

## R-2000 HOMEOWNER SURVEY

The R-2000 Program was set up with specific objectives, goals and a timetable. It was primarily designed to improve the energy efficiency of Canadian housing.

The program's initial emphasis was on the energy features, and included technology transfer and builder education. Fortunately it was recognized early that if changes were going to be made to housing, then all aspects of the house were going to have to be considered, as a house is a complete system. You can't isolate one feature without it having some impact on other portions of the house.

The original phase of the R-2000 program included direct federal government participation (along with the Canadian Homebuilders Association) in the administration of the program. That phase is now winding down, and the industry in each province and territory is picking up the program and making it run.

The value of the R-2000 program, however, must not be lost in the maze of administrative detail and numbers games about how many houses have been registered within the program. The significant impact is that the program has had, and will continue to have, a major impact on the way housing is being built in this country and abroad.

Because there was concern that specifications and innovations be technically valid, many of the R-2000 houses were carefully monitored. The monitoring data represents an important housing data bank. Many of the surveys and monitoring projects not only looked at the specific innovations in the R-2000 houses but also looked at houses built by the housing industry in general, which were used as a "control" group.

### Homeowner Surveys

We can instrument a house and come up with all manner of detail about its physical operations, but we also need to know if it makes any sense to the resident. After all, the object of housing is to provide shelter

for people in which they will find it a joy and pleasure to live. As any realtor can tell you, technical features alone are not enough.

To determine occupant reactions, a number of homeowner surveys were made. The object of these were to:

- \* determine the effectiveness of the R-2000 technical specifications
- \* establish the energy savings
- \* provide information on indoor air quality and heat recovery ventilator performance
- \* identify areas requiring improvements or changes
- \* assess occupant satisfaction
- \* obtain marketing information on occupants.

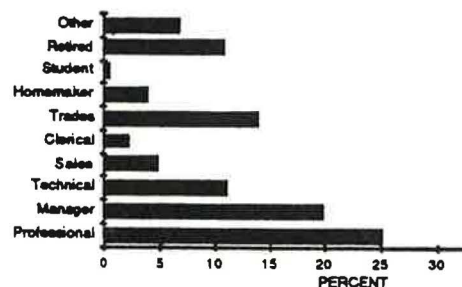
The homeowner surveys were done in two phases. The first phase examined the original 300 demonstration houses which represented the builder's first attempt at working with the R-2000 standard. These surveys were done mostly in 1983 and 1984. The second phase surveys included homes built to revised technical criteria, and were carried out between 1985 and 1987.

The surveys were detailed and included follow up visits. The results provide an insight into who buys R-2000 homes and why. They also present occupant impressions after they have lived in the house for some time (and the novelty has worn off), as well as identifying common concerns and areas of satisfaction.

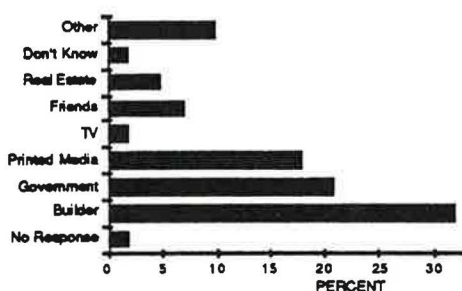
### Who bought R-2000

The image of the R-2000 house as the status symbol for Yuppies is confirmed.

- \* The owners were mostly between 31 and 45 years old
- \* Most were "professionals"
- \* Most had two income earners (57%)
- \* Most were "move-up" buyers who had owned a detached home before
- \* Almost half of the homes had two adults and children, while one third were occupied by childless couples.

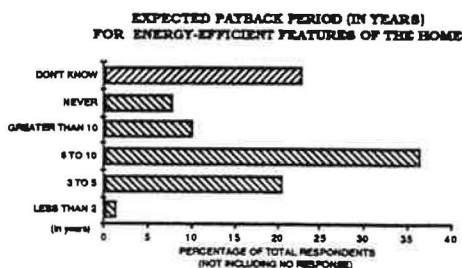


### What influenced the buying decision?



Many factors affect a home buyer's decision to buy.

