



# **Residential Air Quality Improvement System**

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**Centre for Engineering and Industrial Design (CEID)**

**Research Presentation Event**

**14<sup>th</sup> of November 2018**

# Project Motivation

## Our smallest citizens

Children's Commissioner Russell Wills explains that the poor really are poorer now – and whoever forms the next Government will need to set policies to help stop the damage to our under-fives.

By Karl du Fresne In Life in New Zealand

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 26th September, 2014  [Leave a Comment](#)



***“Crowded conditions mean illnesses spread easily. It only takes one kid to bring a cold or school sores home. Adults and older kids get a cold, but the baby gets bronchiolitis or pneumonia and ends up in hospital”***

***“Very commonly families all sleep in the living room because they can only afford to heat one room.”***

– Dr Russell Wills, Children's Commissioner



• 2015

Ideation phase:  
Came up with idea  
and applied for  
ethical approval and  
funding to get the  
equipment  
\$10K

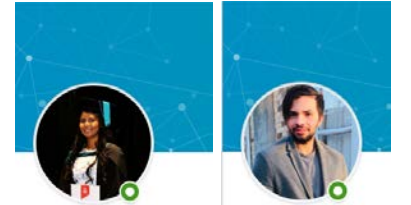
• 2016

Initial survey: four  
students working on  
collecting data. 32  
houses were surveyed  
using a thermal  
imaging camera and  
moisture/air-flow  
meter



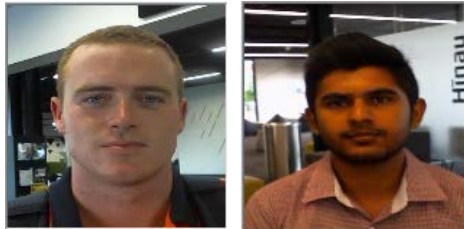
Abel wai • 1st

lovepreet gill • 1st

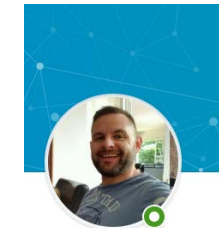


Shikhsha Mudun • 1st

Ranjit Singh • 1st



The build: one student  
working on building  
the first prototype  
(device now built and  
we are testing it)  
One student working  
on redesigning the  
filter to increase  
effectiveness

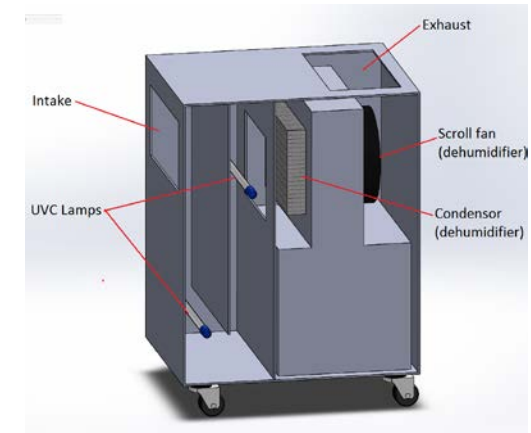
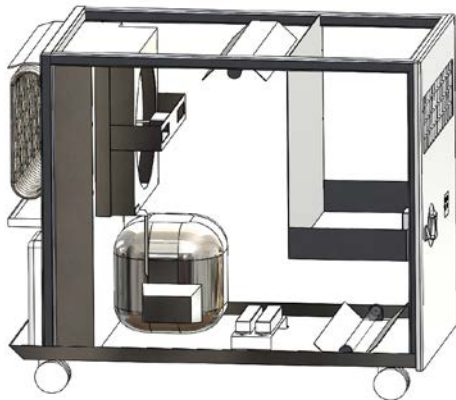


