

Latest Developments in Air Leakage Testing

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Proper Reference of Flow Pressure

Depressurize

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Proper Reference of Flow Pressure

Pressurize

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Solutions

- Add a tube
- Self referencing fan
- Auto detection on gauge

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Error caused by flow that creates 1 Pa

n	C	cfm	at	error PR	error DP
0.6	1000	1000	1 Pa		
0.6	1000	3981	10 Pa	34%	20%
0.6	1000	10456	50 Pa	11%	9%

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Water in tube

- Shake it out

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Check Gauges Regularly

- T both channels together
- Check at several points

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Check Fans


- Field calibration for EqLA

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@ Pressure

- @ 50Pa means ?
- Predicted result at 50
- Uses:
 - increases accuracy
 - compensates for wind

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Adjustable @ Pressure


next shot bigger screen

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@ Pressure, at Set Pressure

PrA	25.00	Pa			
Flow	3800.10	cfm	@ 25.0Pa		
Volume =			1000m ³		
Speed =			50.0 %		
Open				Retrotec DU200	

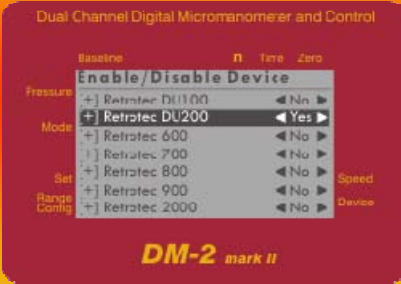
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- @ Set Pressure
- @ Default Pressure
- @ OFF

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Any Device, Rt,Mn, Infiltec



DM-2 mark II

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Any Result



DM-2 mark II

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Any Result

- Pressure + Pressure, any units
- Pressure + Flow, any units
- CFM @50 or @ any pressure
- Air changes per hour @50, key volume
- Air- flow/ area, key area
- EqLA/ Area, key area
- EfLA/ Area, key area

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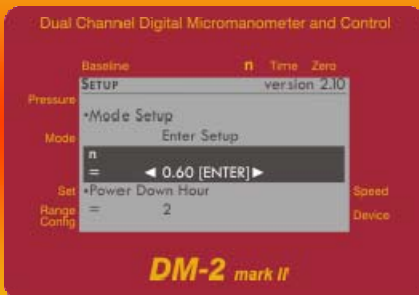
LEED 0.25 in² EfLA/100ft² @ 4Pa



DM-2 mark II

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Set up



DM-2 mark II

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Choose from:

- 2 gauges
- 4 controls
- 3 panels
- 4 fans

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Fan Control

2 class of motor in 2 class of housing

Model 2100
2100 Fan assembly

Model 2200
2200 Fan assembly

Model 2300
2300 Fan assembly

Model 2400
2400 Fan assembly

Model 2500
2500 Fan assembly

Model 2600
2600 Fan assembly

Model 2700
2700 Fan assembly

Model 2800
2800 Fan assembly

Model 2900
2900 Fan assembly

Model 3000
3000 Fan assembly

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Door Panels

Class Door Panel

Modular Door Panel

Two Fan Modular Panel

Three Fan Folding Panel

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Fan Performance

All Retrotec fans include flow restrictor plates that enable testing in wide range of enclosures from super tight to super tight. Retrotec Model 2100 and 2200 and 2300 fans include 11 flow restrictor plates for super tight testing and achieve accurate results regardless of the enclosure leakage properties. 100 CFM models (2400) have multiple flow restrictor plates to test in tight enclosures or ducts with leakage from 1 to 100 CFM (2500). Range configurations settings are integrated with Retrotec's digital pressure flow restrictor results.

Retrotec Fan Range Performance
Flow restrictor in CFM @ 10 Pa

Each range configuration will test between the minimum maximum flow restrictor with a huge number of range restrictor fans seen in a wide range of buildings or enclosures.

