Cairo West Residence,
AlDau Development
Egypt

Agenda

1. Who we are?
2. Our cooperation with the BUILD_ME team
3. Outlook – new projects in the pipeline

Introduction
ALDAU

Who Are We?

Introduction of ALDAU

Our cooperation with the BUILD_ME team

Cairo West Residence

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Cairo West Residence

Location

Lies on Cairo-Alexandria Desert Road in close proximity to the Grand Egyptian Museum (GEM) and Giza Pyramids. The project is also adjacent to the Sphinx International Airport (SIA) and many of the newly developed urban areas of west Cairo.

Aims

Creating a place that provides residents with the high levels of comfort based on smart tech solutions facilitated by an advanced internet network for smoother living and entertainment conditions. Target ing Upper middle class housing for families in Greater Cairo.

Function

A diverse range of residential units in multi-family buildings and one boutique hotel. The project will also comprise of several carefully designed services and facilities.

Size

Total compound area is 45,000 sqm including 14 Multi-family houses and one Boutique Hotel.

BUILD_ME will focus on one MFH (Villa 4) of 3000 sqm.

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Boundary Conditions | Building

Building Data

Status

A prototype of a multi-family house that will be constructed 14 times in the project of Cairo West Residence.

Specific Challenge

The building will not be operated by the project developers and the concerns of most of the end-user focus on prices of the housing unit not EE measures.

Building Key Information	
Data	Input
Latitude	30.020710
Longitude	31.073575
Elevation [m]	120
Utilization	MFH
Number of floors	5
Number of apartment	45
Conditioned floor area [m²]	3,000
Clear room height [m]	2.8
Conditioned volume [m³]	8,400
Number of inhabitants [#]	150
Year of construction	2020-2023

Comparison: BAU and Current Planning

As the global cost of the BAU construction of such a building will be 157 euro/m².

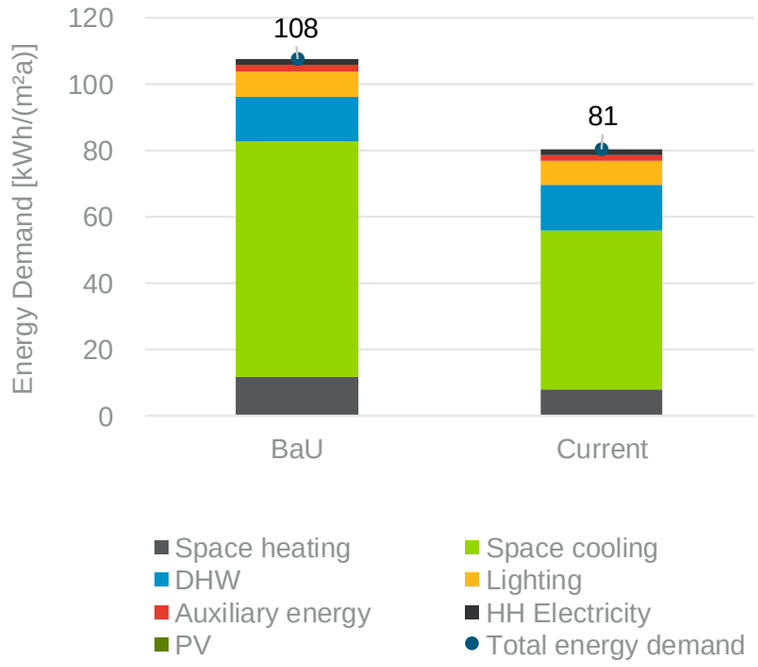
The proposed design cost will be 125 euro/m².

While the proposed design is more energy efficient in comparison to the BAU cases, there is still room for further energy related improvements.

