

*We are a specialized research team dedicated to the non-destructive testing (NDT) and characterization of building materials. We assess structural integrity and material properties without destructive intervention. The team is led by the President of the Czech Society for Non-Destructive Testing, underscoring our active role in the professional NDT community and commitment to established diagnostic standards.*

### TARGETED HORIZON EUROPE CALL — NEW EUROPEAN BAUHAUS (REGENERATIVE)

| Open Horizon Europe Call                                                                                                                | Call ID                      | Role    |
|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------------|---------|
| Combining traditional and innovative building materials, products and practices for sustainable and aesthetically pleasing construction | HORIZON-NEB-2027-01-REGEN-01 | Partner |

### INSTITUTION PROFILE

Our strategic objective is to deliver rigorous, non-destructive diagnostics that certify the structural integrity, safety and reuse potential of building materials and components, enabling the safe and reliable integration of innovative materials (e.g., 3D printed concrete) with traditional construction practices.

### EXPERIENCE & SCALE

- Ongoing bilateral cooperation and mobility partnerships with leading European institutions, incl. **Technical University of Braunschweig**, **ESTP Paris**, and **West Pomeranian University of Technology** (Szczecin).
- Proven scientific track record on the relationship between **fracture mechanics** and **acoustic responses** of advanced cementitious composites, including flaws such as cold joints in 3D printed concrete.
- Selected project: **GA19-04703S** — Use of non-destructive methods for testing the condition of degraded alkali-activated concrete.

### TOPICS OF INTEREST — WHAT WE OFFER

| Controlled Degradation Monitoring                                                                                                      | Structural Integrity Guarantee                                                                 | Data for Decision-Making                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Utilizing Acoustic Emission (AE) during mechanical loading to detect micro-crack initiation and monitor damage evolution in real-time. | Acoustic Resonance and Ultrasound methods for precise defect assessment in building materials. | Exact experimental and physical baseline data (custom Python/Excel frameworks) for certifying structural capacity and safety of reused elements. |

*Comprehensive NDT diagnostics evaluating the structural compatibility and long-term safety of combined traditional and innovative building materials.*

### ORGANISATIONAL CAPABILITIES

- State-of-the-art diagnostic laboratory for both laboratory and in-situ measurements.
- Acoustic Emission systems: **2× DAKEL XEDO**, **DAKEL ZEDO** (multi-channel advanced monitoring).
- Advanced signal acquisition: **TiePie Handyscope** for precise waveform capture.
- **Acoustic Resonance**, **Impact-Echo** and advanced **Ultrasound** equipment.
- Universal testing machines for combined mechanical loading with simultaneous NDT monitoring.



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