



domegaia

AIRCRETE DOMES GUIDEBOOK

An Introduction to the
Domegaia Building System



Second Edition

by Joel Haggan & Ella Kinsloch

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Welcome!

We're glad you're here.

By opening this guide, you've already taken the first step toward something bigger than just building — it's about crafting a home and a future that's healthy, affordable, and deeply personal.

You're joining a community of innovative, curious individuals just like you, all excited to explore what's possible with Aircrete and dome construction.

Whether you're here to dive deep into the Domegiaia system or simply explore the magic of Aircrete, you've come to the right place.

This guide is a doorway to a world where building your dream home can be simple, intuitive, and within reach — no matter where you are on the planet.

Let's roll up our sleeves and start building the future you've imagined.

Here's to you, your dreams, and the journey ahead!

Joel Haggan & Ella Kinloch





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OVERVIEW

Domegaia Building Philosophy

Domegaia Mission

Our Founder's Story

Introduction



Domegaia Building Philosophy

We believe that building a home shouldn't be complex or out of reach. Our philosophy is simple: anyone, anywhere, should be able to create their dream space using easy-to-find materials and minimal tools.

From the mountains of Vietnam to the beaches of California, our methods are designed to work for you, no matter where you're building.

Our Mission

We want you to live your dream, and we're here to show you how Aircrete can make that dream a reality.

You've taken an incredible step towards creating something extraordinary with Aircrete. Now, it's time to bring your vision to life. If you're looking for more **guidance** or **inspiration**, we've got **plenty of resources** to help you along the way.

Together, let's build differently!





Our Founder's Story

Hajjar Gibran, the founder of Domegaia, has spent his life searching for the best ways to build beautiful, affordable, and healthy homes.

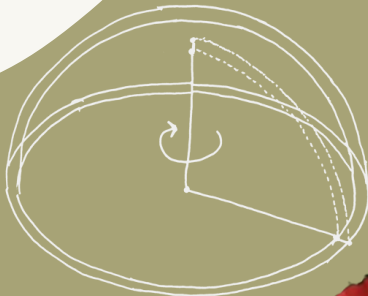
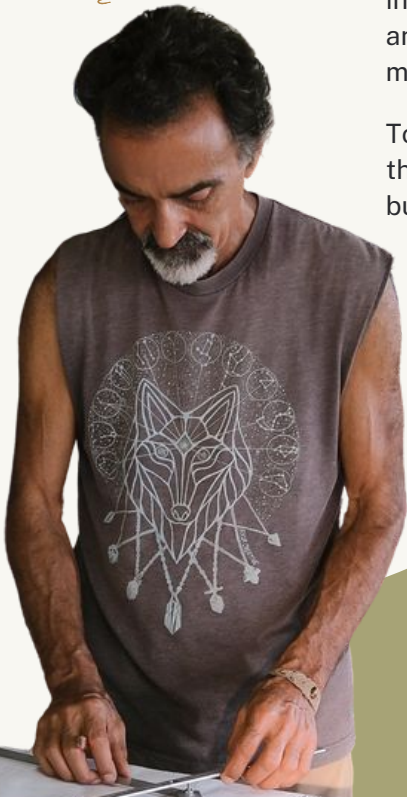
After experimenting with countless designs and materials, he discovered a magical combination of dome architecture and a new material called Aircrete — a lightweight, versatile material that he believed could revolutionize how we build.



Hajjar didn't stop at just finding the right material; he wanted to make it accessible to everyone. That's why he and his son Joel invented portable, low-cost equipment that anyone can use to build with Aircrete, no matter where they are in the world.

Today, Joel and his wife Ella carry forward the legacy, lighting the way for new builders and dreamers across the globe.

Let's Build Something Extraordinary Together!

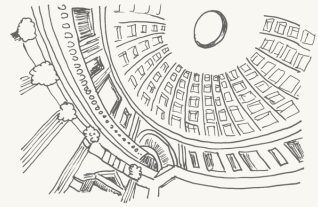


Rediscovering Ancient Wisdom

OVERVIEW

The Timeless Appeal of Domes
The Challenges
The Breakthrough
Building a Healthy Home
Why Aircrete is Different
Emotional and Aesthetic Appeal
Source of Pride and Attention
Ancient Designs & Modern Innovation
Path Forward for Modern Living

The Timeless Appeal of Domes

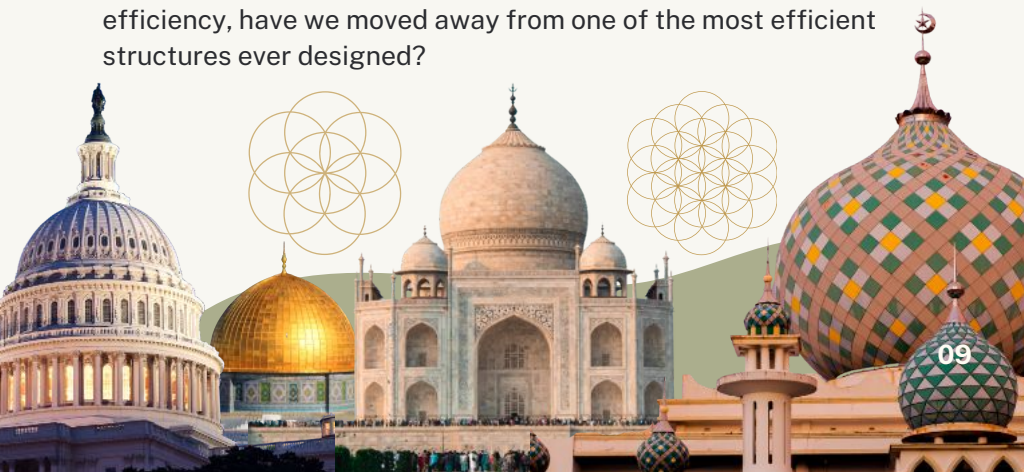


For centuries, humans have marveled at the beauty and strength of dome structures. From the humble igloos of the Inuit people to the architectural splendor of the Pantheon in Rome, domes have been a testament to human ingenuity and an enduring symbol of our **desire to work with, rather than against, the natural forces** of the world. The smooth, curving lines of a dome are not just aesthetically pleasing; they are **functional**. In fact, it is the very shape of a dome that gives it a strength unlike any other form of architecture.

