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REHABEND 2024

Euro-American Congress

CONSTRUCTION
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TECHNOLOGY AND
HERITAGE MANAGEMENT

Gijón (Spain) - May 7th - 10th, 2024

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REHABEND 2024

**CONSTRUCTION PATHOLOGY, REHABILITATION TECHNOLOGY AND
HERITAGE MANAGEMENT**

(10th REHABEND Congress)

Gijón (Spain), May 7th-10th, 2024

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**10TH EURO-AMERICAN CONGRESS ON CONSTRUCTION PATHOLOGY,
REHABILITATION TECHNOLOGY AND HERITAGE MANAGEMENT
REHABEND 2024**

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The **Euro-American Congress REHABEND 2024 on Construction Pathology, Rehabilitation Technology and Heritage Management** was held in **Gijón (Spain)**, in **May 2024**. The event was co-chaired by the **University of Cantabria** and the **University of Oviedo**.

REHABEND 2024 **continued the series of the nine previous REHABEND international events**, which had been held **since 2006 in different Spanish cities**. The previous one, in **2022**, took place in **Granada, Spain**. In 2022 edition, approximately **280 papers** from around **30 countries** were presented, making it a conference of great interest to those who attended.

Construction Pathology, Rehabilitation Technology and Heritage Management currently hold significant importance in the construction sector. This prompted the organizers to propose a **technical event on these topics in Gijón**. The event aimed to collect the **advances obtained in the last two years** in the **theoretical knowledge** and **practical realizations** carried out on the referred topics. The Congress met around **275 technical contributions** coming from professionals, academics and specialists from more than **30 countries**.

Based on previous experiences, the Congress **was once again proposed within the Euro-American cultural space**. The **official languages** were **English, Italian, Portuguese and Spanish**. Organizers understand that technical articles and oral presentations, with the support of graphic material and schemes, would be understood by participants, as evidenced by previous editions of REHABEND.

Under these premises and the success of previous editions, the Congress was sponsored by the **Government of Spain, the Regional Government of Asturias, the Municipality of Gijón, Laboral Ciudad de la Cultura, Gijón Convention Bureau, Grupo Puma, Mapei, Sika, Tecnalía, the University of Cantabria and the University of Oviedo**. Additionally, several universities, technical and professional associations, institutes, foundations and companies pledged their collaboration to ensure the success of this initiative.

The organizers of REHABEND 2024 extend their gratitude to the **sponsors and collaborating entities**; the **Scientific Committee members** for their diligent review of technical contributions to ensure the required level of quality for an international event, to the **keynote speakers**, to the different **speakers** for their valuable contributions, and **all attendees** for their confidence in the event. Sincerely, many thanks to all.



Dr. Ignacio Lombillo

Chairman of the REHABEND 2024 Congress
Associate Professor
University of Cantabria



Dr. Alfonso Lozano

Chairman of the REHABEND 2024 Congress
Associate Professor
University of Oviedo

The University of Cantabria, through its Building Technology R&D Group (GTED-UC), was the promoter of the REHABEND Congresses on Construction Pathology, Rehabilitation Technology and Heritage Management.

The 1st REHABEND Congress was set in motion in Santander, Spain, in November 2006. It became established in the 2nd (Santander, 2007), 3rd (Valencia, 2008), 4th (Bilbao, 2009), 5th (Santander, 2014), 6th (Burgos, 2016) and 7th Congress (Caceres, 2018), all of them carried out in Spanish cities. The 2020 edition was to be held in person in Granada in March 2020, but due to the global health emergency resulting from Covid-19, it had to be held online in September 2020. The 9th edition (REHABEND 2022) took place in Granada, featuring a hybrid format combining in-person presentations with other asynchronous online sessions.

The ability to convene of the nine performed editions was prominent, gathering an appreciable number of experts in the topics of the Congress. As a reference, in REHABEND 2022 Congress took part approximately 280 speakers from around 30 countries worldwide.

The covers and ISBN of some the books of papers corresponding to the previous congresses are attached below. The ISSN of the series of REHABEND books is 2386-8198. In addition, since REHABEND 2014, the papers presented at the congress have been indexed in Scopus.



