

Flat Warming

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What is it all about?

We all 'love' Edinburgh weather as long as it stays outside and we can enjoy the warmth and comfort of our flats.

Because of their age it is difficult to keep the temperature in comfortable range which often results in high heating bills or long-lasting cold.

As a group of engineering and physics students we decided to do our best to address the problem – set up relevant equipment, audit the flats, collect data, formulate conclusions and come up with simple and cheap solutions to address the problem.

With the help of SRS Department Sustainability grant we managed to complete the initial phases of the project and are now hoping to develop it further and communicate our findings to fellow students.



How did we go about it?

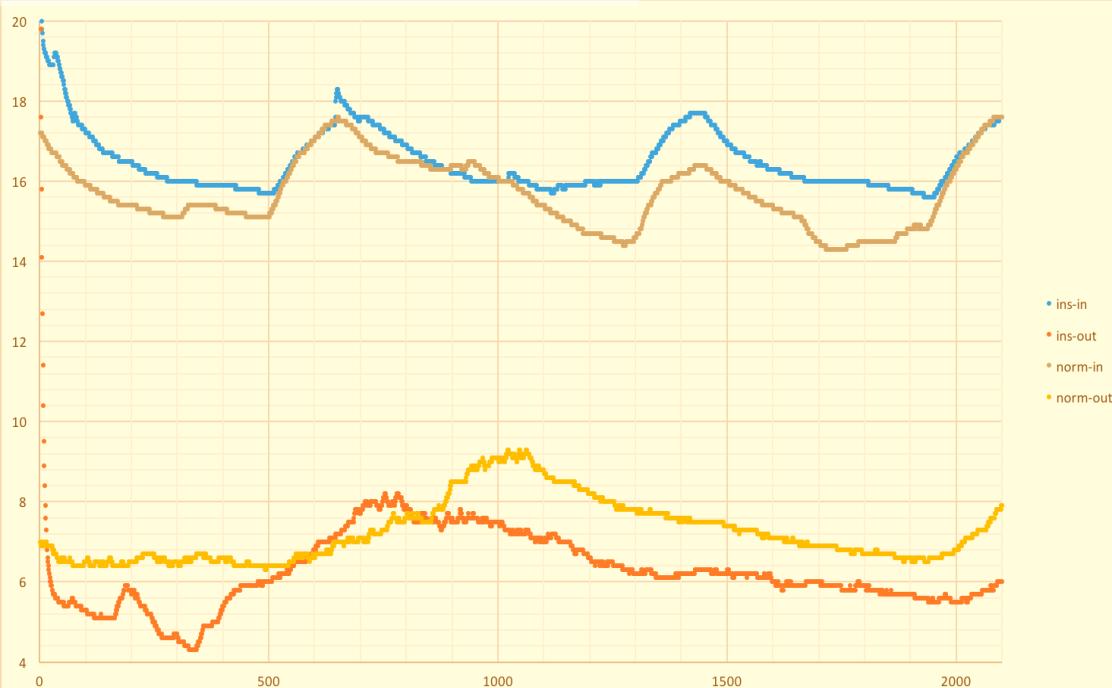
We did a ton of background research in the topic, especially looking at science behind heat transfer and already identified aspects; we did some theoretical conceptualization and pre-analyzed the challenge.

We purchased necessary equipment (thermal-imaging camera, temperature loggers and materials for physical set-up) and conducted tests in ours and our friends' flats.

Having identified major issues, we tried coming up with simple solutions of dealing with them and measured temperature changes and impact it had. Knowing about imperfectness of our testing we also conceptualized how to deal with impact of external factors i.e. human movement, insolation, wind.

The plot below is one of many we got as a result of looking for a solution

Temperature plot



What have we found?

We quickly concluded that single-glazing windows combined with old wooden frames are the largest single heatsink and directed our efforts towards addressing this issue.

We constructed a simple 'stick-on' single-film secondary 'glazing' system and measured its impact. It turns out that having a single sheet of plastic foil stretched on the window frame increases the temperature in the room by $\sim 2^{\circ}C$ – which is a difference between wearing a hoodie and a t-shirt.

We are now working to improve the solution and measurement techniques and take the project to the next level – actual production of cheap, easy-to-attach window insulator which can help students be more sustainable and limit energy loss in their flats. Stay tuned for 16/17!