Patrick Wells • 1st

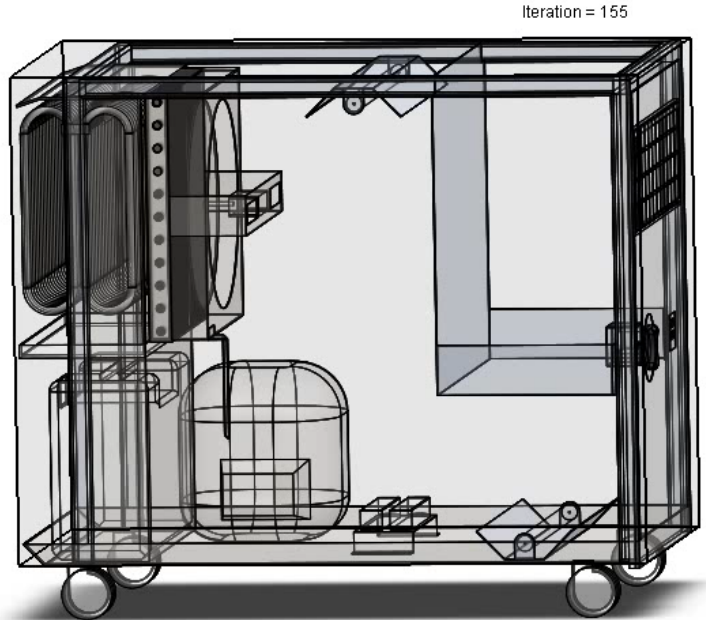
• 2018

Design and  
programming of unit:  
one student working  
on the design based  
on the literature  
review and the data  
captured from the 32  
houses surveyed