The secret lies in how a dome evenly distributes pressure.

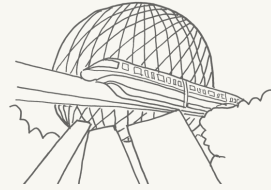
Every curve of its surface works in harmony to transfer the weight of the structure outward and downward, rather than focusing pressure on a single point. This makes domes **incredibly resistant** to the forces of nature. Whether it's heavy snow piling up on the roof, strong winds battering the walls, or even earthquakes shaking the ground beneath, domes have proven time and again that they are **built to last**.

But despite these clear advantages, dome homes have largely fallen out of favor in the modern era. Why, in a world that craves efficiency, have we moved away from one of the most efficient structures ever designed?



The Challenges

of Building Domes in the Modern Era



The answer, as it turns out, is not that domes have lost their appeal, but that **modern construction methods have made it difficult to build them.**

In ancient times, domes were built with what was readily available: stone, earth, and even ice. These materials were abundant and, when used correctly, could be shaped into the elegant curves necessary to form a dome. However, the process was labor-intensive, requiring skilled craftsmanship and immense effort. Building a dome out of stone or compressed earth could take months, if not years, depending on the scope of the project. Even with modern technology, these materials pose a challenge.

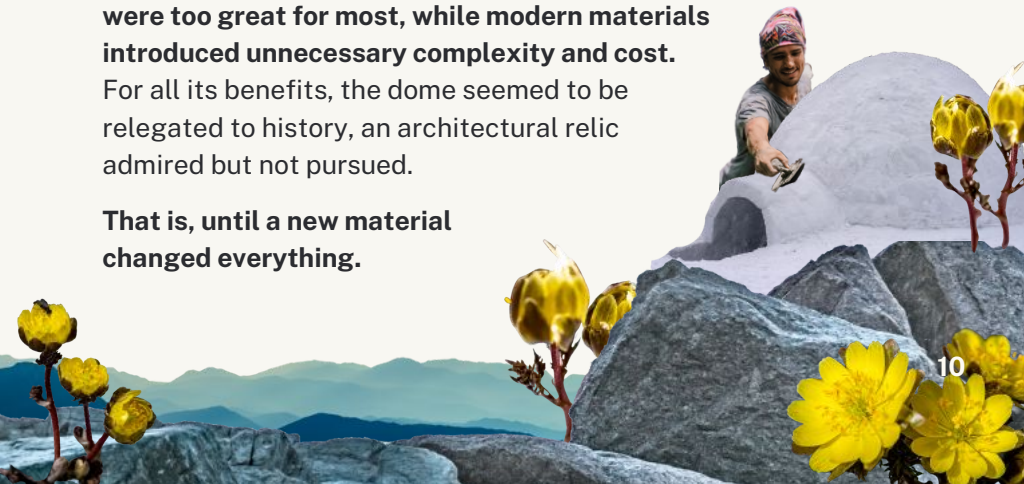
On the other hand, modern construction materials like wood, steel, and reinforced concrete are designed for straight lines and right angles. While these materials are strong and versatile, they are not easily molded into curves. The process of bending steel, pouring concrete, or cutting wood into dome-shaped forms is both time-consuming and costly.

For years, builders and architects were stuck between a rock and a hard place — literally.

The labor and time required to use traditional materials were too great for most, while modern materials introduced unnecessary complexity and cost.

For all its benefits, the dome seemed to be relegated to history, an architectural relic admired but not pursued.

That is, until a new material changed everything.



The Breakthrough

Discovering Aircrete as the Perfect Material for Domes

In recent years, a building material has emerged that promises to revolutionize dome construction: Aircrete. Combining the best of both ancient and modern techniques, **Aircrete offers a lightweight, durable, and affordable solution** to the challenges that have long plagued dome builders.

But what exactly is Aircrete? In essence, Aircrete is a form of **lightweight concrete**. Traditional concrete is made by mixing cement, water, and aggregates like sand or gravel. Aircrete, however, replaces sand and gravel with tiny air bubbles by mixing around ten times as much foam as cement, creating a significantly **lighter** material and more **insulative material** than regular concrete.

It is easy to cut, sand, carve, and shape with normal tools.

For dome construction, Aircrete is nothing short of a game-changer. Its lightweight properties mean that it can be shaped into the complex curves of a dome **without the need for extensive support systems or tools**. Builders no longer need to rely on expensive materials or labor-intensive methods to achieve the dome's signature shape.

Aircrete has both insulation properties and thermal mass, offering **natural protection from extreme temperatures**. Whether it's hot or cold outside, the internal temperature of an Aircrete dome remains remarkably stable.



Building a Healthy Home



Aircrete's Role in a Safe and Clean Living

In addition to its architectural and environmental benefits, Aircrete offers a critical advantage that many modern homes cannot: the **ability to create a healthy living environment**. As more people become aware of the dangers of "sick homes" — homes that contain toxic materials or foster mold and bacteria growth — Aircrete homes stand out as a solution for those seeking a safe, healthy home.

