

Workshops at CLIMA 2019

Workshop n. 12

[Costs and benefits of antibacterial filter and its effects on energy saving, human health and worker productivity]

Tuesday, 28 May, 10:30 -12:00,
Meeting Room XXXXXX

Workshop organizer(s)

[Rhoss S.p.A., Via
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Additional information at:
[www.rhoss.com]

[Acknowledgments, if any]

Presenters

Chair(s)

Speakers

Paolo Stefano Corniati	Rhoss S.p.a.
Micaela Ranieri	Rhoss S.p.a.

Scope

In the present-day society, people spend about 80% of their time inside buildings, and specifically 30-40% in workplaces. From this evidence, the indoor environmental quality needs to be investigated, and, the possible sources of indoor-outdoor pollutants and their impact on the human health, comfort

and productivity.

Through an examination of the indoor sources of pollution, the research analysed the main substances that affect indoor air quality in an office. Second, the pollution of external origin and its effects on the performance of employees were taken into consideration. The outdoor air pollution and the insufficient hygiene of HVAC systems often result in the low quality of indoor air. The World Health Organization estimated that 50% of indoor biological contamination comes from the air-handling system. Some studies demonstrated that the air filters are sources of pollution due to the accumulation and proliferation of bacteria on the surface. Furthermore, the presence of contaminants in indoor environments can have a negative impact on health and productivity of the occupants. To guarantee not only a better indoor air quality but also a lower health risk and an increase in worker productivity, a new concept of biocidal filtration has been introduced. In this context, we explored how to integrate the health and performance effects on building occupants into the economic benefits of the antibacterial filter. The research focuses on the methods used to evaluate costs and benefits produced by the application of a biocidal filter, comparing it with a traditional one, by means of computing both direct and indirect costs. Therefore, this article tries to enhance the focus on energy technology developing an analysis of the impact on human health and employee performance.

Two scenarios were designed for a Heating Ventilation Air Conditioning (HVAC) system in an office building; one by the installation of a biocidal filter and the other by a traditional one. Two methods were applied to evaluate and compare those scenarios; the Cost Benefit Analysis and the Monte Carlo Simulation. From a financial point of view, the investment and management costs of the filters were considered. Instead, the annual benefits included increasing productivity and reducing days of absence from work due to illness.

Audience

[Designers interested to find new solution to implement to solve the issue of the Indoor Air quality adopting innovative strategies of evaluation of the problem]

Expected results

[raise the level of attention and awareness around the IAQ theme proposing also a new approach to this issue]

Programme

Duration	Open discussion
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