

SUPSI

Radon Case Studies: internal radon pit

Nome e cognome relatore/i, funzione e settore SUPSI

Starting Situation

- Passive dosimetry measurements:

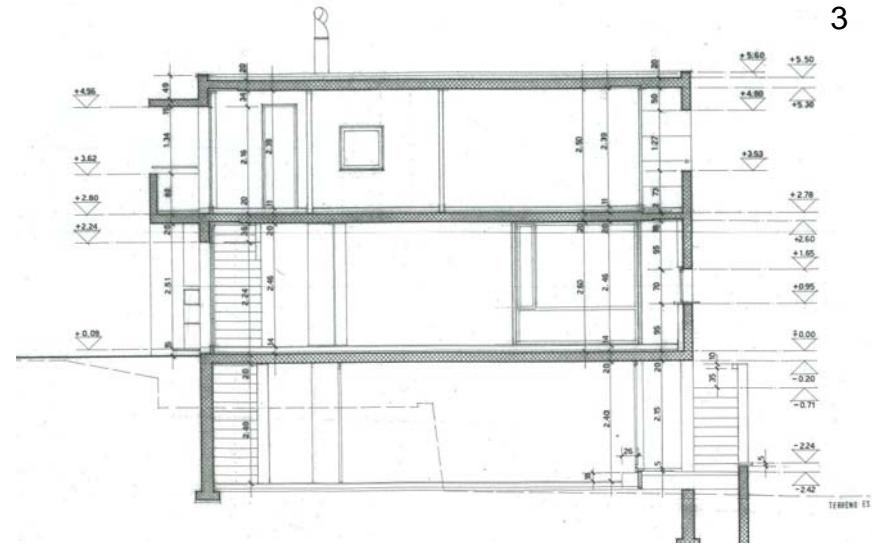
Room type	Rn[Bq/m ³]
Kitchen	671
Kitchen	822



- Medium concentrations measured in the kitchen at the ground-floor (street level).
- Possible higher concentrations in other rooms.
- Very low concentrations measured in the neighboring houses.