The Sick Home Crisis

Many homes today are built with materials like plywood, drywall, and synthetic insulation. These materials often off-gas volatile organic compounds (VOCs), which are linked to respiratory problems, allergies, and even more serious long-term health issues. Additionally, when exposed to moisture — whether from leaks, flooding, or condensation — these materials are prone to rot and mold growth. Mold, in particular, can spread quickly in damp environments and release spores that further degrade air quality and cause health problems.

This has led to a widespread phenomenon known as the "sick home syndrome," where occupants suffer from poor indoor air quality, chronic illnesses, and respiratory issues due to the toxic environment created by the very materials used to build their homes.



Why Aircrete Is Different



Building Safe Sanctuaries

Unlike conventional building materials, **Aircrete does not contain toxic chemicals, nor does it off-gas harmful compounds.** This means that Aircrete domes are naturally free of the VOCs and other hazardous substances that contribute to poor indoor air quality. Families living in Aircrete domes can breathe easy, knowing their home isn't quietly poisoning them.

Moreover, Aircrete is a **sealed wall system**, meaning that there are no gaps or voids where bugs, rodents or air can penetrate. The material itself is impervious to water and Aircrete will not rot, warp, or become a breeding ground for mold or bacteria. Traditional homes, with their reliance on materials like plywood and drywall, are highly vulnerable to moisture damage. Once water seeps into these materials, it begins to break them down, creating pockets of dampness that allow mold to flourish.

In essence, an Aircrete dome is a sanctuary for those looking to escape the dangers of sick home syndrome. By using a **non-toxic, water-resistant material**, aircrete homes promote healthy indoor air quality and a safer living environment overall.



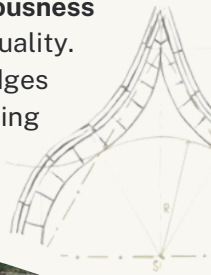
The Emotional and Aesthetic Appeal

of Dome and Arch Designs

One of the most compelling reasons people are drawn to dome homes is the **emotional response** they evoke. There's something primal yet comforting about stepping into a dome, as if you're returning to the protective embrace of a cave. The natural curves of the structure, free from harsh angles and straight lines, create a sense of **softness** and **safety** that is hard to replicate in conventional rectangular homes.

Domes tend to make people feel more at home. The curved walls and high, vaulted ceilings give a unique feeling of openness and expansiveness, even in smaller spaces. A dome structure provides a sense of volume that belies its actual floor space, making small or compact living areas feel surprisingly **large** and **airy**. The way light moves through the space, bouncing off the smooth, rounded surfaces, adds to the feeling of being connected to the environment around you in a way that square homes cannot offer.

From a design perspective, domes inspire awe. The **spaciousness** and **organic flow** of the form have an almost meditative quality. Many people find that the absence of corners and hard edges allows for a sense of peace and creativity to flourish, making domes not just homes, but sanctuaries.



A Source of Pride and Attention

In addition to the feelings of comfort and inspiration, some homes carry with them an undeniable sense of visual appeal. Their unique shape naturally draws attention. Whether it's friends and family visiting your home or guests staying at a short-term rental, domes create an atmosphere of wonder and intrigue. There's a certain pride that comes with owning or living in a dome — knowing that **your home is not only efficient and resilient but also unlike anything else most people have experienced.**

For those in the glamping or short-term rental business, dome structures are a game-changer. Their striking appearance and unconventional design make them instant conversation pieces. People love the idea of staying somewhere *different*, and a dome offers that sense of adventure. A dome vacation rental offers guests an experience beyond the ordinary, something they will talk about long after they leave.

In a world full of rectangular homes and predictable layouts, domes stand out as a bold and beautiful alternative. Whether you're inviting people into your home or providing a unique space for others to enjoy, the dome's distinctive design is bound to leave a lasting impression.



The Perfect Marriage



of Ancient Design and Modern Innovation

The combination of dome architecture and Aircrete forms a perfect marriage of ancient wisdom and modern innovation. The dome's natural advantages — its strength, efficiency, and resilience — are enhanced by Aircrete's lightweight, affordable, and environmentally properties.

Aircrete Domes have it all:

- **Durability and Resilience**

Aircrete domes are designed to withstand the forces of nature just as their ancient predecessors did. In areas prone to earthquakes, hurricanes, or heavy snowfall, these homes offer an unparalleled level of security. The seamless, curved surface of a dome naturally resists pressure, while the flexibility of Aircrete allows it to absorb and distribute the energy from external forces.

- **Affordability and Accessibility**

Perhaps the most exciting aspect of Aircrete domes is their accessibility. No longer are domes the exclusive domain of the wealthy or the architecturally adventurous. Thanks to Aircrete, anyone can now afford to build a home that is not only unique but also practical. Building a dome with Aircrete requires far less labor and time than traditional methods, making it a realistic option for those who want to embrace sustainable, resilient living without breaking the bank.

- **Healthy Homes**

Perhaps most importantly for many people today, Aircrete domes offer a sanctuary from the toxins and dangers found in traditional homes. With Aircrete's sealed, water-resistant walls, and its non-toxic composition, the threat of mold, rot, and harmful off-gassing is eliminated. This is more than just a structure; it's a home designed with the health and well-being of its inhabitants in mind.



A Path Forward for Modern Living

In a world where housing is often unsustainable, inefficient, and unhealthy, and unaffordable, the **Aircrete dome offers a glimpse of a brighter future.** By drawing on the architectural wisdom of the past and marrying it with the innovations of the present, we can create homes that are not only beautiful and functional but also **resilient, affordable, and healthy.**

The dome is not a relic of history — it is a path forward, one that promises to transform the way we think about housing in the modern world. And with Aircrete, that path is more accessible than ever before.



