European Radon Solutions Database

Prepared by

: ERRICCA 2 *European Radon Research and Industry Collaboration Concerted Action*

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Existing Buildings

Case Study	Sheet N°	UK/CS/001

Type	Multiple radon sump system
Country	United Kingdom

Illustration

A B C D E

houses

Description

This project comprises a terrace of five houses, built in 1988, located in Devon in Southwest England. Constructed with rendered concrete block work cavity walls and in-situ concrete ground floor.

This project resulted from a comparison study carried out by BRE looking at the effectiveness of radon protective measures in new dwellings. Although radon protective measures were not incorporated within these particular houses at the time of construction later houses on the same site were protected. These houses therefore offer a useful comparison for measurements taken in the protected houses.

Selection

Initially only houses A and E were monitored as part of the newbuild study. But when it was found that these two had elevated levels 1477 Bq/m^3 and 3392 Bq/m^3 respectively, negotiations were opened with the owners of all five houses to see whether a communal approach might be applied to reducing the radon levels. It was anticipated that when all five houses were monitored they would all have similar radon levels, making a sump system in House C the most appropriate solution. On monitoring it was found that this was not the case, in fact the central house, House C, had a radon level below the UK recommended Action Level of 200 Bq/m^3. Therefore we could not justify installing a system within this house. Instead two sump systems were provided, one at each end of the block in Houses A and E.

Pre-installation Diagnosis

The only diagnosis testing carried out was the radon measurement in each property

Radon reduction achieved

Radon level before	:House A	Living room	1260 Bq/m^3
		Main bedroom	1010 Bq/m^3
		Seasonally corrected annual average	914 Bq/m^3
	:House B	Living room	903 Bq/m^3
		Main bedroom	912 Bq/m^3
		Seasonally corrected annual average	739 Bq/m^3
	:House C	Living room	300 Bq/m^3
		Main bedroom	192 Bq/m^3
		Seasonally corrected annual average	196 Bq/m^3
	:House D	Living room	334 Bq/m^3
		Main bedroom	231 Bq/m^3
		Seasonally corrected annual average	226 Bq/m^3
	:House E	Living room	3305 Bq/m^3
		Main bedroom	2370 Bq/m^3
		Seasonally corrected annual average	2274 Bq/m^3
Radon level after	:House A	Living room	12 Bq/m^3
		Main bedroom	12 Bq/m^3
		Seasonally corrected annual average	11 Bq/m^3
	:House B	Living room	19 Bq/m^3
		Main bedroom	16 Bq/m^3
		Seasonally corrected annual average	15 Bq/m^3
	:House C	Living room	19 Bq/m^3
		Main bedroom	19 Bq/m^3
		Seasonally corrected annual average	17 Bq/m^3
	:House D	Living room	23 Bq/m^3
		Main bedroom	17 Bq/m^3
		Seasonally corrected annual average	18 Bq/m^3
	:House E	Living room	15 Bq/m^3
		Main bedroom	10 Bq/m^3
		Seasonally corrected annual average	11 Bq/m^3

Re-testing has shown that the two sump systems are having a significant effect over all five houses. It had been hoped to carry out additional research on these houses, including pressure field extension tests. Unfortunately due to changes in ownership and the inability to gain access to all the houses further monitoring was not possible.

Problems

There were no problems encountered during installation. Re-measurement in House A has shown the radon level not to have changed over a ten year period, with the original fan still running effectively.

However, there could be a problem in the future if either of the two houses with the radon sump systems fitted should be sold. There is no guarantee that subsequent owners will continue to run or maintain the sump systems.

System enhancements

Both systems worked well, however the fan housing to fitted to house E would benefit from a more attractive looking box around the fan.

It would be beneficial to have a maintenance agreement signed between the property owners to ensure that the system is kept running and maintained in the future.

Further Information

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