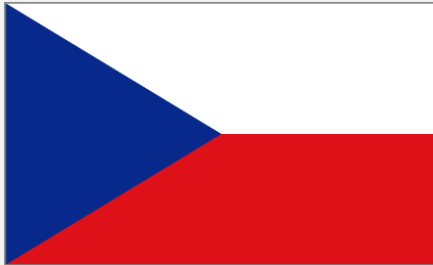


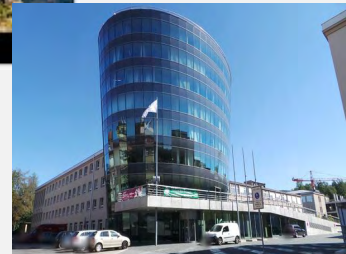


TECHNICAL UNIVERSITY OF LIBEREC

www.tul.cz



Saint Quentin 1100Km





TECHNICAL UNIVERSITY OF LIBEREC
www.tul.cz

Geopolymer foams for passive fire protection of the steel structural and acoustic absorption

Su LE VAN, Iva DUFKOVÁ, Lukáš VOLESKÝ, Vladimír
KOVAČIČ, Totka BAKALOVÁ, Hiep LE CHI, Petr LOUDA

CONTENTS

- Introduction
- Physical properties
- High temperature applications of GP
- Conclusion

INTRODUCTION

Geopolymer foams for passive fire protection of the steel structural



Fig.1 Fire in new Delhi hotel



Fig.2 Grenfell Tower

PHYSICAL PROPERTIES

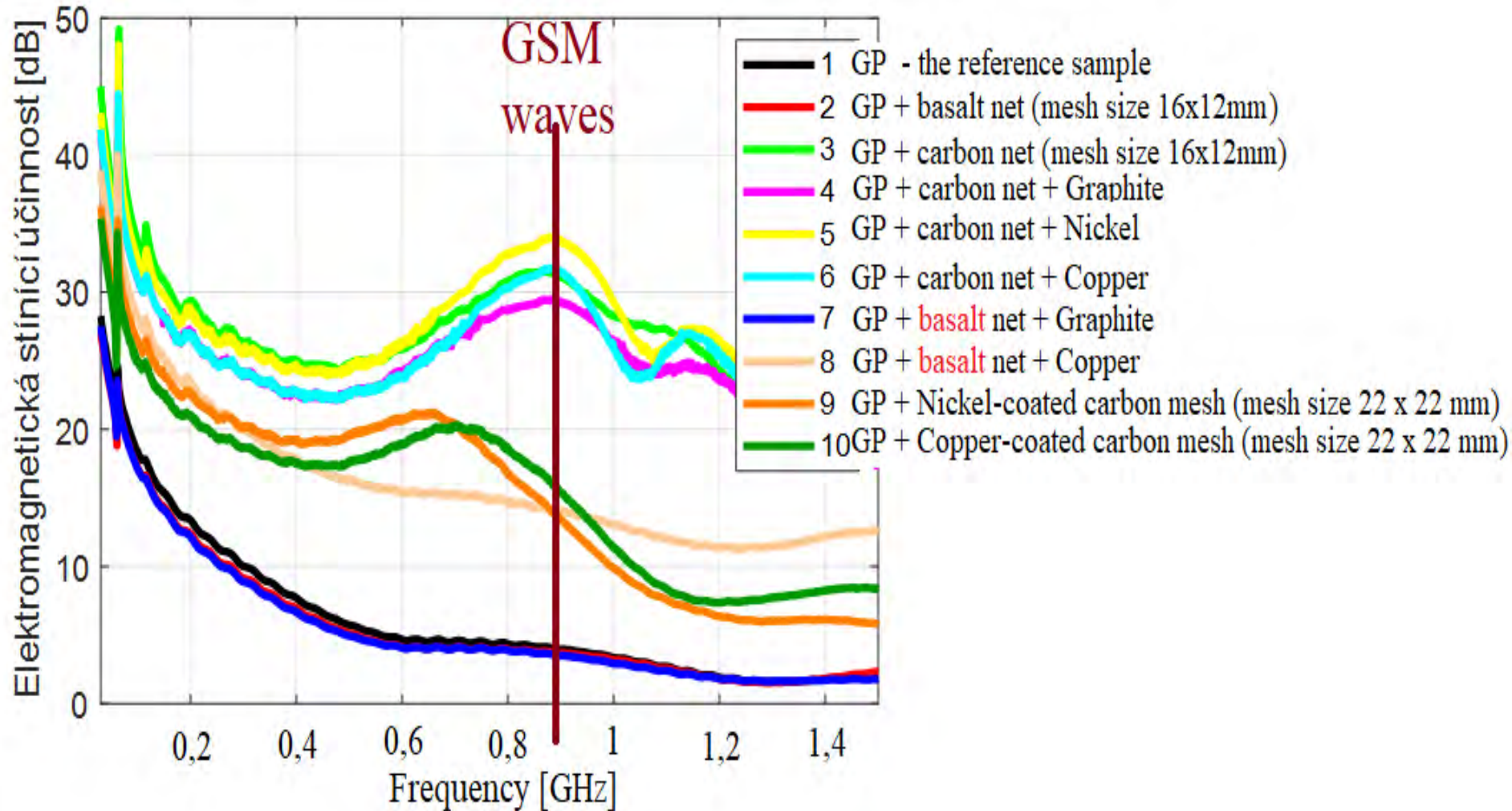
Further research on our laboratory wants to focus on the following property of geopolymers

