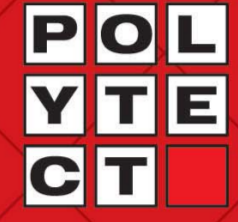


**A strong and multidisciplinary partnership**  
 D'Appolonia S.p.A. (Italy) • Sächsisches Textilforschungsinstitut e.V (STFI) (Germany) • APC Composit AB (Sweden) • Karl Mayer MALIMO Textilmaschinenfabrik GmbH (Germany) • Seicom S.r.l. (Italy) • Universität Karlsruhe (TH), Institute of Reinforced Concrete Structures and Building Materials (IMB) (Germany) • Light Structures AS (Norway) • Universität Kassel, Institute of Geotechnics (Germany) • Institute of Mechanics of Materials and Geotechnics S.A. (Greece) • Consorzio CETMA Centro di Progettazione, Design e Tecnologie dei Materiali (Italy) • S.C. Iridex Group Constructii s.r.l. (Romania) • Wetenschappelijk en technisch centrum voor de Belgische Textielnijverheid (CENTEXBEL) (Belgium) • Centre for Colloidal and Surface Research (CSRI) (Italy) • SL-Spezialmaschinenbau Limbach GmbH & Co.KG (Germany) • Alpe Adria Textil s.r.l. (Italy) • eXtreme Materials S.r.l. (Italy) • BG Polymers (Israel) • Safibra, s.r.o. (Czech Republic) • iKnowHow Informatics S.A. (Greece) • SMARTEC SA (Switzerland) • Interlab Ingeniería Electrónica y de Control S.A. (Spain) • Polystal Composites GmbH (Germany) • TexClubTec (Italy) • Universidad Complutense de Madrid, Chemical Optosensors Group-Laboratory of Applied Photochemistry (Spain) • Federal Institute for Materials Research and Testing, Non-Destructive Testing Department, Fibre Optic Sensors Group (Germany) • Gloetzl Baumesstechnik GmbH (Germany) • Indian Institute of Technology Madras (India)



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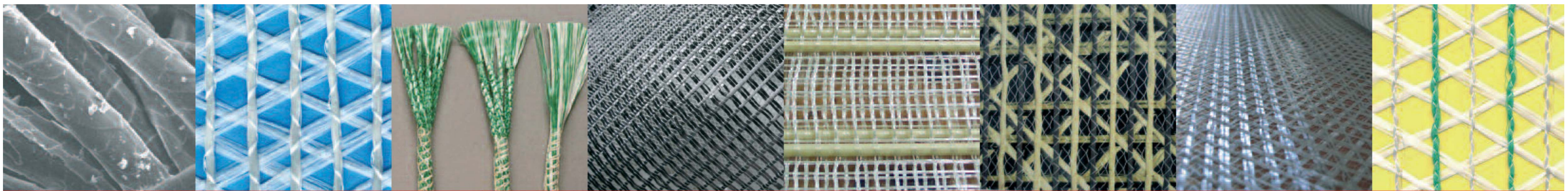
**POLYTECT**  
 Integrated Project for SMEs



**Polyfunctional technical textiles against natural hazards**



Project financed by the European Commission within the Area "Multi-functional technical textiles for construction, medical applications and protective clothing" within the Sixth Framework Programme



**The building and construction sector is one of the main markets for technical textiles. In this sector, the application of technical textiles, which comprise architectural fabrics and geotextiles, is expected to grow significantly between 2006 and 2010. However to achieve such goal, it is fundamental for the textile industry to innovate in its products and to start cross-sectorial and multidisciplinary research projects at European level bringing together the highest level of scientific excellence and the necessary industrial capacities for a rapid exploitation of the research results.**

**The POLYTECT Project**

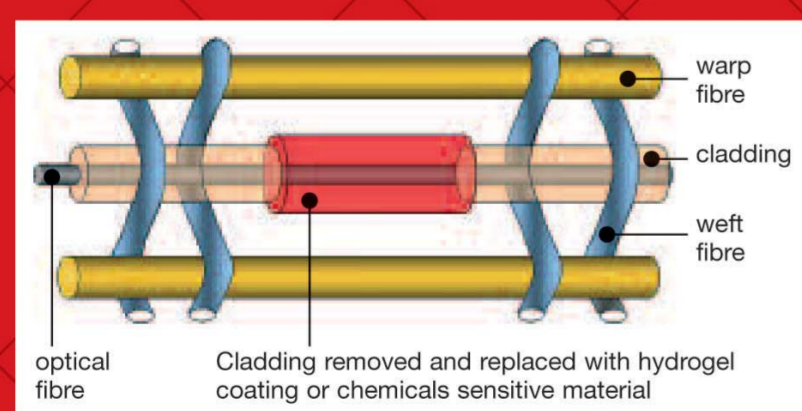
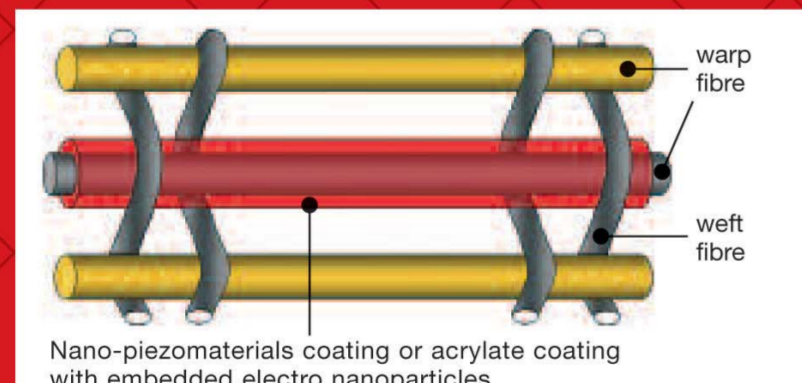
The broader aim of POLYTECT is the development of new multifunctional textiles for application in the construction sector for the retrofitting of masonry structures and earthworks. The functions available comprise a combination of the following:

