Passive House Design in Crete.

Exceptional Architecture and Ultimate Energy Efficiency

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Everything You Need to Know About Passive House Design in Crete, Greece.

Living in a Passive House means living in a space with the highest standards of energy efficiency, comfort, health and wellbeing. Opposing from other sustainable building approaches, Passive House is a performance-based standard that directly and precisely addresses the problem of energy use.



Passive House Design in Crete. Photo by Alexander Andrews on Unsplash

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ARENCOS understands the critical impact that structures and buildings have on climate change and carbon emissions. Never has there been a time where it has been more important to adopt dedicated strategies to mitigate the effects of climate change, adapt the way that we've been doing things, and prioritize a zeroemission, resourceful and resilient building stock in Crete, Greece.

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Passive House Design in Crete and Construction Excellence.

At ARENCOS, we believe that modern architecture is living in comfort without compromising the natural environment or depleting the natural resources available. Our sustainably designed and energy efficient focused homes minimise negative environmental impacts whilst ensuring and maximising comfort and wellbeing.

Constructed with precision and by integrating the latest technology with locally sourced and time-tested natural materials, our eco-friendly properties draw inspiration from the Cretan nature with a delicate yet modern aesthetic, elegance and practicality.

As architects, thinkers and designers, we are always pushing the bounds of current innovation to build a more sustainable tomorrow in Crete, Greece.

What Exactly is a Passive House?

A Passive House is a building design standard that integrates sustainable development principles and value engineering schemes for better performance from every angle – to manage moisture, thermal transfer, air, and sunlight for exceptionally comfortable, healthy, and super-efficient buildings.

It is an energy–efficient **comfortable**, **reasonable** and **ecological construction concept** that is efficient with resources, appropriate to its context, affordable to build and operate, and truly delightful to inhabit.

The "classic five" Passive House design principles—continuous insulation, free-thermal bridge design, airtight structure, energy-efficient and high-performance windows and doors, and filtered fresh air with heat and cooling recovery—are joined by the principles of sustainable architecture and biophilic design.

Discover our Biophilic Design Guides, Info & Articles.

The Road to Affordable Energy Autonomous Housing in Crete.

People, Structures and Technology: Our Net Zero Building Design Vision.

Off-Grid Property Construction. A Dedicated Guide.

Eco-friendly Buildings

Everything we do is grounded in our purpose to design, build and manage sustainable, eco-friendly and of exceptional quality properties. We strive to make our mark in leaving Crete a better place for future generations by designing, planning and constructing eco-friendly and sustainable residential and commercial buildings.

Through a rigorous site assessment and by integrating engineering with Big Data, our design response is unique – inspired by local insights, financial, environmental and spatial constraints as well as the social and historical distinctions each project presents.

This assures sustainable and aesthetic solutions with lasting value for clients,

inhabitants and society.

Learn More 🛛



Average House in Crete Energy Use



Typical Passive House Energy Use

Share of Total Energy by End-Use Comparison.

The pie charts illustrate comparisons between a conventional house in Crete, Greece and a passive house in terms of energy usage. We are assuming that 57% of the total energy consumed by a conventional building is used for heating and cooling.

If the building was a passive house, the total savings would equate to 47% of the total energy consumed by a conventional building. This equates to a 85% savings in space heating and cooling cost.

How is a Passive House in Crete Built?

Our Passive House approach empowers us to design spaces that matter. A Passive house is built like any other building. Despite the fact that, a passive house is constructed with almost the same materials, methodologies and standards as a non-passive house, it can dramatically slash heating and cooling energy use by as much as 80–90%.

Most of the Passive House design integrates value engineering and biophilic principles to establish an exceptional energy thermal isolation for the building and ensure a healthy, comfortable, and noiseless interior environments, full of clean, filtered fresh air.

Also, a passive house doesn't have to look like a spacecraft full of solar panels and off-grid equipment. The most significant parameters of passivity can be tailored to fit different styles of buildings from very modern villas to traditional detached houses and from city-centre apartments to historic apartment buildings.

3 Additional Factors of Passive House Cost to Consider.

1. Passive House = Investment in an asset: The "premium" for a passive house should be around 5–15%. That said, this added expense up front is really **an investment** made by the project owner and will generate a return on investment (ROI) in the form of energy savings, exceptional performance and reduced maintenance costs over the life of the building.



2. Reduced operating costs: Passive constructions can use up to 90% less energy than conventional constructions. Because of their attention on energy consumption mitigation and efficiency, passive buildings are ideal for zero energy building (ZEB) design. ZEBs use solar photovoltaics, heat pumps and small wind turbines to generate as much energy as they use. As a result, net energy costs for operation of Net Zero properties should be close to zero.

3. Supplies: Depending on how easy it is to source construction materials, equipment and supplies your Passive House cost will vary.

How Much Expensive is a Passive House Construction in Crete?

It's hard to give a quick answer to such a complex question. First, understand there are four key factors that affect building cost: (1) Complexity of the design – the more complicated the building design, the more expensive to build, (2) size – No surprise here, the bigger the house, the more it will cost, (3) location – a property near the seaside will cost more than a property located in a village near the White Mountains, and (4) quality of the structural and construction materials.

Generally, the larger the construction, the less its passive elements will impact the budget. A big detached villa will be approximately 10 % percent more expensive to achieve passive house standards. However, it could be much more affordable because of the continuous improvements in construction materials improvements.

Generally speaking, the number that's usually quoted is that it costs between €1300 to €2,000 per square meter of building in Crete. Given that an average three-bedroom villa in Crete measures around 200 square meters in all, you're looking at about €260,000 for the full, unfurnished build.