Acoustic attenuation

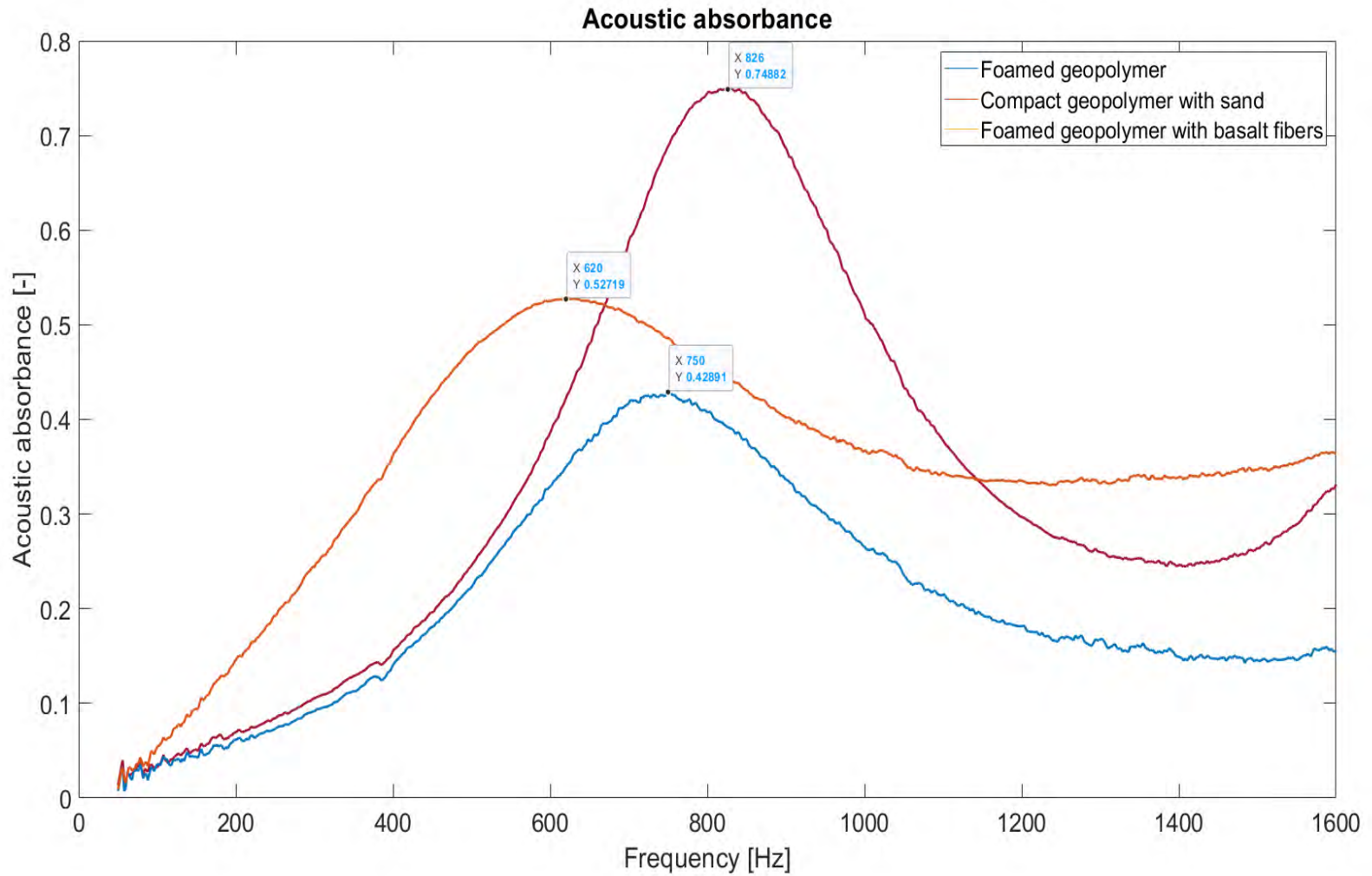
Electromagnetic properties

