March 5th 2026, EUROGIA Program Budapest, PO Day

BIM Integrated Project Aimed to Reduce Carbon Emissions and Increasing Resilience Within The Framework of Exterior Facade and Interior Air Quality for Healthy Living Spaces in Housing Projects

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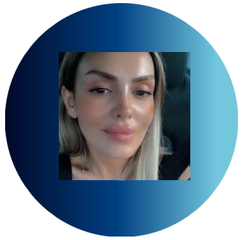

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OUR PROJECT; WHAT WE HAVE DONE AND WHAT WE PLAN TO DO:

When we started developing this project in 2023, our goal was to create a project that could address climate change and reduce carbon emissions in residences. Specifically, we developed a project that includes software to reduce carbon emissions in residences, improve outdoor air quality, and find solutions to climate change, and we started the project with the support of TÜBİTAK (TÜBİTAK; Turkish Scientific, Technological Research and Development Institution).

Within the scope of the project, we first collected data on construction materials and entered this data into the software we developed to make comparisons. We created the software called ROR 360 (Residences Oxygen Release) and the National Materials Database. Subsequently, we started making calculations and comparisons to reduce carbon emissions and increase energy efficiency in residences using the data we obtained from this software. We integrated REVIT into ROR 360 and started modeling. Thus, we produced a prototype that reduces carbon emissions in residences by 10% and has higher energy efficiency. Currently, our project is ready for commercialization, and two invoices have been issued.

We are here today because we primarily want to take our project to an international level and ensure its commercialization. We aim to achieve this by using current technologies and artificial intelligence to make data comparisons more effective, further developing the national database, enriching it with an international database, and taking it to a more advanced level. At the same time, we want to integrate APIs into ROR 360 that will improve indoor air quality in residences, reduce carbon emissions to 0%, and enable the production of more durable houses through static calculations, thus achieving end-to-end BIM integration. In this way, we want to realize a technological and innovative project that can benefit a wide range of sectors such as Architecture, Urban Planning, Engineering, Construction and Real Estate, and Urban Transformation.

ABOUT OUR PROJECT

The presented project aims to address the carbon emission amounts that will result from architectural design, material selection, building shell design, electrical-mechanical system design, construction and housing operation during the life cycle of houses with a holistic method. In this regard, it is aimed to develop solutions that will reduce carbon emissions and increase energy efficiency in residences. Within the scope of the project, it is envisaged to design not only the building shell but also the indoor air quality in healthy conditions, and to ensure end-to-end BIM integration by adopting durable architecture and static project principles.

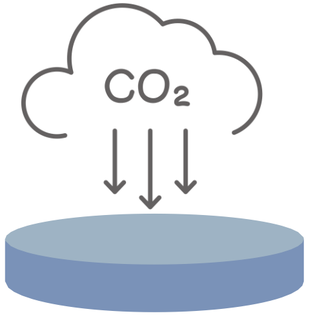
As a result, a prototype house with low carbon emissions and high energy efficiency will be developed, and ROR360, our commercial software that serves this purpose, will be able to work in integration with Revit, Design Builder and related static project programs. Thanks to the integrated BIM system in the housing production and use process, sustainable and optimized design and application solutions will be implemented.

Project Outputs

1

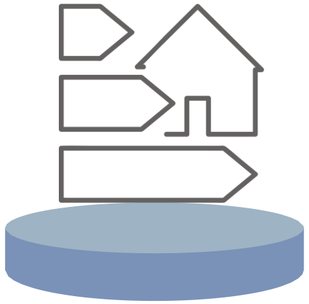
SOFTWARE
USER SERVICE

2



REDUCTION OF
CARBON EMISSIONS
COMPARED TO THE
CURRENT PROTOTYPE

3



BASED ON CURRENT
PROTOTYPE
ENERGY EFFICIENCY
INCREASING

4

NATIONAL MATERIAL
DATA
OF THE BASE
DEVELOPMENT

5

INTEGRATION OF
ARTIFICIAL
INTELLIGENCE INTO
SOFTWARE

6

END-TO-END BIM
INTEGRATION

Business Plan

01

MATERIAL ANALYSIS, IMPROVEMENT OF R&D PROCESS AND RENEWAL OF COOPERATION PROCESS WITH MATERIAL MANUFACTURERS

02

END-TO-END DEVELOPMENT OF THE SOFTWARE PROCESS AND STARTING PREPARATIONS

03

COMPLETION OF REQUIRED STUDIES AND INTEGRATIONS FOR DURABILITY WITH ROR360

04

COMPLETION OF NECESSARY STUDIES AND INTEGRATIONS FOR HEALTHY INDOOR QUALITY DESIGN WITH ROR360/

05

DEVELOPMENT OF A PROTOTYPE WITH LOW CARBON EMISSIONS, HIGH ENERGY EFFICIENCY, DURABLE AND HEALTHY INTERIOR QUALITY

06

PRESENTATION OF ROR360'S NEW DEVELOPMENTS AND OUTPUTS TO THE CUSTOMER

Companies That We Provide National Data

Ongoing Collaboration Processes

AUTODESK.
REVIT

THE WORLD BANK

European Bank
for Reconstruction and Development

Our Sponsors

Microsoft
Azure

Thanks For Listening

Dr. Haldun ERSEN