CHAPTER 2

Aircrete 101

OVERVIEW

What is Aircrete?

Benefits of Aircrete

Ways to Use Aircrete

Aircrete R-Value & Thermal Mass

Aircrete Wall Thickness

What is Aircrete?

Aircrete, is simply a mixture of water, cement powder, and a water-based foam.

It's also sometimes known as aerated concrete or cellular concrete. This unique building material combines the **strength of concrete with the lightness of air.**

It's made by mixing tiny air bubbles into a cement slurry, creating a lightweight, durable material that can be molded into almost any shape.



For years, Aircrete was only created commercially with the use of heavy-duty equipment. However, when Domegaia founder, Hajjar Gibran, discovered the properties of Aircrete, he invented a special foam generator called the DragonXL to make it available to everyone.

The Key is in the Foam

The key to Aircrete lies in the foam — bubbles of air are infused into the mixture, making it **lighter and easier to work with than traditional concrete.** This magic ingredient turns a basic material into something extraordinary.

Not just any foam works for aircrete. It is a high-quality, specialized formula with a specific density. A special Aircrete foaming agent or dish detergent can be used to make the foam.





Benefits of Aircrete

The Magical Material

Aircrete is more than just another building material. It's a game-changer for those who want to build sustainably, affordably, and beautifully.

- **Low Cost:** Aircrete stretches your resources by expanding the volume of cement, making it one of the most cost-effective building materials available.
- **Easy to Find Materials:** Wherever you are in the world, the ingredients for Aircrete are within reach.
- **Customizable:** Aircrete's versatility allows you to create any shape or structure — from curved walls to arches and domes.
- **Lightweight and Easy to Use:** It's so light that anyone can handle it, making it perfect for DIY builders of all ages.
- **Eco-Friendly:** Concerned about the environment? Aircrete's resource efficiency and reduced environmental impact make it a favorite for green builders.
- **Fire and Water Resistant:** Unlike wood or adobe, Aircrete won't burn or be damaged by water, making it a safe and durable choice.
- **Pest Proof:** Sealed Aircrete domes are impervious to pests, so you can say goodbye to fumigation and toxic chemicals.

And best of all, building with Aircrete brings people together. Whether you're working with friends, family, or a community of fellow builders, the process is just as rewarding as the final product.



Ways to Use Aircrete

1. Residential Structures & Buildings

Multi-Dome Home, Dome or Arch Yoga Studio, Dome Glamping 'A-frame' Units, Popular Dome AirBnb Rentals, Dome Artist Studio, Hunting Cabin, Quonset Hut

2. Wellness & Recreational Spaces

Dome Grotto for Spa, Aircrete Sauna, Concert Bandshell, Acoustical Music Dome

3. Commercial & Functional Spaces

Cheese Aging Cave, Storage Root Cellar, Walk-In Refrigerator, Storage Shed

4. Structural Components

Retaining Walls, Wall Panels, Tilt-up Aircrete Walls, Floor Slabs and Subflooring, Precast Blocks, Foundation Perimeter Frost Break Insulation, Pour-on Roof Insulation

5. Landscaping & Outdoor Features

Raised Garden Bed, Pavers, Fencing, Garden or Entrance Archway, Patio Shade Arch, Privacy Walls, Outdoor Shower

6. Insulation & Thermal Applications

Aircrete Insulation Systems, Underground Pipe Insulation, Poured Insulated Floor Decks, Insulation Under RV Homes, Acoustic Floor Underlayments and Shock Absorption, Load-Reducing Fill Over Underground Structure

7. Specialized Industrial Uses

Fill for Abandoned Tanks, Mines, Hollow Blocks, and Pipelines, Landfills, Bridge Approach Fills, Filling in Uneven Rock Surfaces

8. Furniture & Home Decor

Custom Built-In Furniture, Bed Platform, Custom Headboard, Decorative Solid Bench, Wall Shelves Carved into Aircrete Wall, Bookcase, Storage Shelves, Decorative Trim Around Windows and Archways

9. Sculptural & Creative Uses

Aircrete Sculpture, Garden Balls, Aircrete Statues, Bird Bath, Giant Letters or Numbers, Holiday Props (e.g., Gravestones, Snowman), Fake Landscape for Miniature Models (e.g., Train Set)

10. Small Projects & Decorative Pieces

Planters, Dog House or Kennel, Floating Candle Holders, Bedside Lamp Stand, Giant Chess Game and Pieces

Aircrete R-Value & Thermal Mass

The Science Behind Energy Efficiency

To create energy-efficient and comfortable spaces, the materials you choose matter. Aircrete stands out because it combines two powerful properties: **R-Value** and **Thermal Mass** — working together to minimize energy consumption and maintain a stable indoor climate.

Understanding R-Value

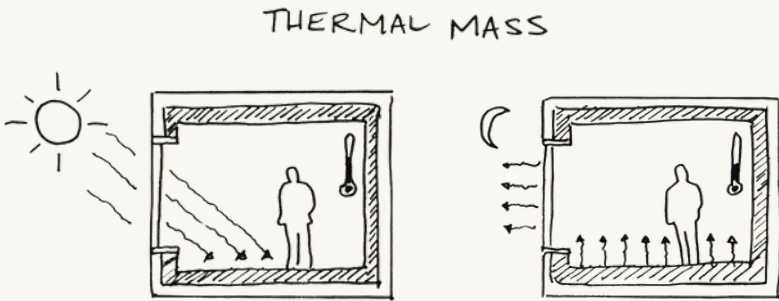
R-Value measures a material's ability to resist heat flow. The higher the R-Value, the better the material insulates. Whether you're keeping heat out during summer or retaining warmth in winter, R-Value plays a key role. Aircrete's approximate R-Value is **R2 per inch**, which provides solid insulation for a variety of climates.

