

From Tradition to Technology: Alker (Gypsum-Reinforced Adobe) Implementation and Sustainability Potential in Cyprus



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Abstract

This study describes the use of adobe as a local building material in Cyprus, located in the Eastern Mediterranean climate zone, for centuries, highlighting its low energy requirements and bioclimatic performance. In this context, adobe structures are considered not only as physical shelter solutions but also as spatial reflections of social organization, production relations, and cultural identity. This article examines how traditional materials are integrated with modern design approaches through an example constructed with "Alker (gypsum adobe)," a technologically advanced adobe system.

In this context, the Alker trial was carried out by the Cengo Foundation on the scale of a kiosk structure located within the 'Püsküllü Children's Park' in the Girne region of Cyprus. This application constitutes the basic example of the study, facilitating the transfer of experience to evaluate the practical applicability and performance of the Alker system.

Material selection and performance, determination of mixing ratios, construction techniques, application details, workmanship processes, and encountered technical challenges are addressed with a holistic approach. The technological adobe construction application carried out by the Cengo Foundation presents an innovative example. The project was realized in collaboration with the KTMMOB Chamber of Architects, the Cyprus EVKAF Foundation, and the Cengo Foundation. This multi-stakeholder structure adds institutional value to the study and highlights the importance of interdisciplinary collaboration.

This project demonstrates that technological adobe applications hold significant potential for preserving and repurposing Cyprus's local architectural heritage. Furthermore, it shows that innovative systems like Alker are highly compliant with current sustainability criteria such as low carbon emissions, local resource utilization, and energy-efficient building production. Consequently, this project argues that integrating traditional building knowledge with contemporary technologies plays a critical role in both ensuring cultural continuity and supporting environmental sustainability; and suggests that this approach, developed specifically for Cyprus, offers a viable model applicable not only in Cyprus but also in similar geographies.

Keywords: Adobe, Alker, Northern Cyprus, sustainable living, sustainable architecture, cultural heritage, traditional materials, foundation, foundation culture, interdisciplinary collaboration.