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Component Specifications

Model	Flow Restrictor	Flow Restrictor	Flow Restrictor	Flow Restrictor
Model 2100	11	11	11	11
Model 2200	11	11	11	11
Model 2300	11	11	11	11
Model 2400	11	11	11	11
Model 2500	11	11	11	11
Model 2600	11	11	11	11
Model 2700	11	11	11	11
Model 2800	11	11	11	11
Model 2900	11	11	11	11
Model 3000	11	11	11	11

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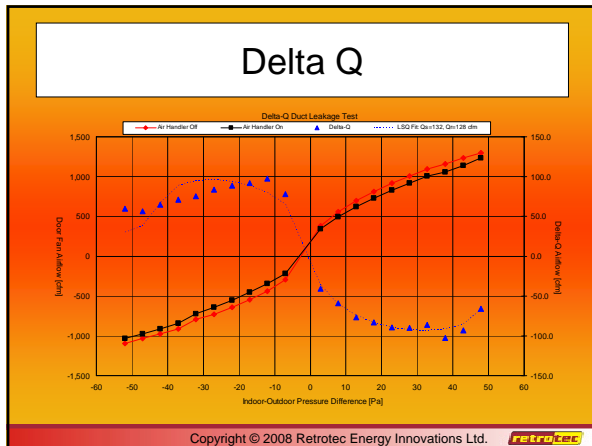
Energy System Selector

6 Models popular for energy testing

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Duct Leakage to Outdoors

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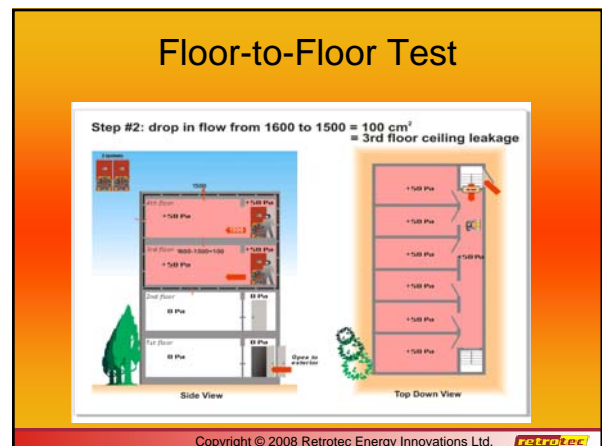
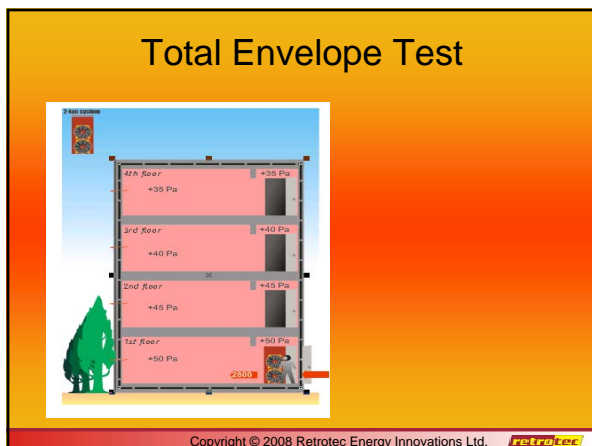
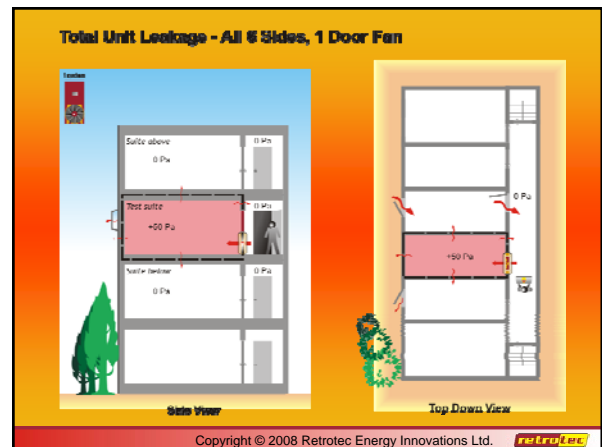
Door-Fan 3 Auto-Test