It's important to remember that R-Value isn't the whole picture — **thermal mass** is also critical. Together, these two qualities help maintain balanced indoor temperatures year-round.



What is Thermal Mass?

Thermal mass is the ability of a material to absorb heat energy and release it slowly. Unlike insulative materials that block heat, thermal mass materials like **concrete, adobe, and brick store** warmth during the day and release it at night, helping to regulate indoor temperatures naturally.



The higher the thermal mass, the more energy it can absorb, and the longer it takes to release — this is known as thermal lag.

For example, Aircrete’s thermal mass allows it to act as a heat sink, keeping your home cooler during hot days and warmer as the evening cools down.



The Energy Efficiency Impact

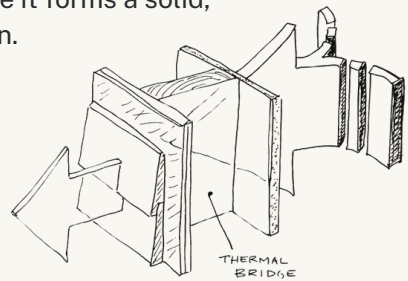
Thanks to its combination of R-Value and thermal mass, Aircrete offers a natural solution to improving energy efficiency. In climates with large temperature swings between day and night, buildings made with Aircrete can **stay comfortable with minimal reliance on heating or cooling systems**.

However, like any material, there are limits. High thermal mass materials may not fully offset heating needs in colder climates with limited sunlight, but they can still be effective in transitional seasons, like spring or autumn.

How Aircrete Compares

Aircrete is unique because it balances both **thermal mass** and **R-Value** — a rare combination for a building material. Most conventional insulation products, like fiberglass, offer a high R-Value but no thermal mass, while materials like concrete have high thermal mass but low R-Value.

By combining these qualities, Aircrete provides a more efficient way to insulate your home. A typical **2x6 wall with R-20 insulation** may perform at just **R-12** due to thermal bridging and air leaks. In contrast, an Aircrete wall of similar cost can deliver **twice the thermal performance** because it forms a solid, continuous barrier with no air infiltration.



How Thick Should Your Walls Be?

When it comes to wall thickness, the answer lies in your needs. Most small domes work well with **4-6 inch walls**, while medium to large domes benefit from **6-8 inch walls**. For exceptional insulation, opt for **10-12 inch walls**, offering up to double the insulation of a conventional house.

What you should consider:

- **Purpose:** Will it be a living space, storage, or something else?
- **Noise:** Do you need extra soundproofing?
- **Size:** Larger domes need thicker walls.

As a general rule, we recommend 6-8 inch walls for a strong, multi-purpose structure suitable for all seasons.

Always consult an engineer for detailed structural analysis of your design.



CHAPTER 3

Creating Dome Designs

OVERVIEW

Designing Your Dome
How to Get Started
Bringing Your Vision To life

Designing Your Dome

How to Get a Successful Outcome

Before you can begin building your Aircrete dome, it's crucial to create a thoughtful and detailed design plan. For some, this stage may feel like the most challenging part of the process. On one hand, Aircrete domes offer **incredible freedom and creativity** in design, allowing you to shape your home to reflect your unique vision. On the other hand, there are key design considerations that can either **make or break your project**.

This part of the process can also be the most **fun and exciting**, as it's the moment where your dream begins to take physical form. We encourage you to take your time, enjoy the creative freedom, and explore the possibilities.

The biggest mistake you can make in any construction project is starting without a well-thought-out plan. While it's possible to make adjustments on the fly, the best way to **guarantee a successful outcome** is to ensure you've developed a comprehensive design beforehand.



How to Get Started

Find Your Dream Dome Design

Traditionally, people would work with an architect to draw up detailed floor plans, construction drawings, and 3D models. While this is still a valid approach, finding an architect with experience in designing Aircrete domes can be difficult. If you're lucky enough to find one, expect to pay anywhere from **\$2,000 to \$6,000** for a custom design. However, there's a risk in working with an architect unfamiliar with Aircrete principles — you may end up spending a lot of money on a design that doesn't translate well into the actual building process.

For most people, a **faster and more affordable** way to begin is by joining the **Dome Builders Academy**, you will not only have access to a complete online course on how to build domes, but you will also have **over 8 floor plans and models** to choose from and they give you all the details you need to get started.



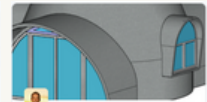
16' Cabin 1/2 Bath and Kitchen



Hawaii Cluster Domes



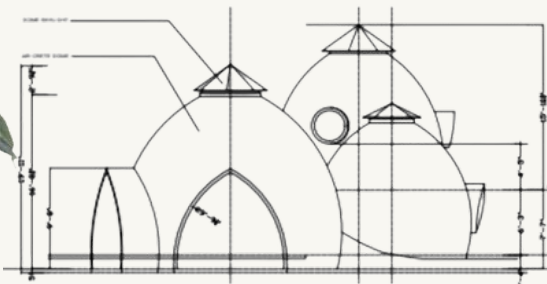
Steve Areen's Dome Plans



Diamond Glamping Dome

With these design packages, you also have the flexibility to **customize** the plans or use them as-is. If you're looking for something truly unique, Domegaia also offers **custom design services** at a fraction of the cost of traditional architects.

