Newsletter
Green Casting LIFE on the 4th Journal of Thermal Analysis and Calorimetry Conference & 10th V4 (Joint Czech-Hungarian-Polish-Slovak Thermoanalytical Conference) 24–27 June 2025, Budapest, Hungary

The 4th Journal of Thermal Analysis and Calorimetry Conference & 10th V4 (Joint Czech-Hungarian-Polish-Slovak Thermoanalytical Conference) took place on 24–27 June 2025 in Budapest, Hungary, https://akcongress.com/jtacc/

This conference is one of the most important events in the field of modern thermal analysis. It is the most important event in the in the field of modern thermal analysis, providing a platform for the exchange of knowledge and experience of specialists from around the world, representatives of industry and research centers.

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During the fourth day of the 4th Journal of Thermal Analysis and Calorimetry Conference & 10th V4, **Angelika Kmita, prof. AGH**, presented a paper entitled **"Inorganic binders as a way for sustainability iron castng producton "** A. Kmita, R. Dańko, M. Holtzer, J. Dańko, R. Gruszka, M. Skrzyński, S. Tapola, related to the reduction of industrial emissions. The presented results are the effect of the implementation of the European project “Green Casting Life” LIFE21-ENV-FI-101074439 https://www.azterlan.es/en/kh/greencasting-life

Dr hab. eng. Angelika Kmita, prof. AGH, Academic Centre for Materials and nanotechnology (ACMiN AGH).

We encourage you to read the **Book of Abstracts** at the hyperlink below:
https://akcongress.com/jtacc/

Inorganic binders – as a way for sustainability iron casting productuon

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The metal foundry industry in the European Union is a major employer, employing over 290,000 people. In addition, the importance of foundries to other industries is equally significant, as they provide a wide range of cast components for sectors such as automotive, shipbuilding, construction, defence and many others. For many years, in the technology of castings made in disposable sand molds, natural binders, resins and organic additives were used, which do not meet the currently applicable environmental requirements. For this reason, in line with the development of green technologies, efforts are being made to mitigate the negative impact of foundries on the environment, with particular attention to air quality [1]. This article presents research carried out within the new GREEN CASTING LIFE project (LIFE21 ENV/FI/101074439) [2], which is a continuation of the already completed GREEN FOUNDRY LIFE project (LIFE17 ENV/FI/000173) [3].The work carried out in the GREEN CASTING LIFE project will implement and validate at industrial level the use of inorganic binder systems for the production of molds in steel and iron foundries (achieving TRL8). This will have a very relevant environmental impact on the amount of harmful volatile and gaseous compounds emitted, on the indoor air quality for workers and on the waste generated by castings. The new knowledge gained will enrich the database needed to update the Best Available Techniques Reference Document for the foundry industry (SF BREF). The aim of the research is to demonstrate the potential benefits of using sustainable materials such as inorganic binders in European iron foundries in terms of improving the environment and working conditions through the introduction of cleaner and more ecological production methods and new innovative inorganic binders, and at the same time to provide a ranking of the binders tested in terms of their content of harmful substances. The article is the first to analyse seven novel, innovative inorganic binders and one organic binder (for comparison) in terms of the comprehensive emissions of gases from the BTEX group (benzene, toluene, ethylbenzene and xylenes) and PAHs (polycyclic aromatic hydrocarbons), as well as other compounds such as phenol, formaldehyde and isocyanates (MDI and TDI) and dusts (PM 2.5 and PM 10) generated during the process of pouring liquid metal into the mold [4, 5].

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