- Certificates
- Any Std
- Any # pts
- min/max
- both ways

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Door-Fan 3 Any equipment

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Various Standards Converted to:
cm² EqLA per m² envelope @ 50 Pa

n=0.6 for an <u>apartment</u> , 120 x 110 x 8 ft, 4 stories	house	Apt.
Canadian R-2000 1 in ² EqLA @ 10 Pa /100 ft ² envelope	0.9	0.8
Canadian R-2000 house 1.5 air changes/ hour	0.8	2.4
US Army standard is 0.25 cfm/ ft ² at 75Pa	1.8	1.8
UK 3 m ³ /h/m ² at 50 Pa Best practice, House	1.5	1.5
LEED, 1.25 in ² EflA @ 4 Pa / 100 ft ² envelope	2.1	1.9
UK 5 m ³ /h/m ² at 50 Pa Best practice, Commercial	2.5	2.5
Danish House Standard 1.5 l/s/m ² floor @ 50 Pa	2.7	2.7
IECC standard is 0.4 cfm / ft ² at 75Pa	2.8	2.9

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Total Unit Leakage - All 6 Sides, 1 Door Fan




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Numerous Apartment Buildings Tested



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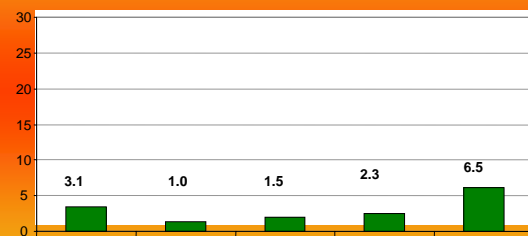


