



PROTECTION OF CULTURAL HERITAGE OBJECTS WITH MULTIFUNCTIONAL ADVANCED MATERIALS



*RICHES Policy Seminar
Brussels, Monday 19 October, 2015
Prof. Dr Jonjaua Ranogajec, project coordinator*

HEROMAT PROJECT

Protection of cultural heritage objects with multifunctional advanced materials

- FP7 theme [ENV-NMP.2011.3.2.1-1 NMP], Project reference: 282992
- Project type: COLLABORATIVE PROJECT - Small or medium scale focused project
- Duration: 48 months, Start date: 2011-12-01, End date: 2015-11-30
- EU contribution: 2.59 mn EUR, Total budget: 3.47 mn EUR



Fortress Bač, Serbia

- stones, mortars, renders, bricks



Dornava Manor, Slovenia

- stones, mortars, renders, bricks, concrete

THE MAIN AIM WAS TO DEVELOP:

- **innovative and environmental friendly materials** that have chemical and mechanical properties tailored with respect to the **protection of immovable cultural heritage assets**.
- innovative protective materials: **self-cleaning coatings, anti-microbial coatings and consolidants**.

THE IDEA

Sampling of the materials from the two selected historical sites

Preparation of model substrates

Simulation of degradation process and characterization

Development of protective and consolidative materials

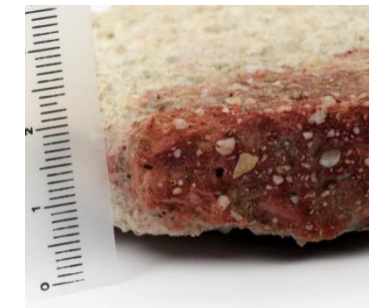
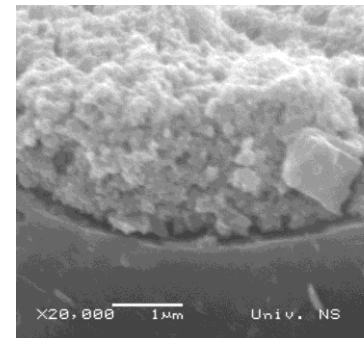
Testing newly developed materials prior to their application onto selected historical sites

In situ application of the newly developed materials



COATING

CONSOLIDANT



PILOT PRODUCTION AND APPLICATION OF THE DEVELOPED MATERIALS

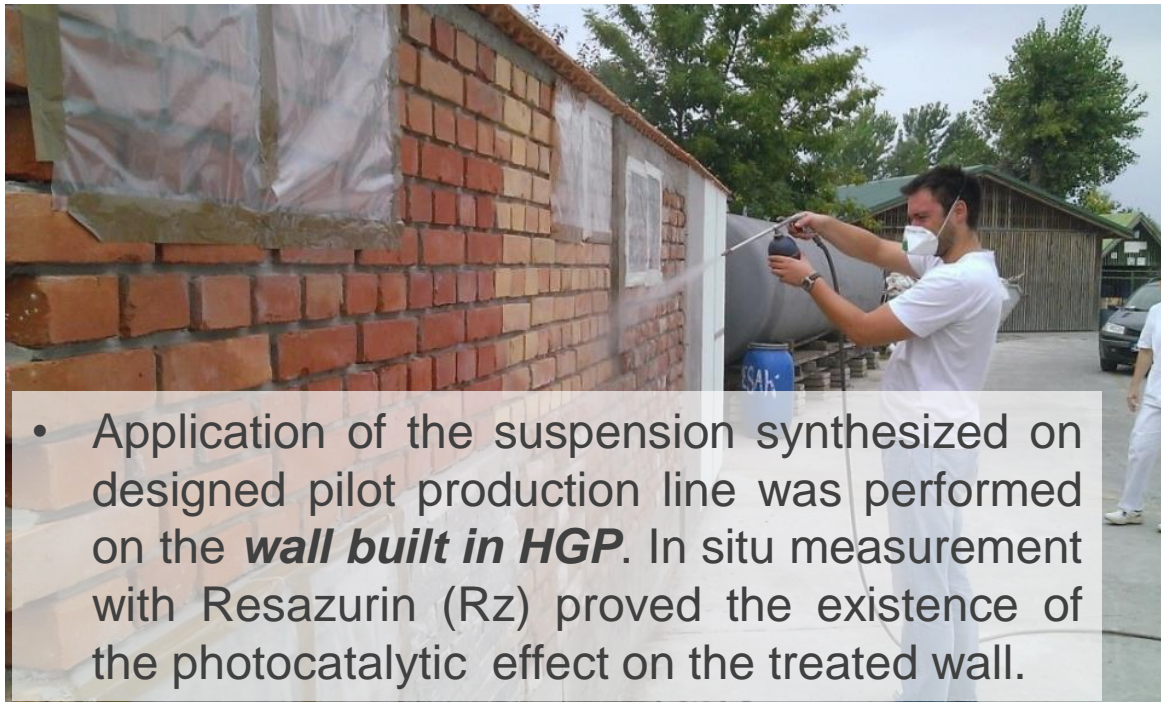
Synthesis unit



Stabilization unit



FINAL PRODUCT



- Application of the suspension synthesized on designed pilot production line was performed on the **wall built in HGP**. In situ measurement with Resazurin (Rz) proved the existence of the photocatalytic effect on the treated wall.





**PETROVARADIN
FORTRESS,
Serbia**



**BAC FORTRESS,
Serbia**



**CHURCH ST. VINCENTA,
Croatia**



**DORNAVA MANOR,
Slovenia**

DIRECT & INDIRECT OUTCOMES

- Development of **new multifunctional materials**: synthesis and characterization
- **NEW EQUIPMENT**
(mobile laboratory, non-destructive techniques)
- Setting up **PILOT PRODUCTION**
- **In situ application** of newly developed materials

Education programs and international students exchange

- New master course
Materials in cultural heritage protection
- Summer schools of Architecture



DISSEMINATION - A NEW “SKIN” FOR OLD STONES

