



## Commercial Air Filtration

### Filtrete™ Commercial Mid Performance Filter Outperforms Competition in Test at National Home Improvement Center

#### Background

3M conducted a field study with a major home improvement center chain to compare the new Filtrete™ Commercial Mid Performance HVAC filter to a competitive 2" MERV 7 product being used at the chain's facilities throughout the U.S.

A representative store in Indianapolis, Indiana, was identified by the client. Two identical rooftop units (RTU) serving very similar interior thermal zones of constant volume operation were selected for this test. The cooling and heating properties of these building zones were chosen to be representative of normal building operations. Other interior RTUs and interior zones were also believed to be quite similar in operation. RTUs serving the exterior zones of the building would be expected to require more air volume and greater cooling loads due to increased energy loss through the building walls.

One of the selected RTUs was equipped with the new Filtrete filters and the other with filters from another supplier. The rooftop units were both Trane™ Model -TCD241C400BA (20 ton high efficiency) and were both equipped with 20" × 20" × 2" and 20" × 25" × 2" filters (4 of each). The supply air fan volumes were both set at equal levels after the filter installations.

#### Performance Data and Test Methods

The filters were installed in May 2005. At that time, baseline measurements were taken of the air flow rate and filter pressure drops. RTU fan and total amperage, and air and zone temperatures were then monitored on an ongoing basis via the Building Management System.

In September 2005, the filters had been in place for over 2,900 hours, or approximately one-third of a year. The monitored information confirmed that the two RTUs were equivalent as anticipated at the beginning of the trial. For the next five months, the amperages and temperatures were carefully documented to allow a quantitative comparison of the energy utilization of each unit.

In February 2006—after over 6,500 hours, or approximately nine months, of normal operation—the competitive filters exhibited high bowing at a pressure drop of 0.88 inches of water. At this same point the Filtrete filters had only reached a pressure drop of 0.40 inches of water. The comparative study was concluded at that time because the competitive filters needed to be replaced due to the noted bowing. The Filtrete Commercial HVAC filters continued in service, because their pressure drop was well below the recommended final pressure.

## Case Study

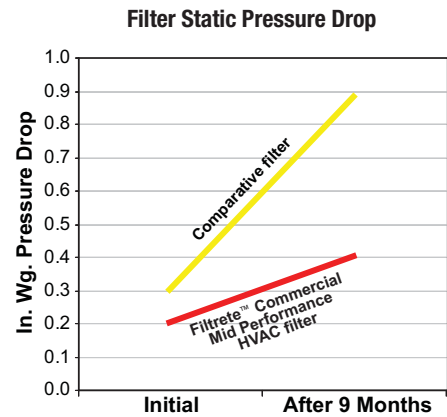
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## Conclusions

The Filtrete™ Commercial Mid Performance HVAC filters demonstrated an extremely low pressure drop increase over the course of this study (0.48 inches of water, less than that exhibited by the competitive filters).

Based on the monitored electrical consumption (just over the last 3,500 hours of the test) and on actual average electricity cost of \$0.10 per kilowatt hour, the RTU equipped with a Filtrete filter consumed approximately \$300 less in energy. Note that these resulting savings are only for one RTU (eight filters) over the five month period on which electrical consumption was monitored. This represented less than one-half of a year, operating in the cooler months, and less than one-eighth of the total building area.



## Project Summary

Objective:	Compare Filtrete™ Commercial Mid Performance Filter to competitive filter
Total test period:	May 2005 – March 2006
Measured RTU energy consumption:	September 2005 – February 2006
Final filter pressure drop:	Competitive filter = 0.88 inches of water Filtrete filter = 0.40 inches of water
Location:	Indianapolis, Indiana
Building area:	90,000 square feet — Tested zone size: 10,000 square feet
Projected total building cooling tonnage:	180
Tested air handler type:	Matching roof top package units – 20 ton each
Client Estimated Building Energy Savings:	ROI under 0.40 years

## Additional Information

For questions or to place an order in the U.S., contact your local 3M Filtration distributor or 3M Customer Service at 1-800-648-3550 or 651-737-2433

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