

IF MORTAR - Experimental and numerical analysis of interface mortar-support (POCI-01-0145-FEDER-032223, PTDC/ECI-EGC/32223/2017, 2018-2022)



Partners: ITECONS (Institute for Research and Technological Development for Construction, Energy, Environment and Sustainability) and IST (CERIS and CERENA research units)

CERIS Principal Investigator (Co-PI): **I. Flores-Colen** (20%)

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Other Research Team members: M. F. Pereira (CERENA/IST), A. Maurício (CERENA/IST), I. Torres (ITECONS), D. Silveira (ITECONS), G. Matias (ITECONS)

Funding: FCT and FEDER-POCI

Total budget: 220.834€ CERIS: 66.475€

Period: 01/10/2018-31/03/2022

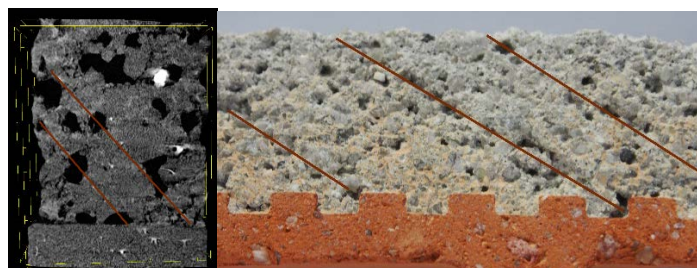
<https://itecons.uc.pt/services/projects/84>

Summary description: the project intends to analyse the influence of the characteristics of several substrates on the properties of various mortars so that when choosing the type of mortar coating to be applied we can estimate what will be its real behaviour when applied on the support.

CERIS participation: microscopic and microstructural observations of the interface during the curing period of the mortar will be carried out. After the application of the mortars to the supports, the samples will be removed and analyse microscopically what is happening at the interface. The same procedure will be carried out for the hardened mortars in the moulds in order to have a better comparison and understanding of the hardening phenomenon in the moulds and in-situ. Micro-CT, XRD and SEM will be used to help the characterization (task 4).

Output: the project intends to deliver: i) the study of several mortars (either produced in-situ or pre-dosed ones), types of supports (considering the most used supports in the country) and performance tests; ii) detailed study of the interface mortar-support to obtain mathematical expressions that allow, from the experimental results, to estimate these same parameters for the mortars after application on the substrates.

Illustrations:



On the left: Micro-CT section; on the right: cross section of applied mortar on brick substrates

Indicators: 4 articles published; 8 papers in international conferences; 4 papers in national conferences; two ongoing PhD Thesis - Rafael Travincas and Poliana Bellei (with FCT scholarship); scholarship; 5 MSc dissertations; 2 research reports.

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1. Travincas, R.; Flores-Colen, I.; Pereira, M. F.; Mauricio, A.: “Interface analysis - experimental program 1” (in Portuguese). CERIS DTC 44/2019 report, Task 4, October 2019, IST.
2. Travincas, R.; Flores-Colen, I.; Pereira, M. F.; Mauricio, A.: “Microstructural analysis of mortar applied to different substrates - experimental program 2” (in Portuguese). CERIS DTC 34/2020 report, Task 4, October 2020, IST.