



# New Scientific Validation of UV Disinfection for HVAC

## International Research Team Proves UVGI Effectiveness

A new scientific study (part of a collaborative research project between National University of Singapore and Pennsylvania State University) has confirmed that ultraviolet germicidal irradiation (UVGI) benefits buildings by improving HVAC system efficiency in addition to improving indoor air quality.

The study took place over fourteen months and was conducted using a well-maintained HVAC coil located in a laboratory building in a warm climate. Initially biofouling and system efficiency were monitored for a four month "before UV" period. A commercially available UVGI system was installed and operational for ten months allowing for a direct comparison between the "before UV" and "after UV" periods. The results showed significant improvements in both HVAC system efficiency and energy savings.

### Summary of Findings

- The application of a coil irradiation system for a period of ten months increases coil overall enthalpy-based thermal conductance by 10% and reduces pressure drop by 13%.
- Improvement in coil performance is most rapid initially and may continue for several months.
- Fan energy use reduces by 9% over a period of ten months with UV irradiation. Savings in fan energy are 39% greater than the energy used by the UV lamps; there can be a net reduction in energy cost after applying a coil irradiation system.
- The Inverse Energy Plus method is a promising method to investigate coil heat transfer performance at a reference condition when there is lack of control over coil inlet conditions.

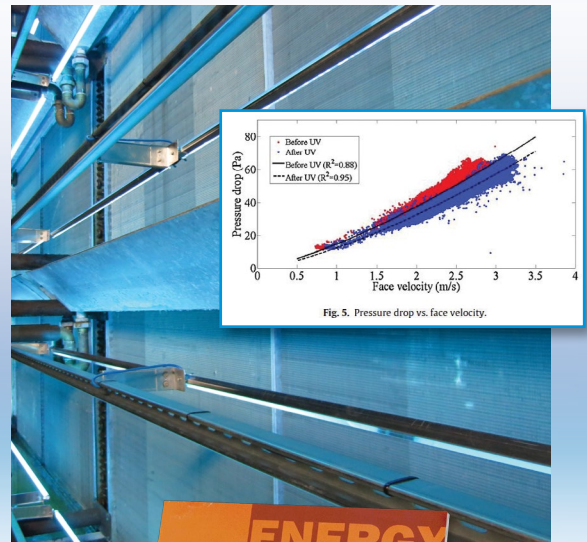
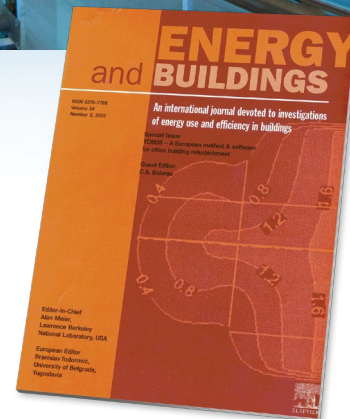


Fig. 5. Pressure drop vs. face velocity.

### Learn More

If you'd like to learn more the study is available for download at [www.sciencedirect.com/science/journal/03787788/130/supp/C](http://www.sciencedirect.com/science/journal/03787788/130/supp/C) a \$36 fee is required for the PDF.



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