Thermal conductivity

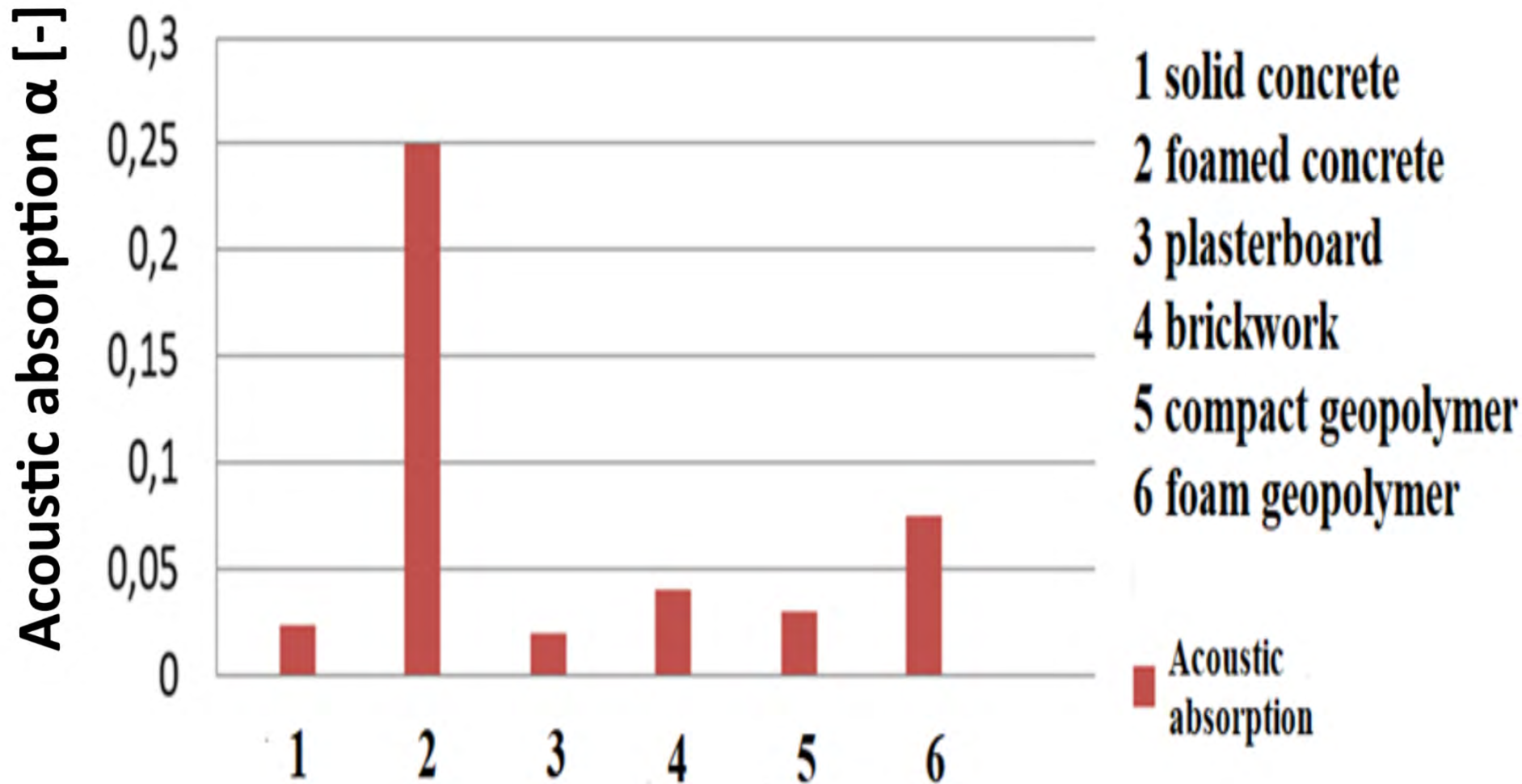
Electromagnetic shielding at a frequency



