

Title of the project proposal: **Non-structural insulating panels based on aerogel and inorganic binder**

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Project type: ICON

Start date – duration: Jan 2023 (if possible) 3 or 4 years?

Innovator zone(s): insulating panels with aerogel as insulating material, in a cementitious matrix

**Content:**

Aerogel offers the advantage of very good insulating capacity, but it lacks mechanical strength. AEROBEL is a Flemish start-up company that developed a method to produce aerogels at a much lower cost making applications in a wider market possible.

Inorganic binders or cements such as alkali activated materials (AAM), have the advantage that secondary resources such as metallurgical slags can be used as precursors, thus the environmental impact is much lower than the one of ordinary Portland cement. Moreover, they can have much better thermal resistance compared with ordinary Portland cement. AAMs are fireproof and can be made to have working temperatures up to about 1000°C. The combination of aerogels and such a binder is however not straight forward. Basic research on this will be performed in the SBO project 'AEROCEM' that is starting in October 2022.

The outcomes of said SBO project will be available for [this ICON-project](#).

In the SBO, also sandwich panels are investigated, composed of an insulating core (aerogels/binder) with textile reinforced cements as skins. Thin skins on the insulating panels will enable to use them for several applications. Thicker, loadbearing skins enable structural applications, but that is outside the scope of the current project.

AAMs need an activator. Currently silicate solutions are the most used activators. SILMACO is investigating the production, starting from wastes/secondary resources. In the project, the production and quality of such silicate solutions, for making AAMs, suitable for the panels, will be investigated.

Applications include thermal insulating panels for microwave furnaces that repel water, fire-protecting panels (e.g. panels for fire protection of concrete in tunnels, garages, fire doors, etc.).

Current partners for **the ICON** are:

VUB-FYSC (coordinator),

KUL- MTM

Companies: talks are in progress with several companies.

Extra partners are welcome in the field of

- fiber (textile) production and treatment. Also, natural fibers can have applications
- precursors for e.g. companies that possibly have a good precursor, but where still some research needs to be done.
- measurement of thermal conductivity (or insulating properties)
- secondary resources for silicate production (e.g. diatoms)
- expertise in water-repellent cement/concrete
- fire resistance

Also, companies that would like to join the advisory board of the already approved SBO AEROCEM are still welcome. Extra information can be sent upon request.