

Project #7 MITIGATING THE RISK OF FIRE **SMOKE & FUMES**



Improved material solutions to mitigate fire, smokes and fumes

Geopolymers (GP) – inorganic aluminosilicate polymers

- Low temperature processing
- Very high temperature stability
- Significantly improved FST behavior
- Very good residual integrity of GP fibre composites after fire exposure
- Investigated GP composite systems:

carbon fabric

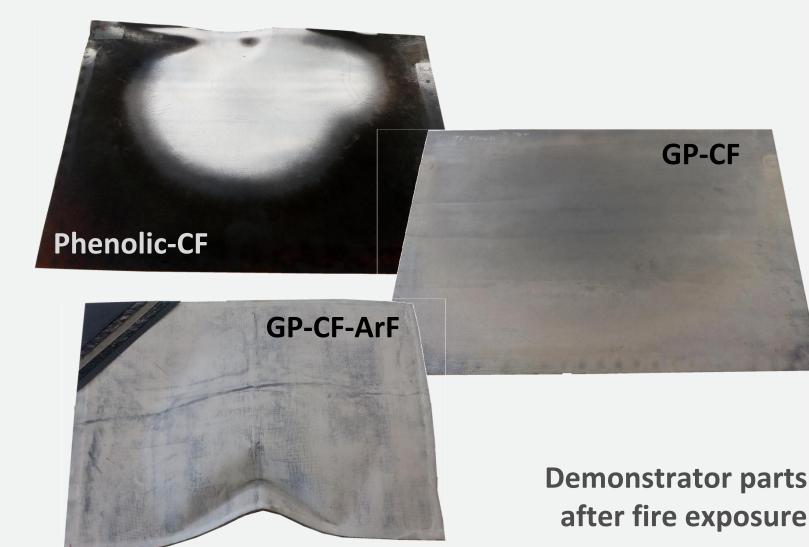
recycled carbon fibres

Layup of GP panel

demonstrator - natural fibres

and recycled carbon fibres applied

flax fabric



- Monolithic & sandwich structures incl. GP-foam
- Carbon fibre reinforcements, recycled carbon fibres (rCF)
- Natural fibre reinforcements (flax fibres)
- Hybrid GP/phenol composite systems

after fire exposure



Fibre Metal laminates (FML) – CFRP laminates reinforced by metal layers

HRR

CO_{8min}

Ds_{max}

- Steel layers do not melt and act as gas barrier
- Trapped decomposition act as thermal insulation (pillow effect)
- Significantly improved FST behavior
- Prolonged mechanical performance within a fire scenario,



generated by intact back side layers



60%

Modelling - Numerical models of flame penetration and of FML thermal behavior have been validated through tests performed to characterize the material and validate the design.



FUTURE SKY SAFETY PROGRAMME

has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 640597. www.futuresky-safety.eu

PARTNERS INVOLVED



Phenolic-CF

Improved FST behavior of

common phenolic laminates

Common al

GP-CF-ArF

GP-CF







