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Copper: A Fresh Approach to Air-Ducts

An office in Marousi, Athens, is among the first in the world to have a complete copper ventilation and air-conditioning network installed. The 3,000 square metre office space was fitted-out with hygienic copper ducting to highlight the importance and benefits of fresh air in office spaces.

The construction company's original design concept was for 'the creation of a clean, antimicrobial, detail-oriented environment of high-aesthetic quality and casual luxury'. Copper offered a durable, high-quality installation with the added benefit that its natural beauty provided a visual difference from the norm, fitting well with the office's overall design and making ordinarily-dull ductwork an appealing and eye-catching feature.

Antimicrobial Copper's role in fighting infection has already been well-documented in clinical trials, taking place at Selly Oak Hospital in Birmingham, in a Department of Defense-funded trial in the United States and also at a hospital in Chile. The Selly Oak trial found a 90-100% reduction in contamination on copper touch surfaces compared to their non-copper counterparts; a finding supported by results from the other trials.

Keevil's work assessing the effectiveness of copper as an antifungal surface for air-conditioning systems as an alternative to aluminium has recently been published in *Letters in Applied Microbiology*. The results showed that on copper, there was increased die off of fungal isolates tested compared to aluminium. In addition, copper also prevented the germination of spores present, thereby reducing the risk of their release.

HVAC units, in which damp and dark conditions provide the perfect breeding grounds for germs, are a prime area of interest for researchers looking to further harness copper's antimicrobial potential. In the United States, the Department of Defense is funding research into antimicrobial copper components that can control the growth of organisms that grow in HVAC units. A field trial is being conducted at Fort Jackson Military Base, South Carolina, where two adjacent barracks have been retrofitted with either new copper or new aluminium coils. Preliminary results, presented at the Copper 2010 Conference in Hamburg, in June, show copper coils reduce airborne fungal and bacterial levels in actual use conditions.

The work indicates that replacing traditional HVAC components, such as heat exchanger fins and drip pans, with copper alloys may have the potential to reduce biological contaminants that impact air quality. This is good news for office managers, as better air quality may lead to healthier working and living conditions, which would reduce absenteeism and increase productivity.



Installed copper ductwork, close up



Installed copper ductwork, sidelong



Installed copper ductwork, corridor



Installed copper ductwork, office interior

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