

from nonmanufacturers show a link to a manufacturer to facilitate product commercialization.

Only five proposals were received, and none was from a major manufacturer. The proposal selected for funding was from EUS, which stated that Mor-Flo Industries, Inc., one of the nine major water heater manufacturers in the U.S., would provide the water tanks and their shipping cases. EUS did not propose that Mor-Flo be involved in either the design and development of the HPWH or in any commercialization planning and market analysis activity.

The EUS project had two phases. In Phase I, which started in 1977, EUS developed two HPWH versions - an integral model and a retrofit model - and conducted a market study to determine the potential demand for each.<sup>1</sup> EUS also tested various tank and compressor sizes, types of refrigerant, condenser designs, and fan speeds.

During Phase II, which began in 1978 and ran through 1982, EUS produced 100 demonstration units with some assistance from Mor-Flo and sold them at cost (approximately \$600) to 20 utilities that agreed to participate in a demonstration project. EUS also sold an additional 125 units to 65 other utilities that were interested in running their own tests.

Because of difficulties in retrofitting water tanks, the retrofit model proved to be impractical and EUS dropped it temporarily. EUS remedied problems encountered with the integral model, including weak joints in the compressor tubing and fragility during shipping.

Data gathered during the demonstration test showed that the coefficient of performance (COP) for the EUS HPWH in field conditions was approximately 2.0, which meant that the unit used half the energy of a conventional electric resistance water heater. EUS later conducted a lifetime assessment of the