Our team can help you further refine an existing plan or create something entirely new based on your specific needs and vision.



Bringing Your Vision To Life



Claim Your Discount and Begin Your Journey

Since you've taken the time to read this book and explore the potential of Aircrete domes, we want to offer you a **special discount on our online course and design packages**. This exclusive offer is a great way to take the next step in your dome-building journey, armed with the best resources available. Whether you choose one of our pre-designed plans or opt for a custom build, you'll have everything you need to bring your vision to life.

Visit <https://domegaia.com/pages/ebook-special-offer> to claim your gift and get started on designing your dream Aircrete dome. The freedom to create, the affordability of Aircrete, and the potential for a healthier, more sustainable home are now at your fingertips. Don't wait — take the next step today and transform your dream into reality with the power of Aircrete domes.



CHAPTER 2

The Domegaia Building System

OVERVIEW

Construction Principles

Aircrete Tools and Equipment

Bringing it All Together

Overview of the Building Process

Aircrete Construction Principles

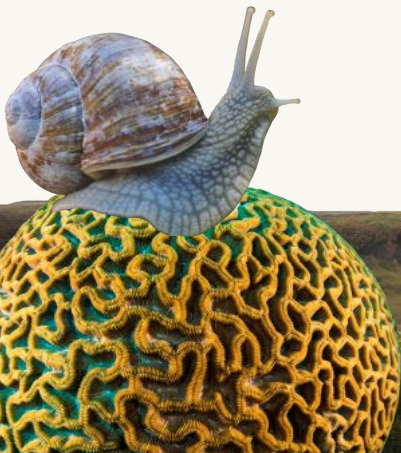


1. Compression Strength vs. Tensile Strength

Like all cement-based products, aircrete exhibits excellent **compression strength**, meaning it is capable of withstanding forces that push down or inward on the material. However, unlike reinforced concrete, Aircrete lacks significant **tensile strength**, which is the ability to resist forces that pull apart or stretch the material. Tensile strength resists lateral forces that would cause something to bend, for example.

In conventional concrete construction, **rebar** (reinforcing steel bars) is embedded within the concrete to provide tensile strength. This steel reinforcement allows the concrete to handle stress that might otherwise cause it to crack or fail. Aircrete, however, **does not rely on rebar or any similar reinforcement** for tensile strength.

Aircrete's strength comes from a composite of materials and how they interact as a whole.



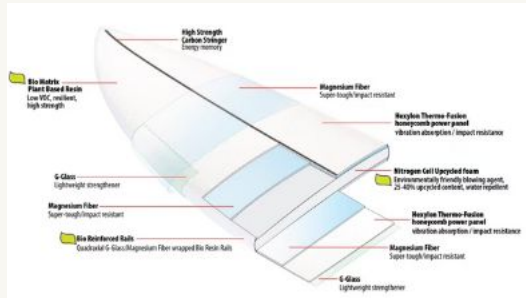
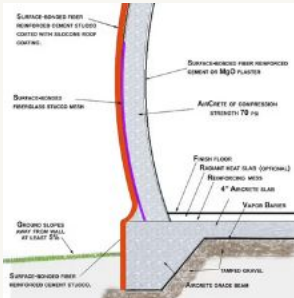
2. Composite Strength of Aircrete Walls

One of the core principles of Aircrete dome construction is the composite strength of the walls.

To understand how this works, think of an Aircrete wall as being more **similar to a surfboard** than a traditional concrete wall. In a surfboard, the foam core provides **structure**, while the fiberglass skins bonded to the outer surface provide **rigidity**. Taken separately the foam would crack easily and the fiberglass would flop around and be very bendy. But when **bonded together into a composite material**, it becomes incredibly strong.

Aircrete functions in a similar way:

- **The Aircrete** itself forms the foam-like core, providing the basic structure and insulation.
- On top of this, a **fiberglass-reinforced stucco** is applied to both the interior and exterior surfaces, creating a rigid, protective shell.



This layered composite creates a very strong structure that can withstand both the forces of nature and the stresses of daily use. The fiberglass-reinforced stucco not only strengthens the dome but also **protects the Aircrete core from external damage**, such as impacts or weathering, while allowing the entire structure to maintain its lightweight properties.



3. The Shape of the Dome: Enhancing Structural Integrity

In addition to the composite nature of Aircrete, the shape of the dome plays a critical role in the overall strength of the structure. The inherent strength of a dome or arch comes from its ability to **distribute loads evenly across its curved surface**. Domes do not require materials with high tensile strength. This means that, unlike flat walls or roofs, which can buckle or collapse under pressure, the dome shape channels forces around and down into the ground, making the structure extremely resilient to natural forces like wind, snow, and earthquakes.

The combination of Aircrete's **compression strength** and the dome's natural ability to **evenly distribute** forces creates a structure that is not only strong but also highly resistant to damage.



4. Aircrete as Both Structure and Insulation

Another key principle that sets Aircrete apart from conventional construction is its dual function as both the **structural component** and the **insulation** of the building. In most traditional building methods, the structural frame (whether wood, steel, or concrete) is built first, and insulation is added later to create an energy-efficient envelope.

With Aircrete, this process is reversed. The **Aircrete itself serves as the insulation from the beginning** but is also used to form the basic shape of the structure. This means that when you're building an Aircrete dome, you are essentially building with insulation first, and then reinforcing it as you continue. The main shape of the dome is first made with the aircrete. This is a benefit because aircrete is very easy to shape, stack, and work with, so the building process requires very little precision. Unlike concrete bricks aircrete can easily be rasped or sanded into a smooth surface so the bricks don't have to be placed perfectly.