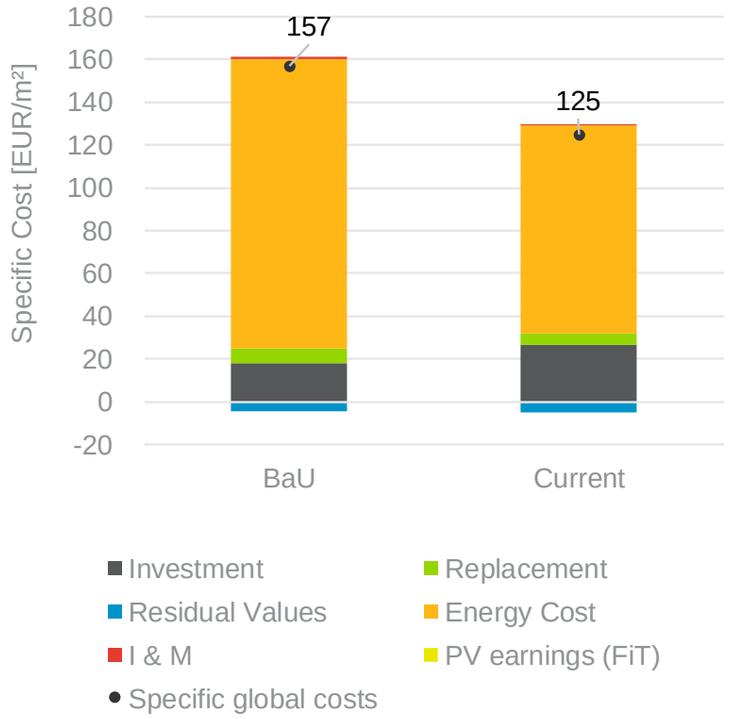
Energy savings: 25%

Global cost savings: 20%

Final Energy Demand



Global Cost



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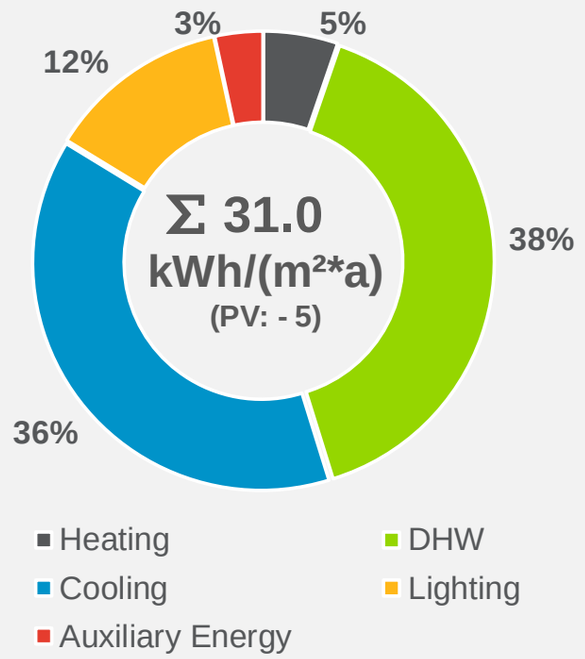
Selected Solution

Results

After the exchange with the project developer, the following components have been assessed as feasible and will be taken into account in the further planning:

- Improvement of the building envelope
- Solar Glazing
- Higher efficient VRF system
- PV on the roof

Parameters	Optimized Building
Roof insulation (U-Value)	**0.40 W/m²K**
Wall insulation (U-Value)	**0.50 W/m²K**
Floor insulation (U-Value)	2.2 W/m²K
Windows (U-Value; G-Value)	2.8 W/m²K**; 0.3**
Window fraction	Ø 37%
Shading	**Solar Glazing**
Air tightness	0.25 1/h
Heat supply	VRF - **COP 3.2**
Cold supply	VRF - **COP 3.2**
Hot water	Gas instantaneous
Ventilation systems	Natural ventilation
Lighting systems	**LED**
Renewable energy	**12 kWp (PV)**
Set temperature cooling/heating	**26°C / 20°C**



Energy Cost
1.4 EUR/(m²a) I 26 EGY/(m²a)

CO2 - Emission
0.7 kg / (m²*a)