- \* Information provided by the builder was the most significant
- \* government information
- \* print media (much of this would have been government funded).
- \* size/design of the house



The energy efficient features of the R-2000 houses were important considerations. There was acceptance of the extra initial cost for the long term benefits. 23% of the homeowners expected a payback period of 5 years or less. As well, 23% did not know what the payback term was - or perhaps they didn't care.

### What is the owners' attitude after living in an R-2000 home?

The majority of homeowners considered the energy features to be positive, and felt the energy savings were being achieved (only 5% believed that savings were not attained).

**Perceived Advantages and Disadvantages to Living in an R-2000 Home**

	Perceived Advantages	Perceived Disadvantages
<b>Indoor Air Quality</b>	<ul style="list-style-type: none"> <li>• Less Dust</li> <li>• Less Moisture</li> <li>• Humidity Control</li> <li>• Fresh Air</li> </ul>	<ul style="list-style-type: none"> <li>• Air Too Dry</li> <li>• High Humidity</li> <li>• Stale Air</li> </ul>
<b>Thermal Comfort</b>	<ul style="list-style-type: none"> <li>• Warmer</li> <li>• No Drafts</li> <li>• Constant Temperature</li> </ul>	<ul style="list-style-type: none"> <li>• Overheating</li> <li>• Cold Basements</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>• Quieter</li> </ul>	<ul style="list-style-type: none"> <li>• HRV Noise</li> <li>• Loud Furnace</li> </ul>
<b>Other</b>		<ul style="list-style-type: none"> <li>• Electricity Costs</li> </ul>

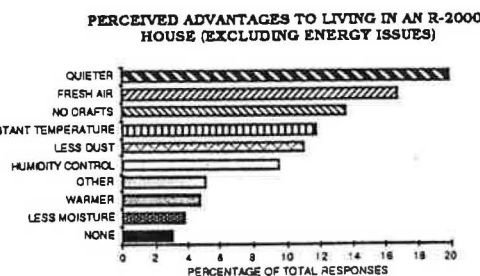
The survey identified perceived advantages and disadvantages of living in an R-2000 home. The format of the survey was such that the issues were suggested by the homeowner - they were not suggested by the survey. The three most important features of an R-2000 house identified were: the indoor air quality, they are quiet, and the thermal comfort.

The questions and responses were solicited both in the survey conducted shortly after the owner occupied the home (when they could have been influenced by claims made by sales information) and in the follow-up survey which would reflect actual experience.

Almost one half perceived no disadvantage to living in the homes.

The most commonly reported disadvantages were HRV noise, dry air and high electrical costs. The main indoor air quality problem was dry air in the winter (identified by less than 10%). Relatively few homeowners (less than 15%) specified any air quality problems.

The significant information is how perceptions change over a year or more of residence in the house.



After living in the house for at least one year (in the initial phase), there was a small change, as some homeowners found high humidity and HRV noise as a problem but the net change was small (less than 10% of the total).

Noise generated by the HRV and forced air heating system were identified by the second phase survey as major problems.

Major indoor air quality problems identified by 12% was dry air. The relative humidity must be considered in conjunction with climatic conditions, occupant lifestyle and the difficulty in defining the sensitivity to dry air. Many of these responses came from areas

where higher relative humidity is the "norm". This also indicates a problem of over-ventilation.

The increasing concern of excessive ventilation means that some people are shutting off their HRV's. However, the survey noted that 90% ran their HRV continuously, the balance at least part of the time. Half also indicated they ran their HRV during the summer as well.

The issue about ventilation rates, as regular readers know, is one that still has not been fully resolved. We still hear from builders about homeowners shutting off their ventilation because of the perceived dryness of the air. Whether this problem is real or more a perception will maybe require more study.

Overall, homeowner satisfaction is very high. Only 4% indicated they would not purchase again, while 11% did not know.

While these surveys were done in order to document the performance of R-2000 homes which have received much publicity, and involve technology innovation, it is too bad that a parallel survey of owners of standard market houses was not done at the same time, as was the case for technical issues.

*Richard Kadulski*

*This is based on 'Results of the R-2000 Homeowner Survey' prepared for the R-2000 Home Program by Buchan, Lawton, Parent, Ltd.*

