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SUPSI

Radon Case Studies

A description of several radon recovery plans: Cellar ventilation

Starting Situation

- Passive dosimetry measurement:

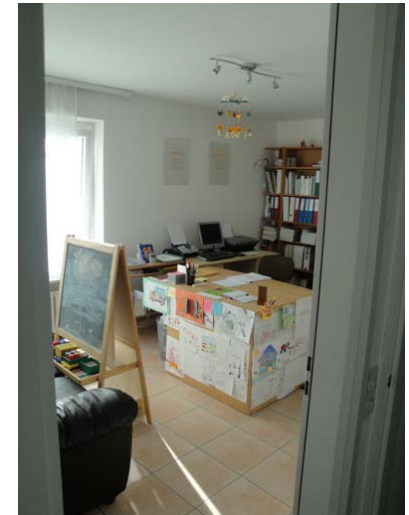
Floor	Room type	Rn[Bq/m ³]
0.0	Office room	2'527



- High concentration measured in a living room at the ground-floor.
- Room utilization change in the last year: non-lived room → lived room.

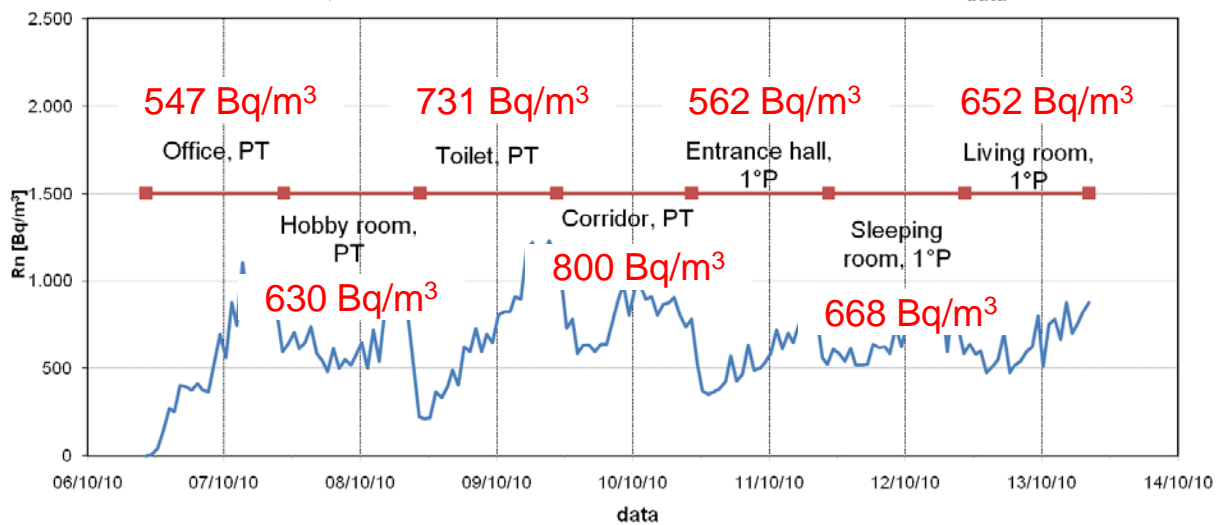
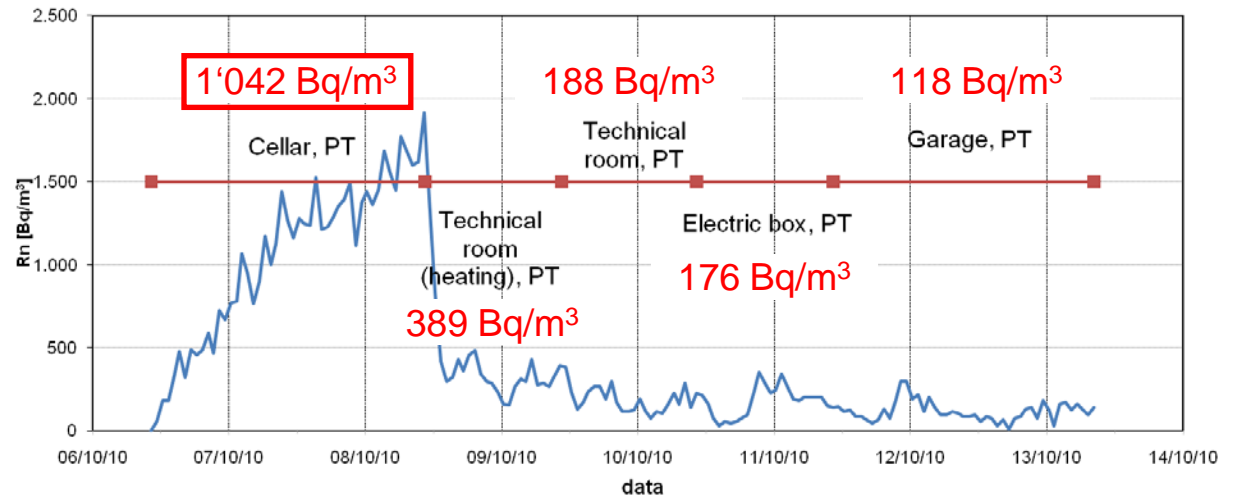
Building Description

- Single family house built in the 60thies.
- Ground floor partly located below the ground level :
 - Living rooms: office, hobby room, toilet
 - Non-living rooms: garage, technical rooms, cellar
- Upper-floor:
 - Living rooms: living room, kitchen, toilet, sleeping rooms
- Floors connected by an internal stairs.
- Presence of a closed fireplace which connect the two floors.
- **Cellar floor made of gravel.**



Active Short Measurement

- 7 days: october 2010



Proposed Solutions

1. **Cellar Ventilation.** Because of the probable penetration of radon mainly through the cellar floor (gravel) the installation of a fan inside the cellar which could put under depression the soil underneath the building.