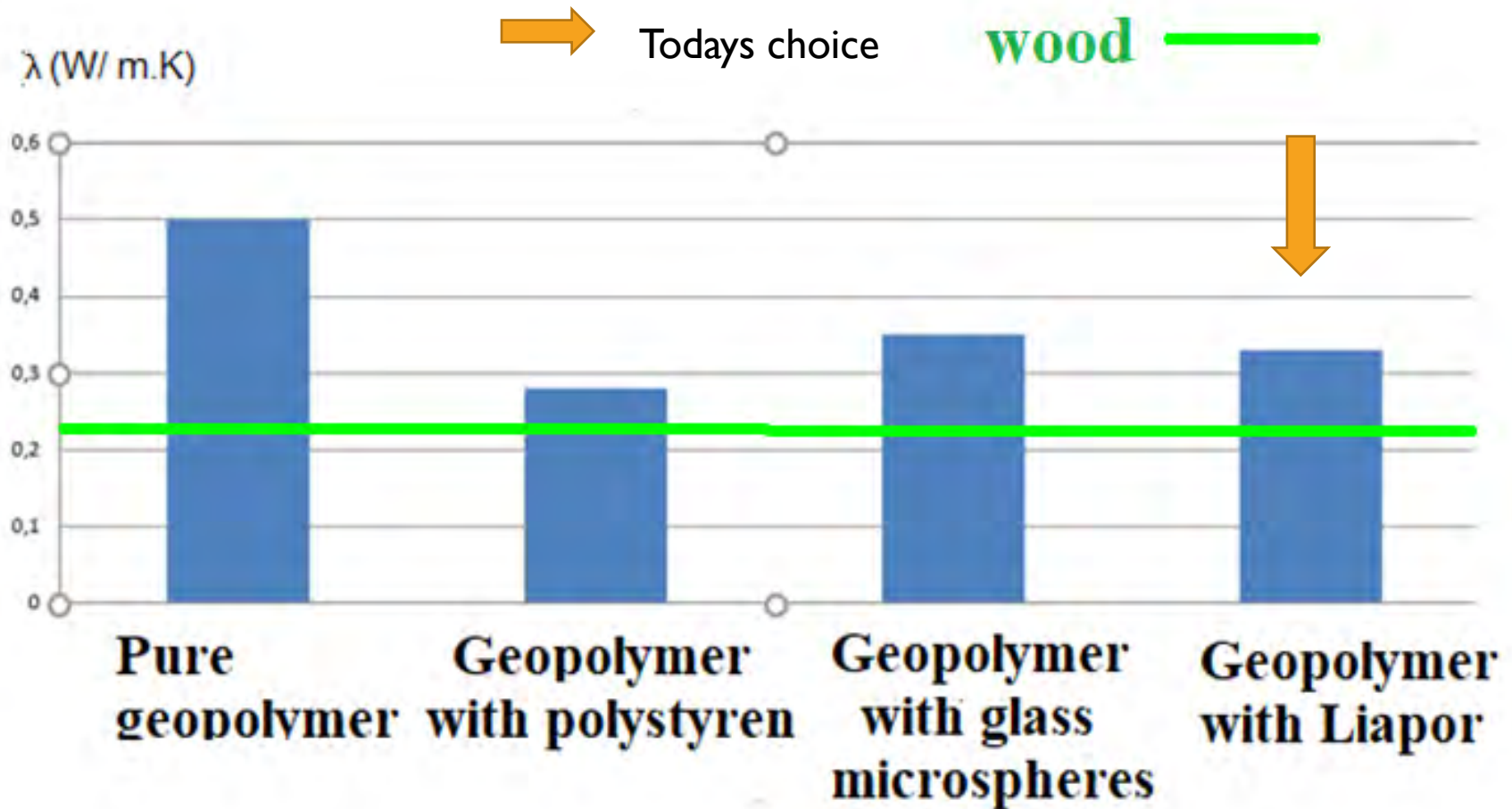
Acoustic absorbance α [-]



