5.6.3 The DOE Role

DOE has facilitated the development of Hotboxes on a number of fronts. It has provided half of the construction and operating costs for the NIST Hotbox. Though the exact numbers are unavailable, DOE and NIST have jointly spent between two and three million dollars on the NIST Hotbox (Taylor, 1988). DOE also provided a quarter of a million dollars to CTL. These funds were provided at the same time that DOE was sponsoring similar research at NIST. DOE support facilitated the development of the Hotbox at CTL. In addition to supporting the costs of constructing Hotboxes, DOE took the lead in funding a round robin on Hotboxes. In round robins, sample(s) of one or more materials are tested at different research locations, and performance tests are compared. The NIST Hotbox is seen as the standard for calibrating different Hotboxes. DOE also supported a horizontal Hotbox at the Roof Research Center at ORNL.

Hotbox results are available to users - builders, construction companies, and architects - through ASHRAE's Handbook of Fundamentals. DOE is sponsoring a compilation of Hotbox calculations on different wall systems which will be published for use by builders. Thus, DOE has had a role in stimulating the use of Hotbox testing, even though it has had little direct role in the commercialization of the Hotbox itself.

The objectives of DOE were: (1) to provide industry with a benchmark apparatus to evaluate wall systems, (2) to provide industry with a capability to measure heat transfer through superinsulated walls, (3) to facilitate the standardization of wall systems, and (4) to test how real-world data fit laboratory calibrations. These objectives have all been accomplished for steady state Hotboxes. Work is progressing on the development of a Hotbox capable of measuring dynamic temperature settings and the transfer of moisture.