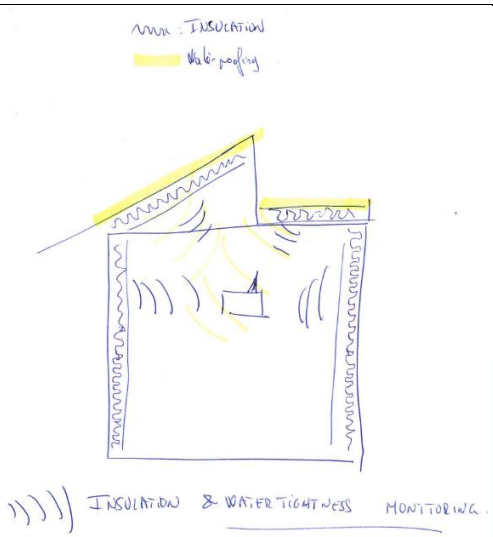
Advanced Manufacturing of Multi-Material Multi-Functional Products Towards 2020 and Beyond

High-priority product: SMART BUILDING MATERIALS

Designation of multi-material multi-functional product:	*Thermal insulation product with efficiency sensors inside : thermal insulation sensors, moisture sensors, polymers degradation sensors …*
General description of product (3 – 4 sentences):	*In the building materials, most of them are static (concrete, tiles, thermal insulation, waterproofing products) and has to be efficient for a long time (from 20 to 50 years …Leakage detection appears via observations and in many times, in too late for a simple reparation.* *The goal is to monitore building construction material via direct or indirect live measurements*
Multi-materials needed/required:	*Long life time thermally insulating and waterproof polymeric materials with embedded intelligence (sensors, data transmission)*
Multi-functionality needed/required:	*Thermal flux measurement, moisture measurement, load measurement, associated to first function as mechanic for concrete, thermal insulation for insulation, watertightness for roofing materials …*
Expected improvement:	*Inclusion of sensors or sensitive materials and data exploitation*
Bottlenecks to overcome for reaching the expected improvement	*Low cost, sensitive and long lasting sensing functionalities*
Functional requirements:	• *Sensing functionalities to be tightly embedded inside building materials/products.* • *Sensing functionalities to be spatially distributed according to building materials, designs and architecture, climate,…* • *Data transmission with hidden/minimum wiring or even wireless capability*
Technical sketch of product (if applicable):	*Please insert a sketch indicating geometrical dimensions of your product*

	 INSULATION Waterproofing INSULATION & WATERTIGHTNESS MONITORING