

How to run labs more sustainable

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Abstract

Laboratory buildings consume 5 to 10 times more energy and 3 to 5 times more water than office buildings of the same size. At the same time research in wet labs produce great amounts of plastic waste, e.g. from single use items such as pipette tips and tip racks, Eppendorf tubes, as well as hazardous chemical waste. Thus, a lot of measures can be taken to reduce energy consumption (and therefore CO₂ emissions), to limit waste production and to generally conduct research in laboratories in a more sustainable and efficient way. Lab sustainability has many levels, and a lot can be achieved by adapting work flows in laboratories and by changes in the way that wet labs are operated, without compromising research excellence and workplace safety. Here we will show, analyze and discuss how sustainability measures have been implemented at TU Darmstadt and the University of Konstanz, including the implementation of the lab sustainability programs LEAF and MyGreenLab, the energetic optimization of lab ventilation systems, the reduction of liquid nitrogen consumption and the implementation of recycling programs for plastic lab consumables. These measures not only increase sustainability in operating our labs, but also save substantial amounts of money for the universities and increase the skills of coworkers and students as ambassadors for sustainability.