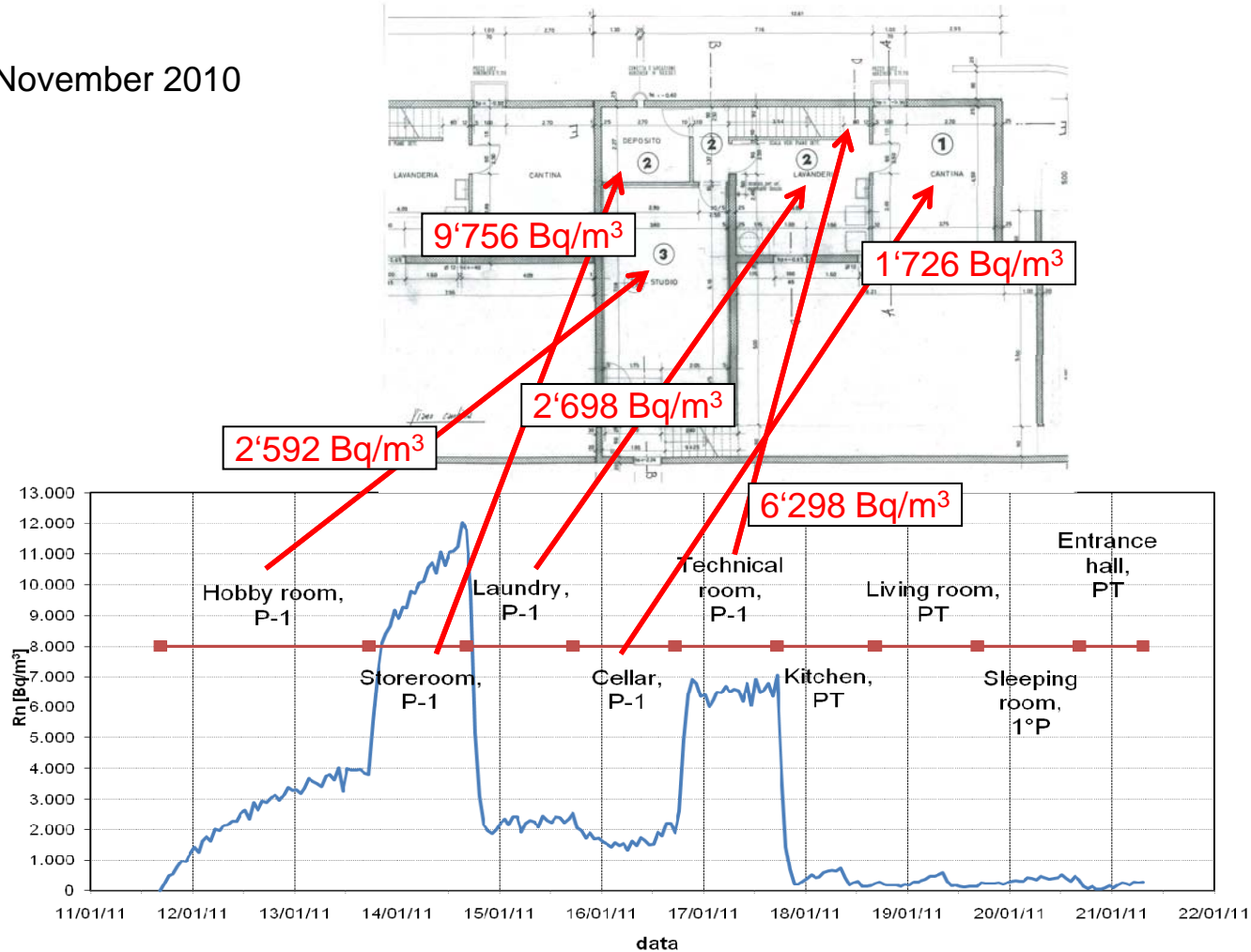
Building Description

- Terraced house built in the 90thies.
- Floor partly located below the ground level :
 - Living rooms: hobby room (pass. dos)
 - Non-living rooms: storeroom, technical room, laundry, cellar
- Ground-floor :
 - Living rooms : living room, kitchen (pass. dos), toilet
- Upper-floor:
 - Living rooms : 2 bedrooms, toilet
- All floors connected by an internal stairs. The connection can be interrupted between the lower and the ground-floor by closing a door.
- **The lower floor is a 8 cm concrete slab floating on gravel..**



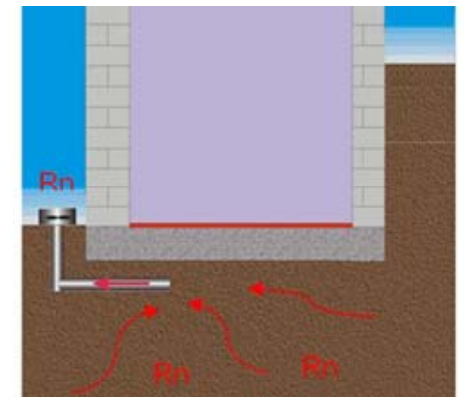
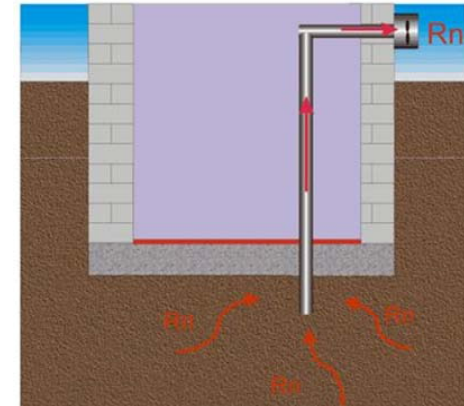
Active Short Measurement

- 10 days: November 2010



Proposed Solutions

- Internal radon pit.** Because of the probable penetration of radon through several unsealed points of the house floor in contact with the soil we proposed the construction of a radon pit which could put under depression the soil underneath the building. The pit is constructed inside the house (storeroom with outdoor gas evacuation).
- External radon pit.** The same result could be reached with the construction of an external radon pit. The pit should however reach the soil underneath the house in order to put the soil under depression.