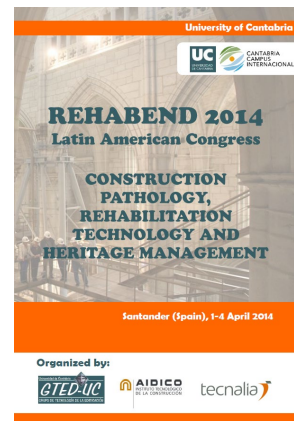
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The Collaborating Entities have been presented grouped in countries, following an alphabetical order. As Collaborating Entities have been considered to all that have contributed at least with two accepted articles in the Congress, or that some of its members formed part of the International Scientific Committee of the Congress / keynote speakers. Finally, in each country, the Collaborating Entities have been ordered according to the number of accepted articles.

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<p style="text-align: center;">1.- PREVIOUS STUDIES</p>	<p>1.1.- Multidisciplinary studies (historical, archaeological, etc.).</p> <p>1.2.- Heritage and territory.</p> <p>1.3.- Urban regeneration.</p> <p>1.4.- Economical and financial policies.</p> <p>1.5.- Social participation processes and socio-cultural aspects in rehabilitation projects.</p> <p>1.6.- Construction pathology.</p> <p>1.7.- Diagnostic techniques and structural assessment.</p> <p>1.8.- Vulnerability studies and risk management.</p> <p>1.9.- Guides and regulations.</p>
<p style="text-align: center;">2.- PROJECT</p>	<p>2.1.- Theoretical criteria of the intervention project.</p> <p>2.2.- Traditional materials and construction methods.</p> <p>2.3.- Novelty products applicable and new technologies.</p> <p>2.4.- Sustainable design and energy efficiency.</p>
<p style="text-align: center;">3.- BUILDING INTERVENTION</p>	<p>3.1.- Intervention plans.</p> <p>3.2.- Rehabilitation and durability.</p> <p>3.3.- Reinforcement technologies.</p> <p>3.4.- Restoration of artworks.</p> <p>3.5.- Conservation of industrial heritage.</p> <p>3.6.- Examples of intervention.</p>
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CODE 146**DIATOMACEOUS EARTH AS A PARTIAL REPLACEMENT FOR PORTLAND CEMENT IN MORTARS - A REVIEW****Magalhães, Leandro^{1*}; Ramos Gavilán, Ana²; Ferreira, Débora³; Merelles, Samira⁴**

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e-mail: samira.merelles@gmail.com; web: <https://www.uefs.br>**KEYWORDS:** Sustainability; Alternative binders; Diatomaceous earth; Cement mortars.**ABSTRACT**

Over the last years, the increase in CO₂ emissions into the atmosphere, its impact on climate change, and issues related to the sustainability and environmental impacts generated by the participation of the construction industry in global warming, have led to countless researches, several of them looking to modernize cement production with alternative binders. The most known alternative binders used nowadays in the construction industry are slag obtained in blast furnaces, metakaolin and fly ashes obtained from burning coal in thermoelectric power stations. In the present paper, due to diatomaceous earth's pozzolanic properties, is researched the possibility of the use of diatomaceous earth as an alternative binder. This work shows a review of studies about introduction of raw and calcined diatomaceous earth in cement mortars, and the feasibility of using this material as a binder in cement mortars.

The different studies present that the introduction of different percentages of diatomaceous earth in mortars influences the physical and mechanical characteristics of the manufactured mortars. The tests performed in mortars with introduction of calcined diatomaceous earth show that the mechanical strength improves when compared to mortars manufactured with raw diatomaceous earth. The results of the compressive and flexural strength in mortars with introduction of calcined diatomaceous earth present lower values during the first 28 days, when compared with mortars without diatomaceous earth, however, there is a significant increase in the values of mechanical resistance, surpassing the values of mechanical resistance of mortars without diatomaceous earth at the end of 90 days. The water absorption by immersion tests also reveal that the increased introduction of diatomaceous earth increases the water absorption of the mortars.