1. structural strengthening
2. increase of ductility
3. deformations monitoring
4. stresses monitoring
5. monitoring of structural integrity
6. monitoring of accelerations
7. monitoring of water level variation
8. monitoring of pore pressure
9. detection of fluids and chemicals
10. structural health assessment

**The enabling Technologies**

Enabling technologies include:

- the combination of warp-knitted grid-like basic structure and rope-like reinforcement made out of high-ductile and high-strength fibre material
- the incorporation of optical fibres into textiles as sensors and for signal transmission
- the incorporation of sensors in textiles by coating the fibres with nanocrystalline piezoceramic materials or by encapsulation of nano electric particles

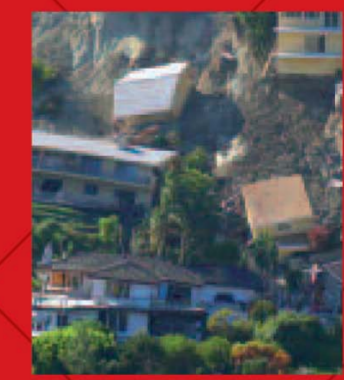


**Breakthroughs**

- The use of textile material as load-bearing part of the building, resulting into a better shear and bearing behaviour of the structure and its after-break-behaviour, preventing total collapse
- The use of multifunctional textiles for the stabilisation and the monitoring of earthworks, preventing landslides after heavy rainfalls or during earthquakes
- The use of nanostructured materials to tailor the interface properties among reinforcement fibres, resin and substrate, as well as to develop new mortar and adhesive systems

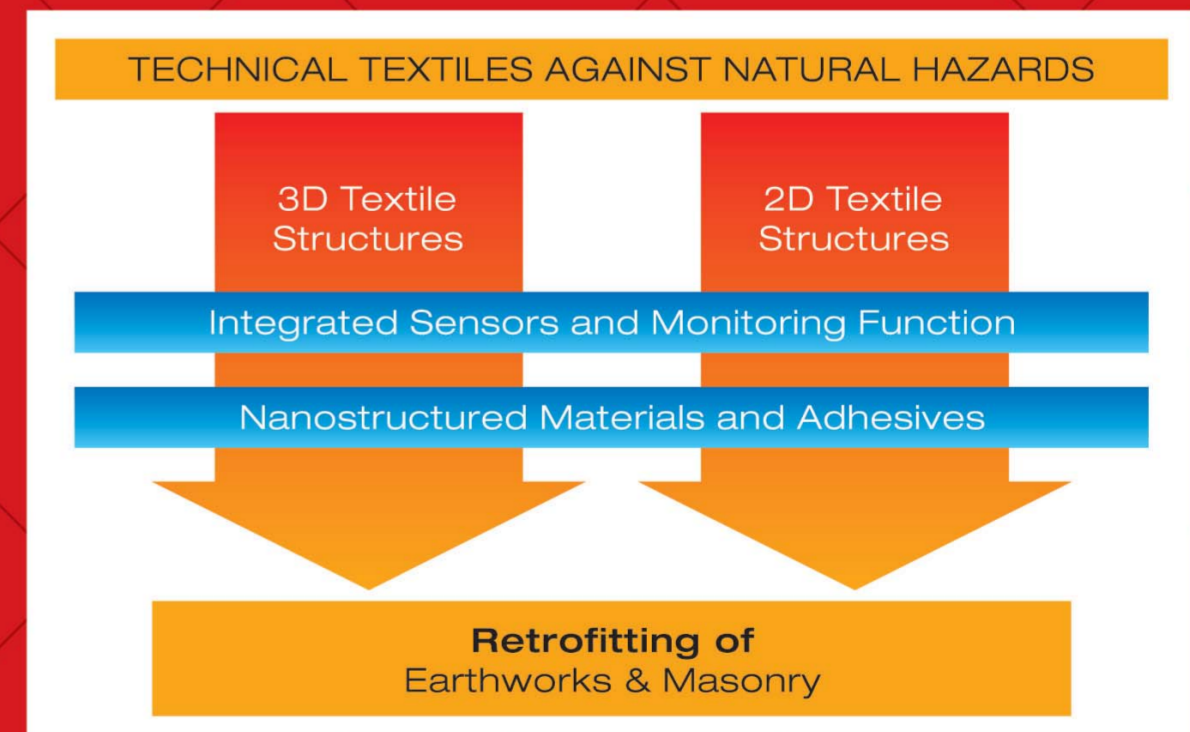


- The incorporation of sensors based on the use of nanocrystalline piezoceramics and optical fibres into the textile reinforcement for the structural monitoring of the reinforcement work
- Integrated development of health monitoring techniques for a very quick condition monitoring of a structure in a post-earthquake analysis and for the assessment of the condition after reinforcement with the proposed techniques



**A truly Cross-Sectorial and Multidisciplinary project**

POLYTECT will follow an integrated and multidisciplinary approach which asks for the close interaction among research, innovation, demonstration and training activities. A critical mass of strictly complementary activities is created by researchers and practitioners from the textile and construction sectors.



**ALPEADRIA  
 TEXTIL**