WG4 SMART TEXTILES FOR BUILDING AND LIVING

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1. OBJECTIVES OF THE MEETING

Aims of the working session:

- Knowing the participants and their competences better for further project ideas and collaboration opportunities.
- Brainstorming to identify new project ideas.
- Establishing a roadmap for longterm actions of the Working Group.

2. PROJECT IDEAS

The WG4 meeting focused on main issues now faced by textile sector for building applications. The first topic discussed was about the prosecution of the joint project idea developed by the WG in the previous meetings, i.e. "textiles for building with advanced functionalities":

- Photocatalytic action of materials/textiles to reduce pollutants (indoor/outdoor), antibacterial effect of titanium dioxide, combine fabrics made of optical fibers with applications in filtering/depolluting systems.
- Use of PVDF (Polyvinylidene fluoride) as a new material for building applications, with new properties for textile structures (UV protection); use of PVDF (Piezo-electrical properties) in innovative energy production systems; extrusion of PVDF filled with nanoparticles;
- Self-regulating systems.

Scientific and technological bottlenecks of this kind of applications were discussed and WG leader presented the main scientific and technological bottlenecks, providing examples from the conference held in Frankfurt on Oct 2019.

It was briefly presented the state of the art report of textile for building (to be finalized in next months):

- Innovative energy production
- Monitoring and self-regulating textiles through e-yarns
- Improvement of fire-proof resistance
- Reduction of environmental impact
- Nanotechnologies for buildings
- Visual impact

- Advanced functionalities
- Interactive textiles
- Industrialization of e-yarn production
- Improvement of insulation properties

The joint project building between participants was discussed and ideas collected from participants through a brainstorming exercise. The main outcomes are:

- Create materials easy to incorporate to existing materials used in building industry
- Develop a light sensing structure based on polymeric fibers/fabric
- Use of PVDF for buildings with new properties – producing energy
- Textile waste – for the new textile structure, testing it – mechanical properties, SEM microstructure – develop a new product
- Possible applications in buildings and urban environment to improve air quality
- Introduction of piezoelectric or UV resistant properties in building materials: defining components, process to develop fabric
- Composite model of waste with no chemical added

3. ROADMAP

- **Long term roadmap: 1 project idea decided by WG4 participants**

An Open Access publication writing was also decided, possibly as a whole Context Action and limited to WG4 topic, to be freely included in the open access portal (www.mdpi.com/).

- **Short term roadmap**

It was decided to carry on the joint proposal about textile recycling technologies, for functionalised composites realised by waste recycling, and about the investigation of advanced functionalities (re-considering the use of Titan Dioxide) and extending the PVDF use to piezoelectric structures application.

Next WG4 meeting was presented, to take place in Brixen (Italy) on the occasion of CONTESS2020 conference (www.eurotextileacademy.com/en/contess-2020-3).

A possible training school about textile technologies for Context members and students for the summer 2020 was proposed (possible location: Italy).

The submission of an abstract for a presentation at Autex conference (June 2020 Portugal) will be done.

The Context final conference proceedings publication was also proposed to all Context members.