Energy Saving Thermostat

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INTRODUCTION

A normal Dane spends more than a third of the year away from home and a third of the year sleeping, during which he or she is wasting energy when heating the home. By using an intelligent thermostat a yearly energy reduction of 9.5 GJ can be achieved. This roughly translates to a CO_2 reduction of 311 kg and an energy bill cut of DKK1700. Thereby the consumer is able to make their home smarter and not only able to save a rather large amount of money but also reduce the overall environmental impact.

THE SMART HOME

Heating in Denmark is for the most part (63% of all households) supplied by *fjernvarme* (district heating) to household radiators, where a thermostat locally controls the heating. Currently "old-school" bi-metallic thermostats dominate the Danish market. These thermostats can be hard to control and even more so if you want to save money and reduce the environmental impact. Some programmable thermostats exist but are not common, and somewhat difficult to use. We have developed a thermostat that is easy to control and learns and adapt to your behaviour. It will be able to take indoor climate advices into account, such as reduced heating while ventilating, optimise the radiators heating efficiency and integrate all the smart thermostats to heat most efficient.

How

The Energy Saving Thermostat works by communicating through WiFi and using sensors to detect activity. As such when one leaves the home it will notice, and when one goes on vacation. Calculations show that a smart thermostat can reduce a normal 150m^2 household's yearly CO_2 emissions by up to 311 kg and thereby reduce the energy bill yearly by DKK1.700.

LCA	Material	Production	Use	Disposal	Total (first year)
Energy (MJ)	70.1	1.72	-9420	0.15	-9350
CO_2 (kg)	6.81	0.13	-311	0.01	-304

Table 1: LCA Table for the first year

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