1. Project objectives

Radon is a natural radioactive gas. It is colorless, odorless and found all over the world. It is produced by the decay of uranium and radium in the ground. Outdoors, levels are low as it dissipates quickly in the air. However, it can seep into enclosed spaces, particularly homes. As houses become increasingly well insulated, radon trapped inside cannot escape and can accumulate to very high concentrations. Long-term exposure to radon can be hazardous to **health.**

Positive Input Ventilation prevents the build-up of radon from the ground by creating a slight positive pressure in the house. The radon is diverted and expelled from the dwelling.

With this in mind and the current situation in Europe (2013 proclaimed "Year of Air" by Janez Potočnik, European Commissioner for the Environment), a French SME wants to go further in the prevention against exposure to radon by developing **a measurement system coupled to** a **VMI® system (Mechanical Blown Ventilation)**, i.e. forced ventilation.

Several radon sensors exist on the market. Unfortunately, the sensors able to achieve an accurate and instantaneous measurement are too expensive to be sold on the consumer market. Low cost sensors exist, but their reaction time is of the order of several hours to several days, doomed to fail any attempt of modulating ventilation.

The diffusion of radon from the soil to the atmosphere is indeed a discontinuous phenomenon in time and space, and depends on many environmental factors. It is therefore necessary that the measurement of radon is made within a short time –less than 1 hour, to enable the ventilation system to respond effectively.

2. Technological objectives

Three main areas of study were identified to design **a radon measurement system coupled to a VMI® system**:

- Task 1: Development of a radon sensor with responsive, wireless and economical characteristics,
- Task 2: Defining one or several threshold values of radon triggering or modifying the implementation of the strategy of ventilation,
- Task 3: Development of control algorithms of the ventilation rate, on the basis of radon measurements from the sensor, and the threshold values identified in Task 2.

The energy impact must be taken into account so that the developed solution is not contrary to the requirements of energy efficiency. Finally, the wider concept of air quality should also be taken into account to make the new product fits into the philosophy of the French SME.

3. Partner search

This project will be submitted to the European **Eurostars programme** (http://www.eurostars-eureka.eu/) in the frame of its biannual call for proposals whose deadline is 4 April 2013. The main objective of this call is to generate international collaborative research and development between SMEs with high innovation potential in Europe by easing **access to support and funding**. The final results of this call must, if successful, be strictly operated by SMEs within two years after the end of the research project.

The French SME will be the project coordinator. It will work with a French research center specialist of the building sector, which will bring to the project its expertise in terms of regulation and methodology.

However, the achievement of such a project requires other European partners in areas of expertise essential to the efficient functioning of the project, namely:

- The sensor part with a **radon sensor manufacturer** (preferably electronic integrating device),
- The measurement part with several **test sites: schools, nurseries and individual houses** (working with public authorities or social landlords would be of interest).

Partner type: SME
Eligible countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom.