builder, or homeowner for a known amount of time. The instructions for use can be followed by the untrained layman. When the test is over, the source and sampler are sent to the laboratory for analysis with gas chromatography. Knowing the duration of the test, the amount of gas, and the volume of the house, one can calculate the effective air infiltration rate in air changes per hour and the air flow between zones of a building.

Blower door testing also is used to measure air infiltration but it gives different results and serves different purposes than AIMS. Blower doors measure the tightness of the building envelope and give an instantaneous measurement of leakiness or tightness in terms of an equivalent leakage area. Thus, in contrast to AIMS, blower door techniques do not measure infiltration rates. The blower door results can be incorporated into simulation models, for which the user makes assumptions about climate, wind conditions, and other factors affecting infiltration, to estimate an average long-term natural infiltration rate. The most useful application of the blower door technique, however, is as a diagnostic tool to determine how much additional infiltration reduction is needed, to locate leakage sites while the building is being weatherized, and to provide an index of the change in building leakage performance before and after retrofit. AIMS does not serve such diagnostic purposes; instead, it measures effective infiltration rates over extended periods of time including the effects of mechanical ventilation, exhaust fans, door and window openings, and other occupant-controlled activities (DuPont, 1987).

5.7.2 The DOE Role

AIMS was developed as a practical technique by Russell Dietz at Brookhaven National Laboratory with support from the U.S. Department of Energy in the early 1980's. Patents on the technology, however, are held