The **fiberglass-reinforced stucco** applied to the outside and inside of the Aircrete dome creates a strong, weather-resistant shell that locks in the insulation and completes the structure.



5. Simplicity of Aircrete Walls: Fewer Materials, Less Complexity

Traditional construction involves multiple layers and a variety of materials: a structural frame, exterior cladding, interior drywall, insulation, vapor barrier, and various reinforcements like rebar, plywood, etc. Each layer adds complexity, cost, time, and required experience to the building process.

By contrast, **Aircrete walls are far simpler**. They consist of **fewer materials** — just the Aircrete core and the fiberglass-reinforced stucco. This simplicity not only **reduces material costs** but also **speeds up construction**. With fewer components to worry about, the building process becomes more efficient and straightforward.

Conclusion: The Revolutionary Potential of Aircrete Dome Construction

Aircrete dome construction represents a radical departure from traditional building methods, leveraging both the innovative properties of Aircrete and the timeless strength of dome architecture.

By combining insulation and structure into a single material, creating composite walls, and embracing the natural advantages of a dome's shape, Aircrete domes are stronger, simpler, and more efficient than many conventional building techniques.

Whether you're looking to build a home that is sustainable, cost-effective, or simply unique, Aircrete domes offer an exciting path forward in modern construction.



Aircrete Tools and Equipment

To understand how Aircrete is made, let's break down the tools and equipment that come together to create the batches of Aircrete for your project. **This system ensures consistency, simplicity, and efficiency.**

1. Air Compressor

This essential tool compresses the air needed to create bubbles in the foam, typically at 3 cubic feet per minute.

2. Foaming Agent Reservoir

Holds the pre-mixed foaming agent and water, supplying the DragonXL with 32 gallons or more for continuous foam production.

3. Dragon XL Foam Generator

Combines compressed air and foaming agent to generate thick, reliable foam at the correct density, which is fed into the mixer.

4. Foam Injection Mixer

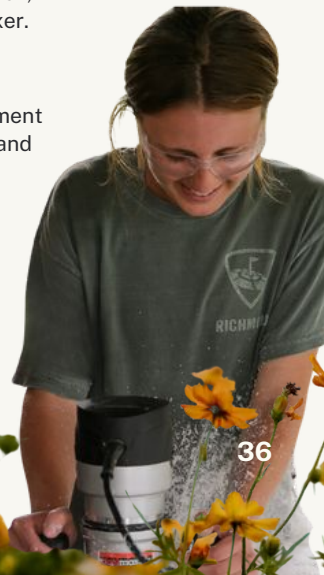
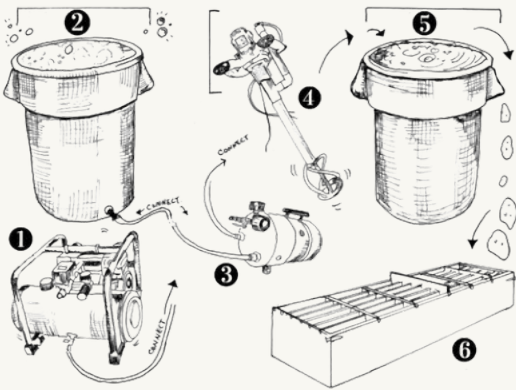
As foam is created, this mixer simultaneously blends the cement slurry with the foam from the DragonXL, ensuring a smooth and consistent mix.

5. Mixing Bucket

A 94lb bag of cement is mixed with 6 gallons of water, the injected with foam, expanding the mixture to 45 gallons of Aircrete.

6. Aircrete Block Forms

The final Aircrete is poured into adjustable forms to create blocks in sizes of 4", 6", or 12". Each form takes two 45-gallon batches to fill.



Bringing it All Together

Here's how the system works, step by step:

1. The Air Compressor generates the air pressure needed to form bubbles in the foam.

2. The Foaming Agent Reservoir supplies the foam generator with a pre-mixed solution of foaming agent and water.

These both connect to...

3. The Dragon XL Foam Generator where the compressed air mixes with the foaming agent to pump the foam into the mixer.

This connects to...

4. The Foam Injection Mixer which injects the foam into the cement mix, blending them seamlessly.

This blends in...

5. The Mixing Bucket which now contains the cement, water, and foam mixture, ready to be used.

Finally, the mixture is poured into...

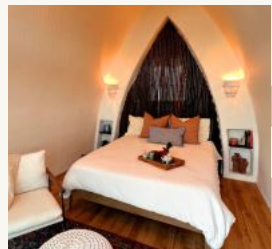
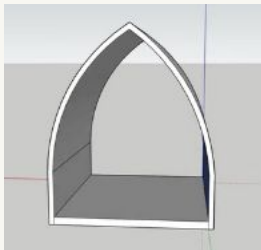
6. The Aircrete Block Forms adjustable to create 4", 6", or 12" blocks, depending on your building needs.



Overview of the Aircrete Dome Building Process

Constructing an Aircrete dome is a unique, hands-on process that blends innovative materials and timeless design principles. From the initial making of the bricks to applying the final finishes, building an Aircrete dome requires careful planning and execution.

In the next pages is a step-by-step overview of how the process unfolds.



1. Making the Aircrete Bricks

The first step in building your Aircrete dome is creating the Aircrete bricks themselves. Aircrete is made by mixing bags of Portland cement, water, and foam. The foam creates tiny air pockets within the mixture, making the material both lightweight and insulative.

These lightweight, insulative bricks form the inner core of your dome's structure. For more details on the Aircrete mixing process and the equipment required, see the next section on Aircrete equipment.