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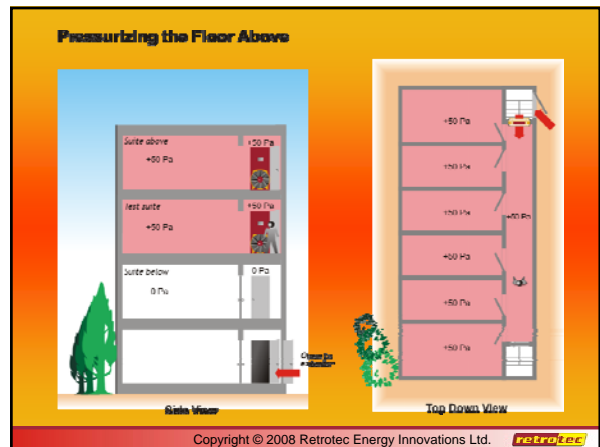
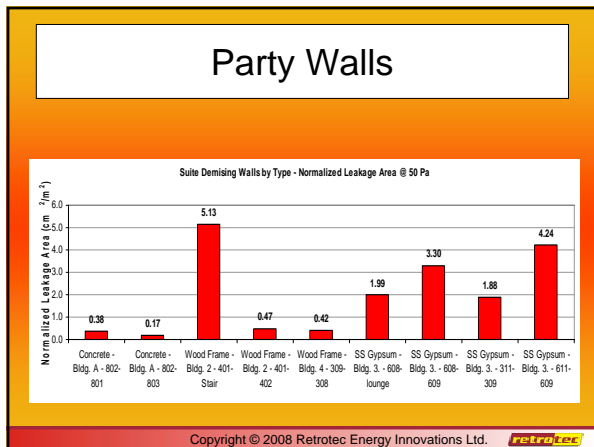
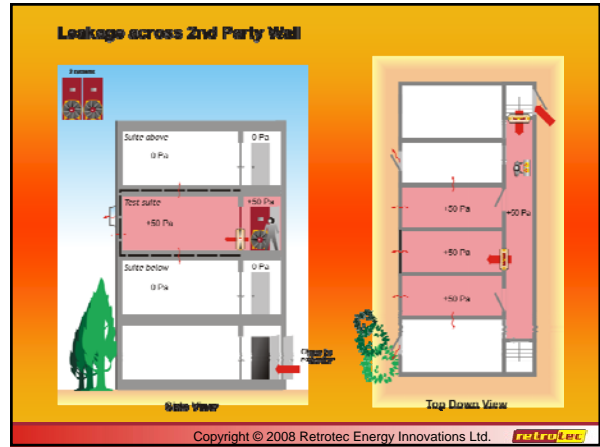
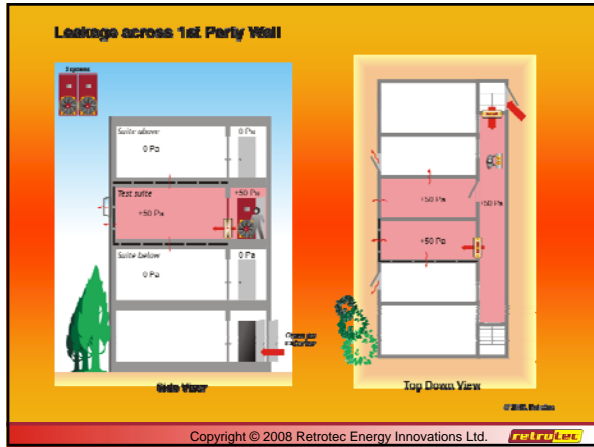
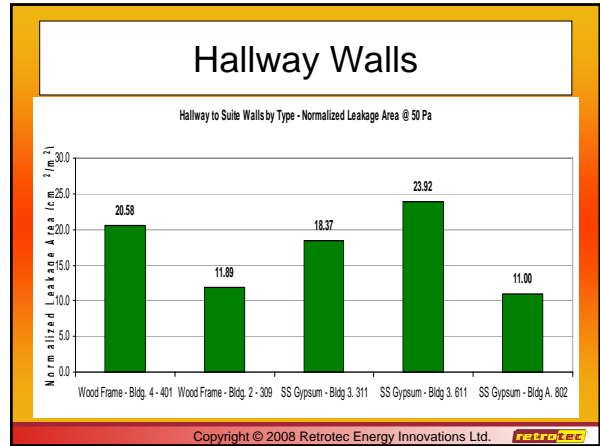
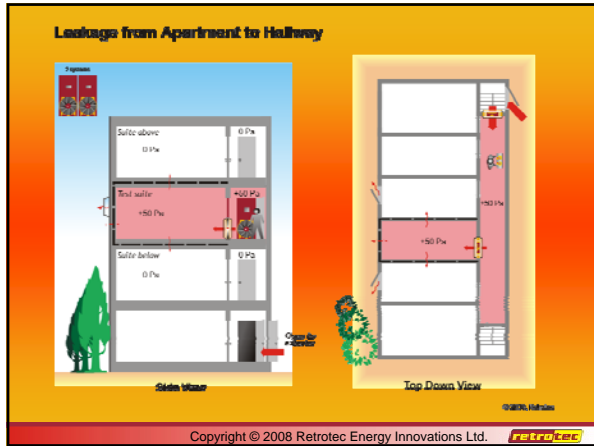


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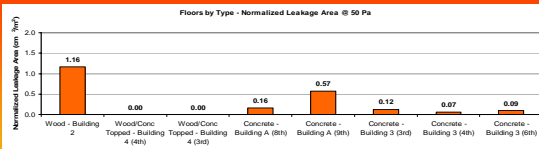
Leakage on all 6 sides
cm²/m² @ 50 Pa



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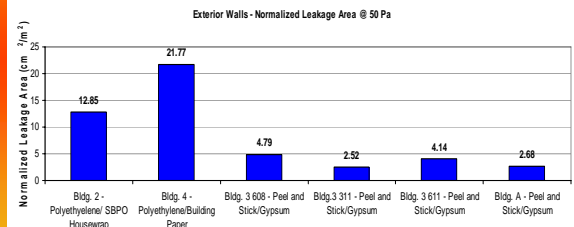
Floor Leakage



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Exterior Walls



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Conclusions

- Leakage of any surface can be tested

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airflow systems since 1978

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