• 2017

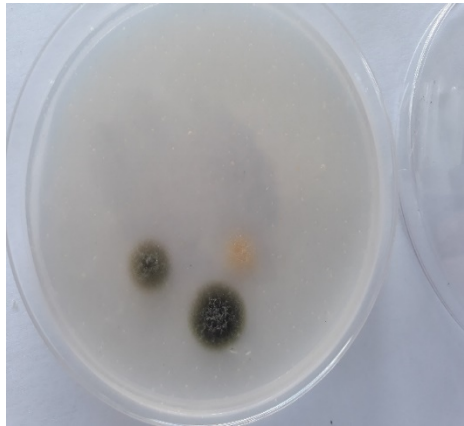


# CFD Simulation

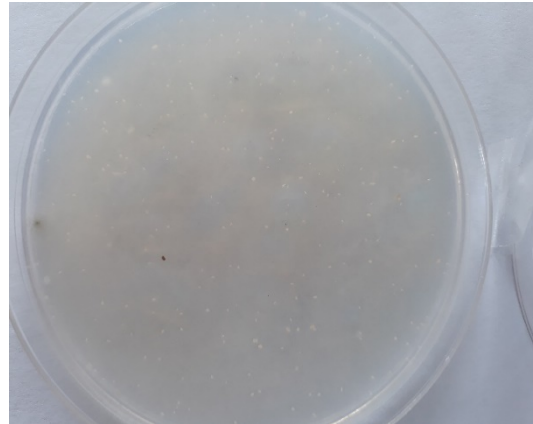




## LG.23 far wall after 8 days

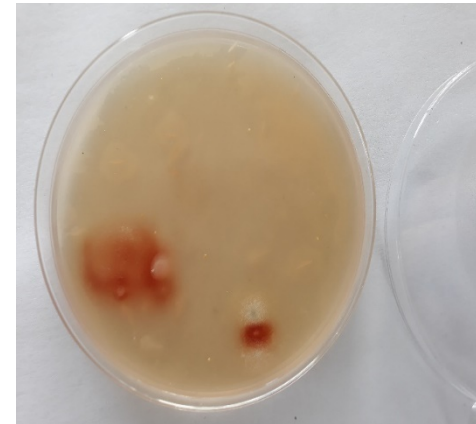


Before

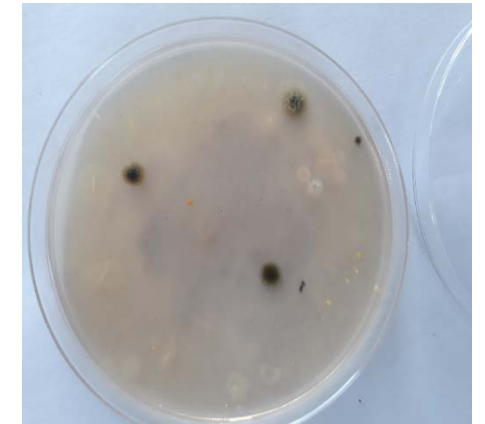


After

## Swab from collected water after 6 days

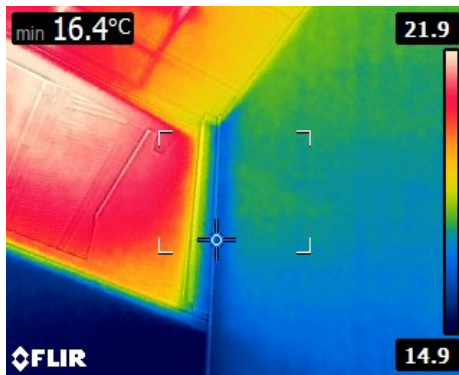


Without UV lights

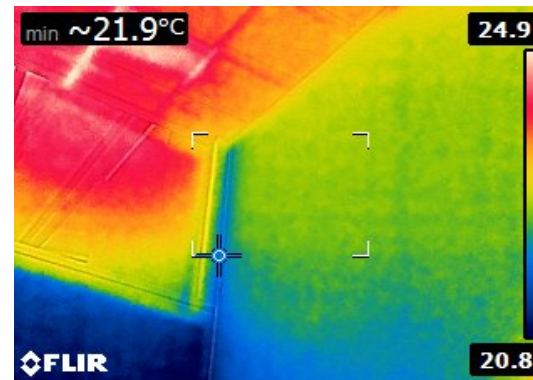


With UV lights on

## Outside facing wall, 3h 20m of use



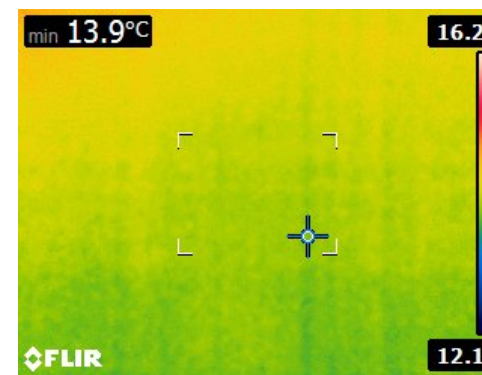
Before



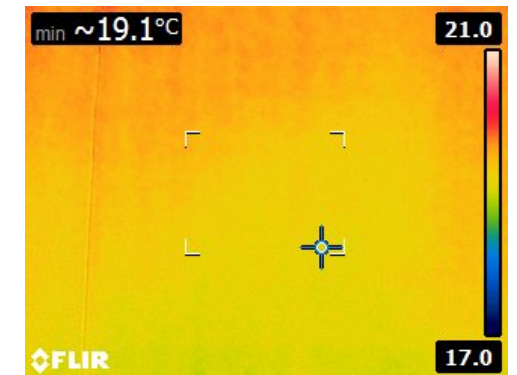
After

mohammad.al-rawi@wintec.ac.nz

## Lower outside facing wall, 3h 20m of use



Before



After



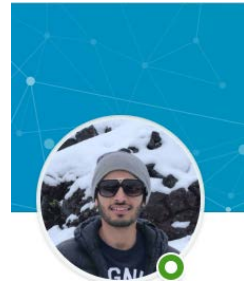
# Quiz



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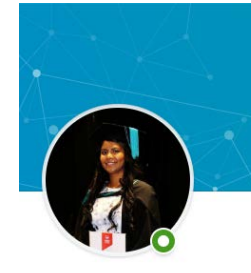
Ranjit Singh • 1st



lovepreet gill • 1st



Patrick Wells • 1st



Shikhsha Mudun • 1st



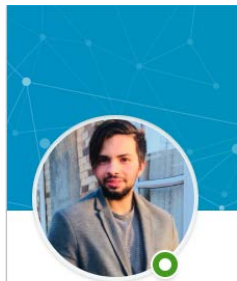


# Quiz

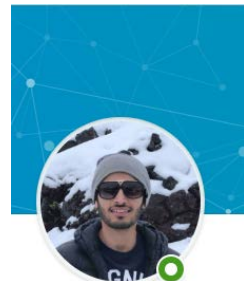
## Name each flag



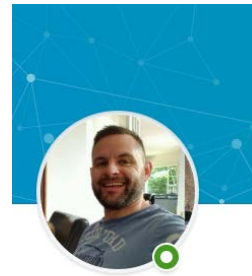
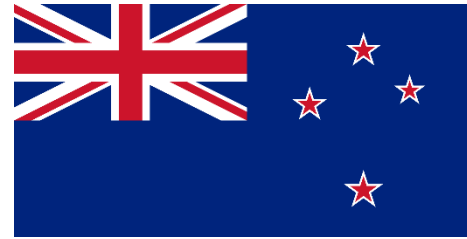
Abel wai • 1st



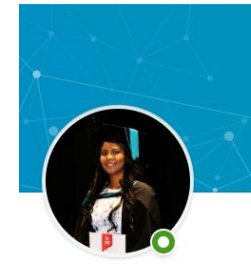
Ranjit Singh • 1st



lovepreet gill • 1st



Patrick Wells • 1st



Shikhsha Mudun • 1st





**Thanks!**

Any Questions?

