



# E3

## Excellence in Pandemic Response and Enterprise Solutions

Creating health safety spaces  
with cleaner air

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Infections are  
transmitted by air

Are we ready for  
next pandemics?

We are facing  
paradigma shift



**E3**

Excellence in Pandemic Response  
and Enterprise Solutions

Indoor problems due  
to outdoor air  
pollution

Indoor air problems  
due to sick buildings  
(sick building  
syndrome)

**Indoor  
health safety**

Spreading of  
pathogens from  
human to human

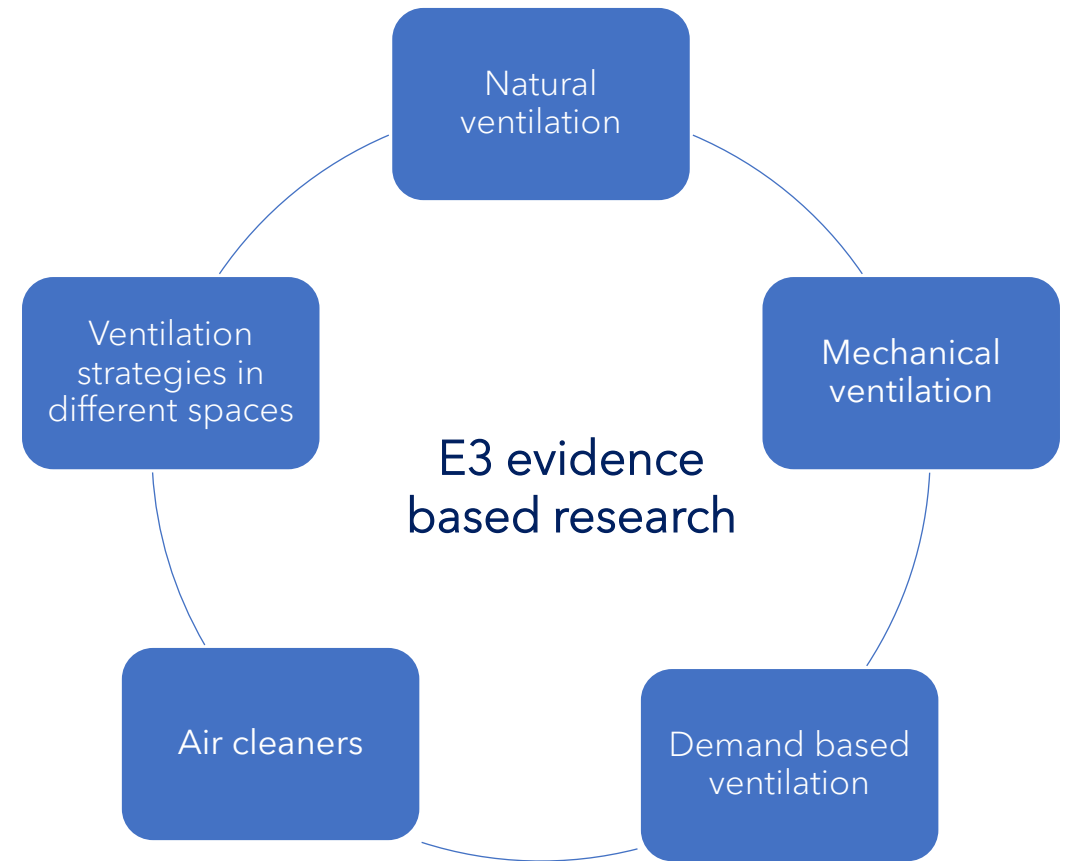
Has the  
construction  
sector learned  
anything about  
corona  
pandemics?

*No, not yet*



We have evidence  
that clean air  
production  
reduces infection  
risk

But how much?



# Case Matei Bals infection hospital

Natural ventilated hospital with window openings

How much air cleaners influence on indoor air quality (IAQ) and infection risk?