Comparative Overview

Current vs. Optimized

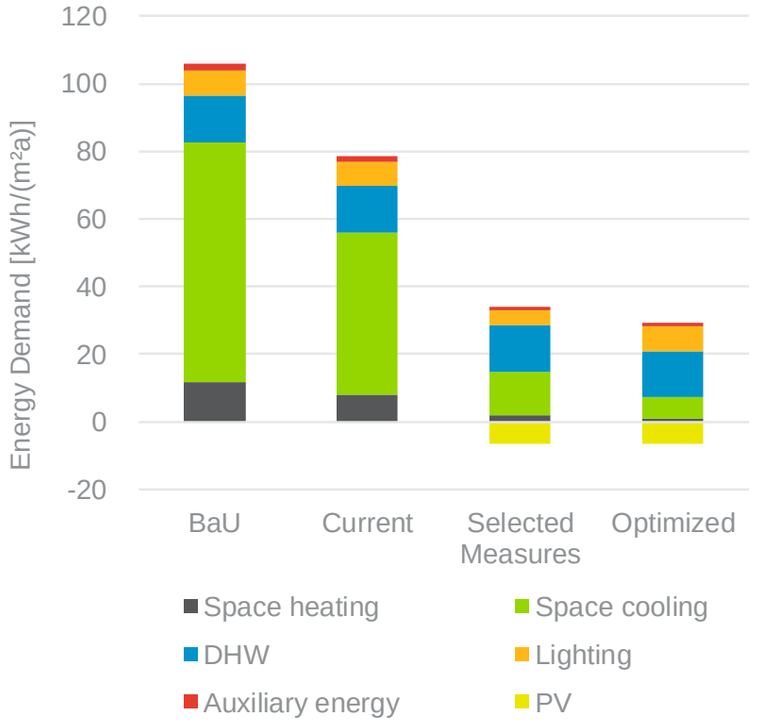
Conclusion

- The suggested measures of the selected package and the optimized lead to a **significant decrease in energy demand and cost savings.**

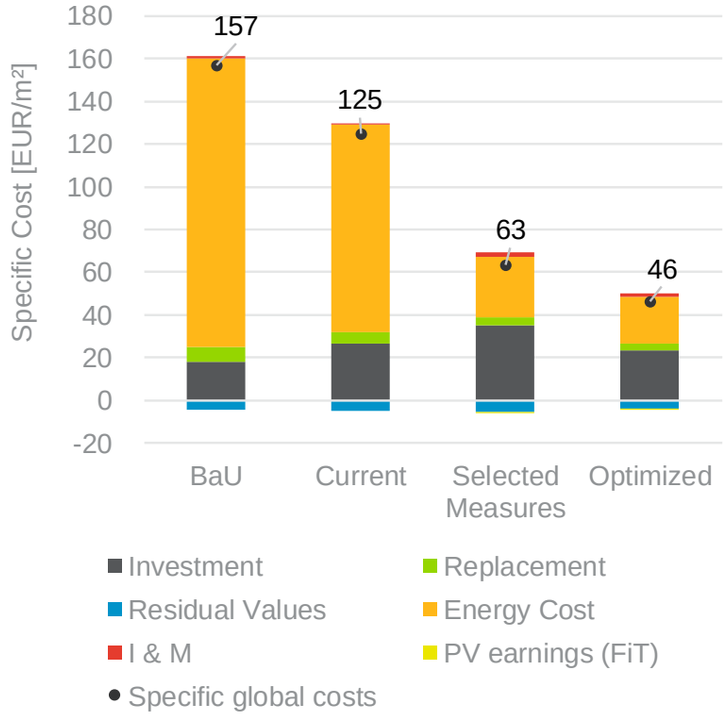
Savings compared to BaU

Variants	Energy	Costs
Selected	66%	60%
Optimized	72%	71%

Final Energy Demand



Global Cost



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Other Projects and Outlook

Other Ongoing Projects

Hyatt Centric Cairo West Hotel

Hyatt Centric Cairo West

Location

Lies on Cairo-Alexandria Desert Road in close proximity to the Grand Egyptian Museum (GEM) and Giza Pyramids. The project is also adjacent to the Sphinx International Airport (SIA) and many of the newly developed urban areas of west Cairo.

Aims

Converting existing office buildings at pyramids heights office park into 5-star trendy, modern, eco- friendly Hotel that promotes sustainability to complement Egypt's 2030 vision of creating Egypt Touristic Capital close to Great Pyramids of Giza and Great Egyptian Museum.

Function

250 keys of modern, trendy, life style hotel inspired by great Cairo cultural blend, the Hotel offers a huge entertainment area with F&B and fine dining outlets and +1000 sqm pools and water features, and Roof top all day dining and Indoor /Outdoor GYM.