That doesn't include the cost of the land, the cost of extras like a swimming pool and landscape gardening, special off-grid equipment or taxes, which typically amount to around 15% of the total. Factoring them in gives a final ballpark figure of about €390,000 for a Passive House.

Let's reiterate – that's an estimation! There are so many variables to think about when it comes to calculating the cost of your new project in Crete that there's almost no such thing as an accurate ballpark figure. It's possible to bag land here for under €100.000, but there are also plots worth millions.

<u>The Road to Net Zero: Prioritizing Passive House Design in</u> <u>Crete.</u>

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natural environment or depleting the natural resources available. Our sustainably designed and energy efficient focused homes minimise negative environmental impacts whilst ensuring and maximising comfort and wellbeing.

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Reliable. Sustainable. Efficient. Exceptional.

Energy Efficient

We integrate high-performing building designs and bioclimatic architecture practices to offer climate-responsive and operationally efficient properties.

The final proposal is based on the adoption of suitable parameters for building orientation, structural profile, passive heating and cooling mechanisms, shading, and glazing to ensure a healthy indoor and outdoor living environment.

Carbon Neutral

PMDE

residential projects.

We have helped many clients realize their sustainability aspirations in residential and commercial buildings.

We strive to create carbon-neutral buildings and we know that this is only possible by synthesizing the latest design trends with locally sourced building materials and state-ofthe-art renewable energy applications toward carbon neutrality.

This framework is based on our **<u>Project Management &</u>**

Delivery Excellence Folder and it outlines the initiatives,

construction, obstacles and challenges faced by similar

methodologies that helped us overcome the difficulties, and

low-carbon solutions applied to the design, construction,

and operation of off-grid properties in Crete, Greece.

methods and strategies for carbon reduction in the

Moreover, it also includes the mechanisms and

Sustainable Building

At ARENCOS, we assist clients discover pragmatic solutions that match their own objectives toward building sustainability.

To make structures really sustainable, we design for better performance from every angle – this way we help our clients create properties that are practical, affordable to build and operate, pleasant to inhabit and exceptional to their context.

Comfort + Wellbeing

We want to create buildings that motivate and delight, and which are responsive to the owner's needs.

From detached houses to larger deluxe properties, we take pride in creating a competitive and innovative design attitude.

From concept to operation, our decisions and actions are intended to produce safe, inclusive, high-performance and sustainable properties.

Integrity + Dedication

At ARENCOS we constantly strive to redefine the standard of excellence in everything we design and manage. Therefore, we are open to ideas that challenge conventional views and drive innovation.

As a team, we are sharing our knowledge and lessons learned. We support and encourage innovation and we also set big goals and high expectations, but we are appreciative, grateful, and supportive of our successes.

Ingenuity — There are more ways to keep cool than turning on the air conditioning. From naturally cool materials to clever ways to harness wind and sunlight, we design buildings with total sustainability in mind ...





Passive House Design in Crete & Off-Grid Properties.

Building an off-grid house in Crete, Greece is a dream for many people. The ability to choose the exact layout, structural orientation, off-grid systems and finishes when you build an off-grid property is an exciting and rewarding process yet, daunting, complicated and stressful. Not everyone is well-matched to the amount of decision-making and risk tolerance or uncertainties involved.

We've simplified the building process for an off-grid house making it an easy, transparent and enjoyable journey where you know exactly what to expect.

read more about our process earrow

Our Team

ARENCOS is owned and managed by Maria Gkika, a senior civil engineer professional with two decades of experience in the construction sector. The firm consists of a dedicated team of engineers, architects,



Good for you & the Environment.

ARENCOS was founded on the principles of sustainable building design and total architecture that holistically support the well-being of inhabitants and long-term energy efficiency of the construction, to achieve a zero-carbon, equitable, resilient,

and healthy built environment.

Subsequently, we view design as a process of discovery. Dedicated design research and off-grid assessments, enable us to experiment, to improve — and to design smarter properties for our clients. That's particularly important as we strive to create a more resilient future.

With a background in civil engineering, ARENCOS founder and manager Maria Gkika had seen too many poorly planned properties built with little consideration for the environment and local character.

We design our properties to take advantage of the site and surrounding environment, make the most of energy efficiency, and utilize natural resources and sustainable materials.

See our off-grid project in Stavros, Chania earrow

Would you considering building your new home in Crete sustainably?

researchers and surveyors.

meet the team \square

Senior Civil Engineer, Maria Gkika is a Certified Passive House Designer (CPHD). She is one of a few professionals in Crete, Greece who have been accredited by the Passive House Institute (PHI) to design truly energy-efficient, comfortable and affordable spaces.



This achievement provides ARENCOS with the ability to offer exceptional in-house expertise to our clients.

<u>Designing and delivering the best possible living space takes a team</u> <u>committed to a common goal.</u>

ASK THE EXPERTS

OFF-GRID HOUSE IN CRETE: HOW MUCH DOES IT COST?

Fully off-grid covers places where there is no mains grid connection at all. This could either be down to the costs or purely as a personal choice. Installing solar panels is not enough to be considered off-grid, and most people who use solar energy still rely on electricity from an outside source.

Read More

Why ARENCOS?



Functionality. Practicality. Sustainability. Inclusivity.

Using our critical thinking, knowledge, motivation and passion to deliver lasting value for our projects – that's our approach to sustainability. We have the motivation to do it, and we believe we have the responsibility to do it. It's that simple.



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Would you be interested in our services? <u>Talk to us about your</u> project

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