First phase – Spring 2023



Project Management  
ICT  
MEP survey



Smartwatcher  
IAQ sensors



Air0  
Air cleaners



ISEC  
Air cleaners  
Microbiological sampling

TAU – Indoor measures, IAQ simulations  
FMI – Outdoor weather data, simulations  
Tamlink – operational coordination

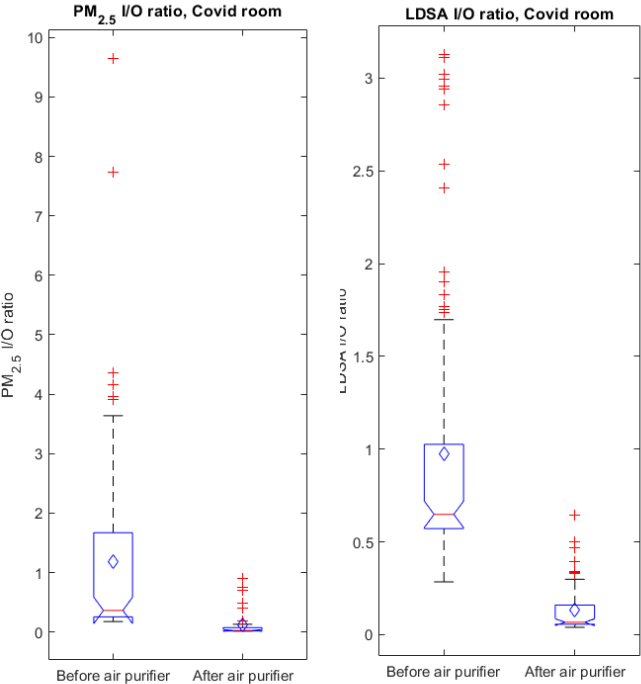


# Results in Covid room

1. Particles were reduced dramatically

2. The simulated and calculated infection risk was reduced dramatically

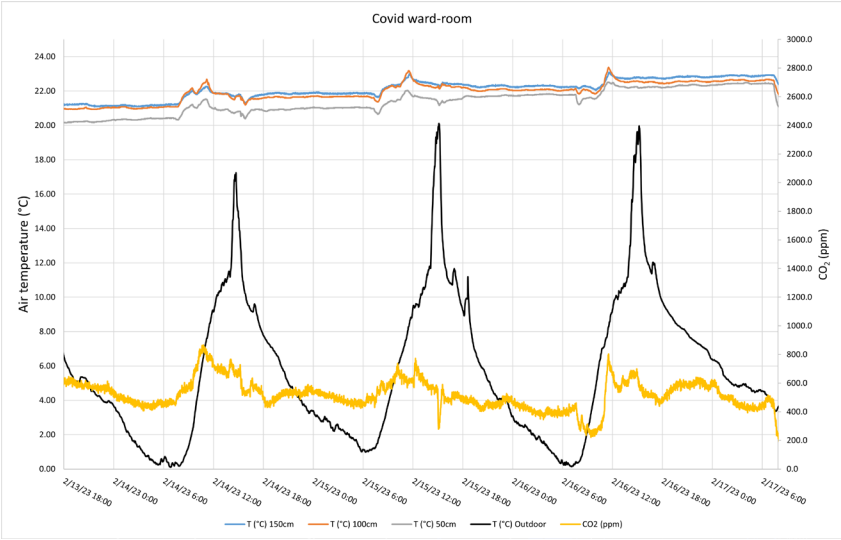
3. No change in other IAQ measures



65%\*

\* Wells-Riley

$$p = 1 - e^{-\frac{(1-\eta_i)IqQ_b(1-\eta_s)D}{Q+(\lambda_{dep}+k+k_f)V}}$$





## Conclusions so far..

- Clean air production has big impact on infection risk
- Ventilation system is the MUST to ensure indoor air quality
- In crowded spaces the air cleaners need to be installed in case the spaces are poorly ventilated
- We need more evidence based research in clean air production to be able to make conclusions - do we need to change design principles?

# Contact information

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“  
The E3 project will create a new global business  
by studying the spread of communicable diseases.  
With the help of the concepts developed in the project,  
it is possible to keep society and the economy  
safely open even during future pandemics.

”  
Needless to say, there is a great need for the show

-Ecosystem manager Outi Tuovila, Business Finland