Air Cleaning Technology for Indoor Air Quality: How To "Grow" Fresh Air?

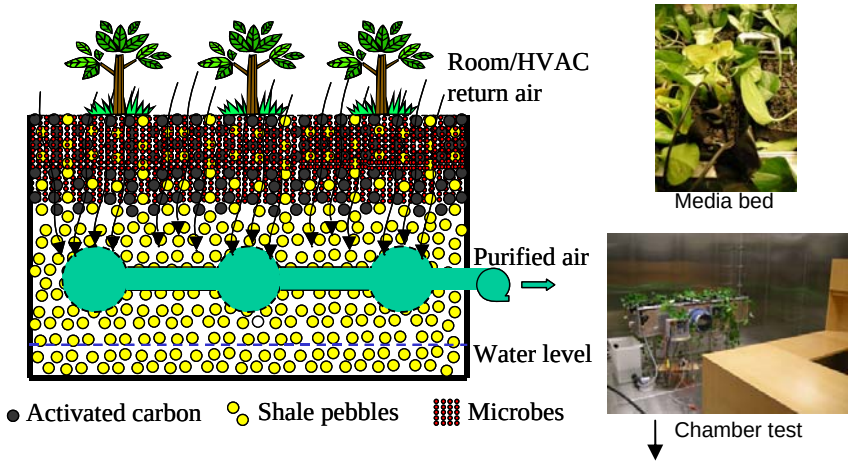
By Z.Wang, J.S. Zhang, M. Mittelmark, and B. C. Wolverton

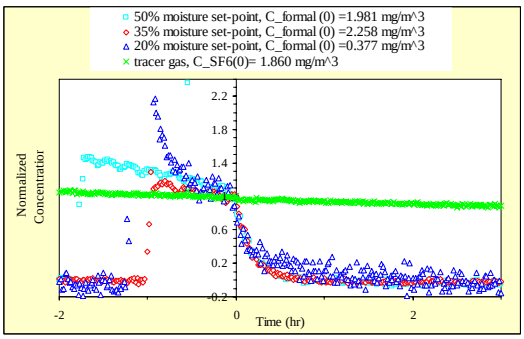
Syracuse University, Mechanical and Aerospace Engineering, 149 Link hall, Syracuse, NY 13244, U.S.A Email: zwang16@syr.edu; http://beesl.syr.edu

Air cleaning/purification is an effective and energy-efficient method for improving indoor air quality (IAQ). The Wolverton air filtration system, a NASA based spinoff technology, presents a unique opportunity for developing and commercializing such an integrated air cleaning device. It uses a plant root bed of activated carbon, porous shale pebbles, microbes and a wet scrubber to remove VOC's and radon from the air in tightly sealed buildings. The VOCs removed are converted into a food source for the indoor plants that also offer a green and natural environment indoors. The microbes that are responsible for the conversion can quickly reactivate the carbon eliminating the need for replacement, unlike the typical carbon filters used for air cleaning which need to be replaced every 3-6 months. A prototype device has been developed and is being investigated its VOCs removal performance.

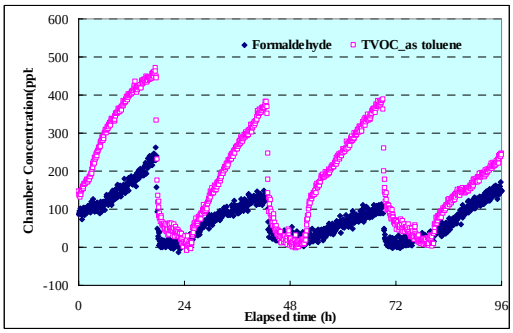
Reference:

Wolverton,B. C. Can plants improve air quality in the office environment? In: Proceedings of the 14th Annual International Facility Management Conference and Exposition, Denver, CO, Oct. 10-13, 1993, pp. 279-288.





"Pull-down" test result



Running for 8 h per day