Acoustic absorption α [-] at 1000 Hz



Comparing the thermal conductivity λ (W/ m.K) of geopolymer materials with 30% of individual fillers



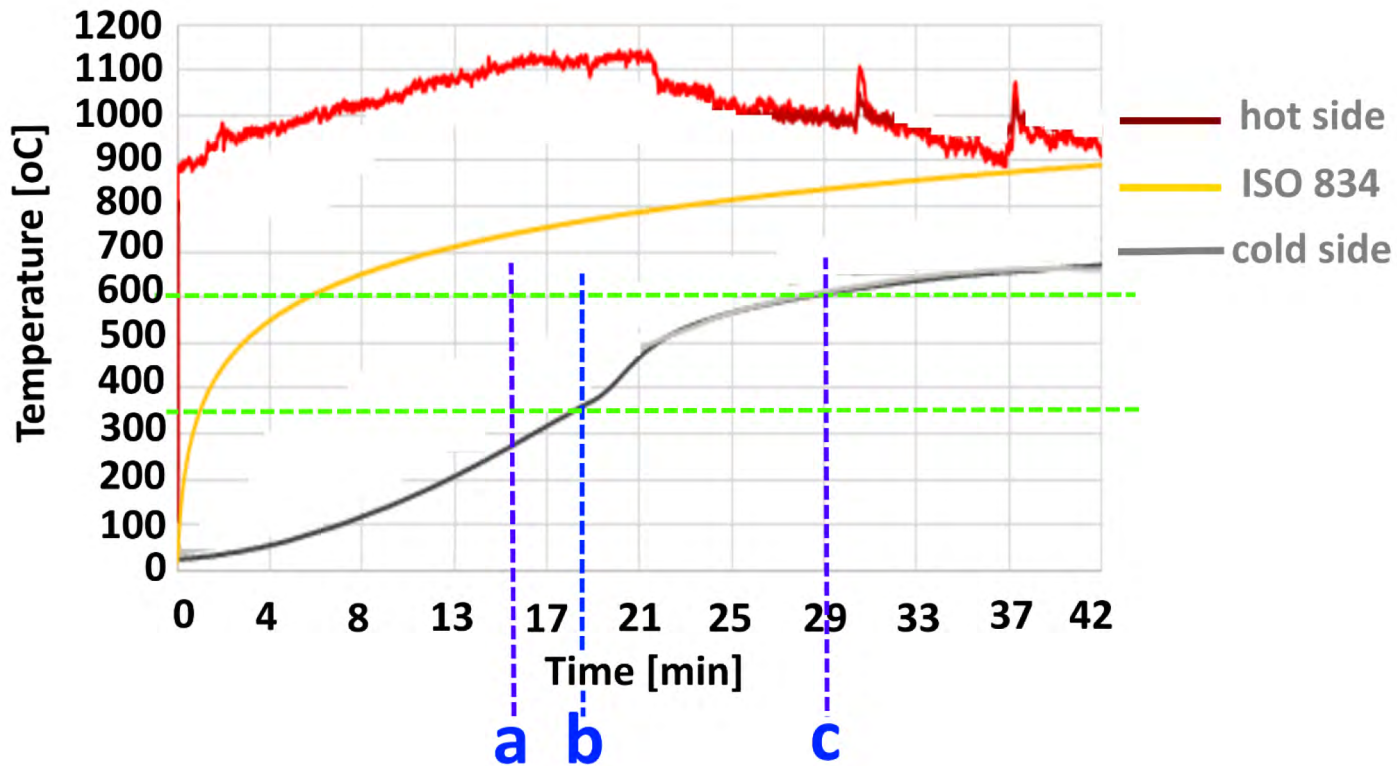
APPLICATION

Why is using geopolymer for spraying on the surface steel?





PHOTOGRAPHS OF THE SAMPLE ARRANGEMENT FOR FIRE-RESISTANCE TEST



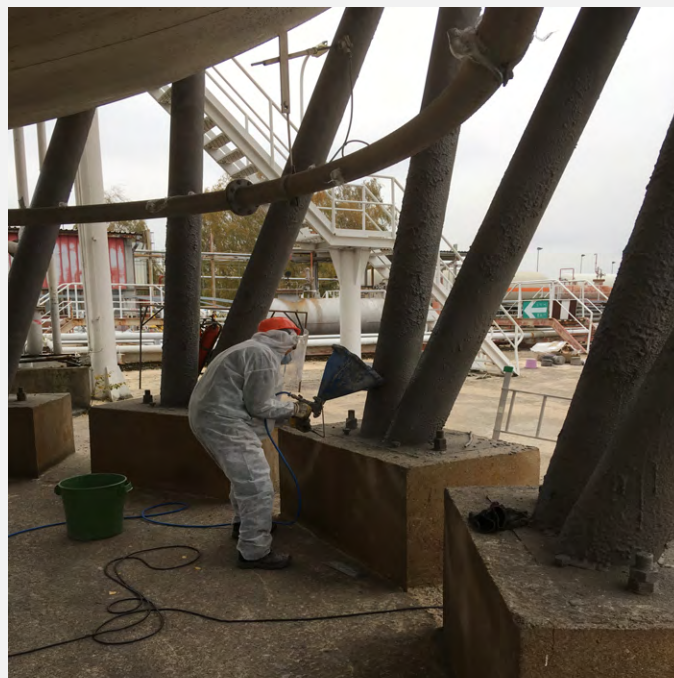
a = 15 min. = Firemen

b = 19 min. = Real temperature of degradation of carbon steel

c = 29 min. = Normalized temperature of degradation of carbon steel

GEOPOLYMER FOAMS SPRAYED ONTO THE SURFACE OF THE COLUMNS GAS RESERVOAR VOLUME 500M³

November 2018



CONCLUSION

Due to their physical properties, geopolymers are excellent candidates for the use in fire protection. They exhibit promising physical properties such as heat resistance, fire resistance and also acoustic or electromagnetic shielding etc. Therefore, they can be widely used in many industrial applications.

REFERENCE

- <https://www.newsinlevels.com/wp-content/uploads/2019/02/090120-F-1975M-003-300x150.jpg>
- <https://tn.nova.cz/clanek/policie-v-grenfell-tower-uhorelo-jeste-vic-lidi-jasno-nebude-dlouho.html>
- https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcSciWbSUJubxgqWpLBWF_dNF065YhukSEDM7BIWpfFpsx4Ec7IM
- <https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcTImxLqv0FEIvah4wr-WrX9bzs29V3Aol3zp49AFd05VSu6eavnaw>
- <http://www.cestipanovnici.estranky.cz/img/picture/221/cesky-lev.jpg>
- <https://stavba.tzb-info.cz/akustika-staveb/228-konstrukce-na-pohlcovani-zvuku>



THANK YOU FOR YOUR ATTENTION