through Harvard's Green Revolving Fund. Contact us for more information: energy@fas.harvard.edu; sustainability@hms.harvard.edu; ecoop@hsph.harvard.edu