Size

Total Land area is 27,000 sqm including two building.

Total Footprint is around 5300 sqm. And Total BUA is 30000 sqm, 3 main buildings between 3-5 floors and misc. buildings of basement and ground floors

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Boundary Conditions | Building

Building Data

Status

A prototype of a Hospitality that will be constructed at Pyramids Heights, Giza Egypt

Specific Challenge

The building high construction cost

Building Key Information	
Data	Input
Latitude	30.010589
Longitude	31.043917
Elevation [m]	110
Utilization	Hospitality
Number of floors	5
Number of Units / Keys	250
Conditioned floor area [m²]	25000
Clear room height [m]	2.8
Conditioned volume [m³]	70,000
Number of inhabitants [#]	500
Year of construction	2022-2024

Sustainability Approach

Key parameters

Solar Water Heating Panels

2,400 gallons LP fuel saving per month

Green roofs

87% reduction of heat gain

37% reduction of heat loss

Solar Panels

150 Watt produced from 1m² surface

Motion Sensors

LED lighting throughout

Steam Boilers

40.1 cross calorific value for ligth oil with 87% efficiency

Greywater System

Covering 100% of Irrigation (70 m³ / day)

Condensate Capture

3-4 Liters of water directed to STP

Low Flow Toilets

Up to 20,000 gallons of water saved

Daylight

Big reflective double-glazed windows with sun screens

Induction Cookers

100% efficient, compared to 40% gas

Contact

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New Projects in the Pipeline

Grand Hyatt - Great Egyptian Museum

Back Up Slides

Optimized Solution

Results

The key components of the energy concept are illustrated in this table, it shows that the building envelope is significantly enhanced compared to the business as usual and current plan.

Special attention is given to the use of renewable energy sources in terms of PV (for electricity).

This leads to energy savings and emission reduction.

Parameters	Optimized Building
Roof insulation (U-Value)	**0.4 W/m²K**
Wall insulation (U-Value)	**0.38 W/m²K**
Floor insulation (U-Value)	2.2 W/m²K
Windows (U-Value; G-Value)	2.8 W/m²K**; 0.3**
Window fraction	**Ø 15%**
Shading	**Solar Glazing**
Air tightness	0.25 1/h
Heat supply	VRF - **COP 5**
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Lighting systems	CFL
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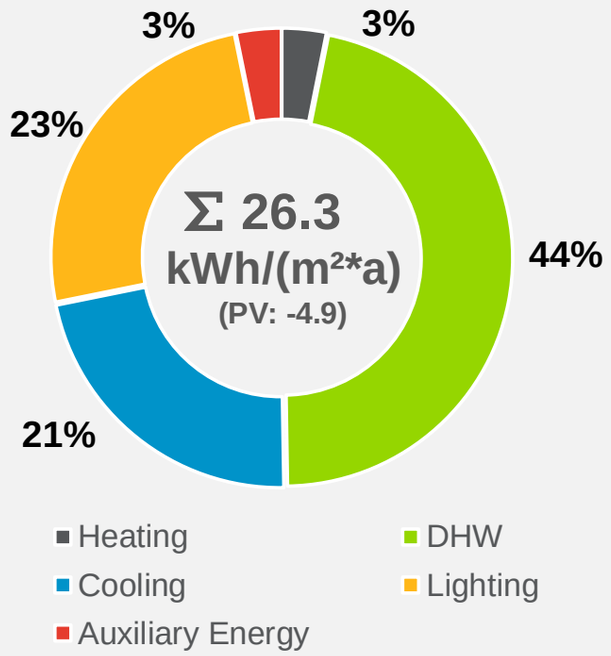

Energy Cost
1.1 EUR/(m²a) | 20 EGP/(m²a)

CO2 - Emission
0.6 kg / (m²*a)

Key Conclusion

Main Take Aways for Cairo West Residence Project

1

- Energy savings in the range of 60 -70% are possible

2

- The selected package is also attractive in economic terms with a payback below 5 years

3

- Additional costs per appartement of 1,000 € / 17,000 EGP looks appealing for a low energy building