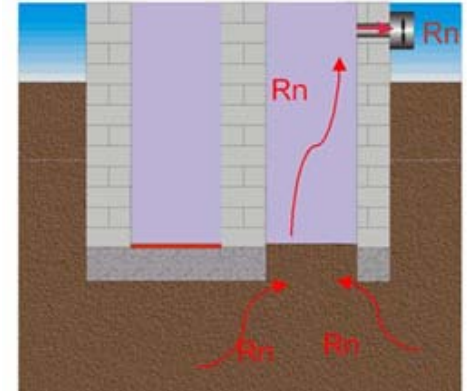
Fan Choice:

Name: Elicent Vitro 9/230 A

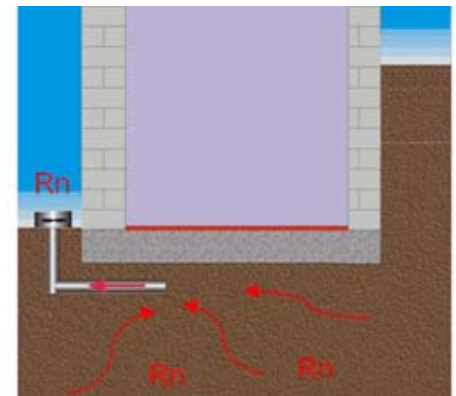
Type: Axial Fan

Performance: 24 Watt

Air output: 200 m³/h



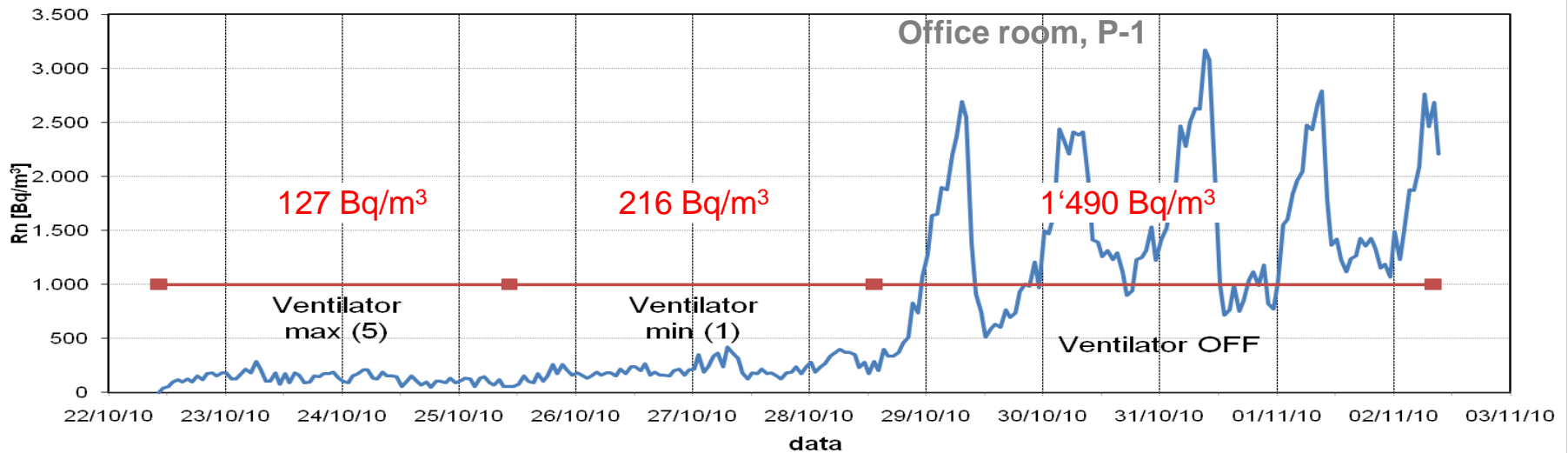
2. **External/Internal radon pit.** Construction of a radon pit which could put under depression the soil underneath the building.



Proposed Solutions Advantages / Disadvantages

	Advantages	Disadvantages
Cellar Ventilation	<ul style="list-style-type: none"> •Lower costs 	<ul style="list-style-type: none"> •Possible internal noise •Maybe not sufficient
External/Internal radon pit	<ul style="list-style-type: none"> •Probable more efficient 	<ul style="list-style-type: none"> •Higher costs •Possible noise for neighboring houses

Adopted Solution: Cellar Ventilation (depression), costs approx. 400 € (not including diagnostic measurement)



Final considerations

- With respect to previous measurements radon concentration decreased considerably in the office (lower floor) and in the sleeping room (upper floor).
- Radon concentrations reached previous levels when the fan is turned off (similar to passive dosimetry results).
- The installation should work 24 h during the heating season (power can be adjusted). The cellar door should be hermetically closed. In order to increase the depression in the cellar.
- Upon conclusion of the mitigation a passive dosimetry performed by an independent body is mandatory for certifying the remediation intervention.