Fan description:

Name: HELIOS Type RR 100 C

Type: Radial Fan

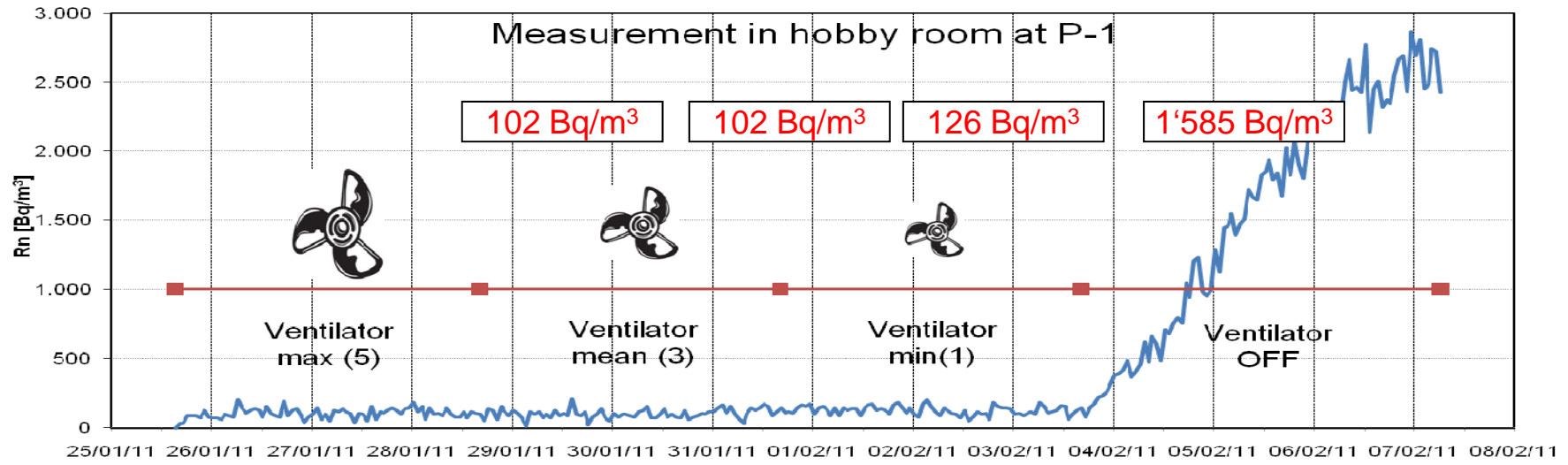
Performance: 70 Watt

Air output: 240 m³/h

Proposed Solutions Advantages / Disadvantages

	Advantages	Disadvantages
Internal radon pit	<ul style="list-style-type: none"> • Probable higher efficacy • Lower noise for neighboring houses 	<ul style="list-style-type: none"> • House structure modification • Possible internal noise
External radon pit	<ul style="list-style-type: none"> • No modification of house structure 	<ul style="list-style-type: none"> • Possible lower efficacy • Possible noise for neighboring houses

Adopted Solution: Internal radon pit: costs approx. 2'300 €(not including diagnostic measurement)



data



Final considerations

- With respect to previous measurements radon concentration decreased considerably in the hobby room (lower floor) and in the kitchen (ground floor).
- Radon concentrations reached previous levels when the fan is turned off.
- The installation should work 24 h during the heating season. If the house is not constantly ventilated during the summer season it is advised to turn on the fan during night.
- Once the installation finished, the house radon recovery has to be certificated (passive dosimeter during heating season)