Note



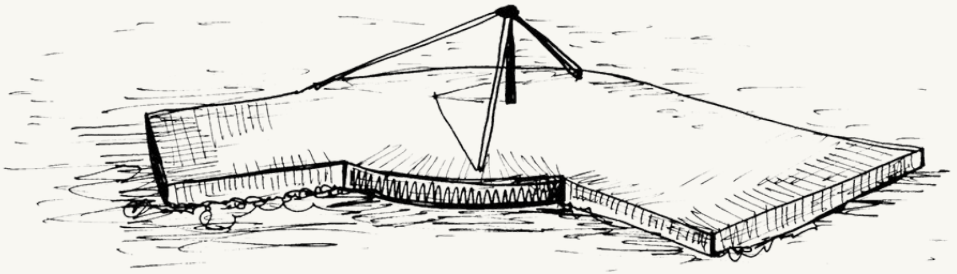
- **Time Efficiency:** It takes approximately **3-10 minutes** to turn one bag of cement into Aircrete bricks.
- **Output:** Each bag of cement produces around **18 bricks**, with dimensions of **12"x12"x4"**.



2. Building a Foundation

Like any building, a good foundation is crucial for the **stability** and **longevity** of an Aircrete dome. There are several types of foundations that can be used, but the most common is a concrete slab foundation.

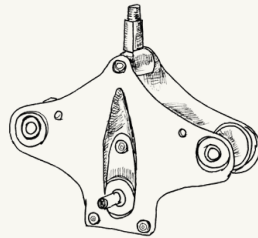
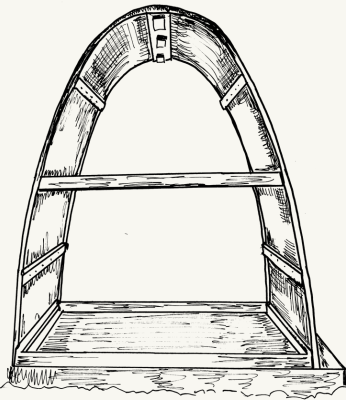
- **Foundation Types:** Your foundation will depend on factors such as your local environment, frost line, and soil conditions.
- **Standard Process:** The foundation follows standard construction practices, ensuring a level, stable base for the dome structure. Make sure to consult local building codes for foundation requirements in your area.



3. Making Forms for Arches and Windows

One of the great aesthetic features of an Aircrete dome is the ability to incorporate **arches** and large **windows**, which help extend the space and let in natural light. To create these, you'll need to make temporary forms.

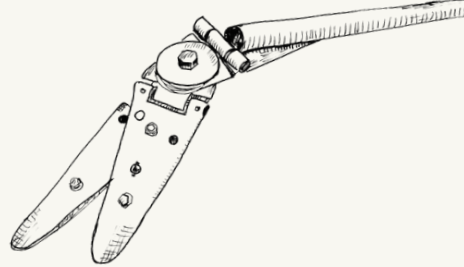
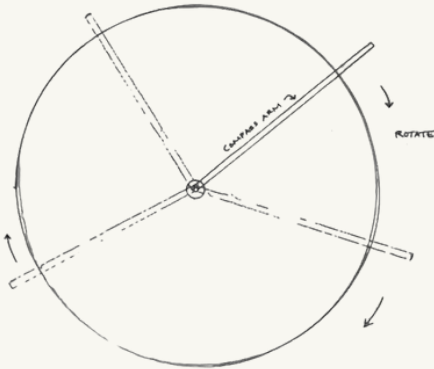
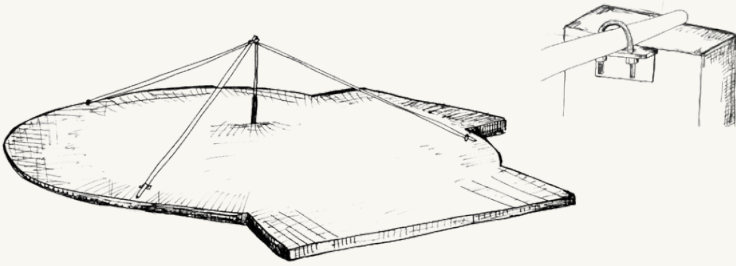
- **Materials:** These forms are typically made using electrical conduit and 1/8" plywood.
- **Form Creation:** We use a simple tubing bender to shape the electrical conduit into the precise curve needed for your arch. Once shaped, these forms are braced and set in place on the foundation, ready to support the stacking of Aircrete bricks.



4. Setting Up the Compass Arm

The compass arm is one of the **most unique tools** used in Aircrete dome construction. This simple yet effective tool pivots from a central point on the foundation and acts as a **guide for placing each brick** in the correct position, eliminating the need for string lines or levels.

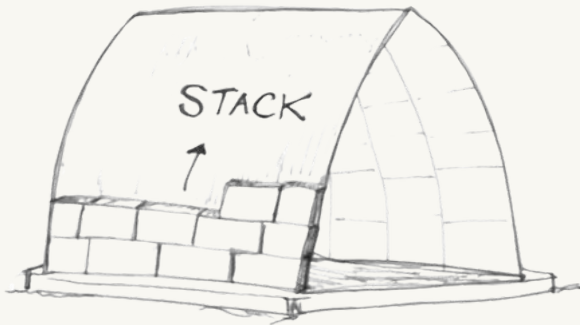
- **Precision:** The compass arm ensures precise placement of each brick, guaranteeing that the dome forms its perfect, natural curve. As you build, you'll move the arm in circular motions around the central point, laying bricks row by row.



5. Stacking of Bricks

Once your forms and compass arm are in place, you can begin stacking the Aircrete bricks to create the arches and the dome itself.

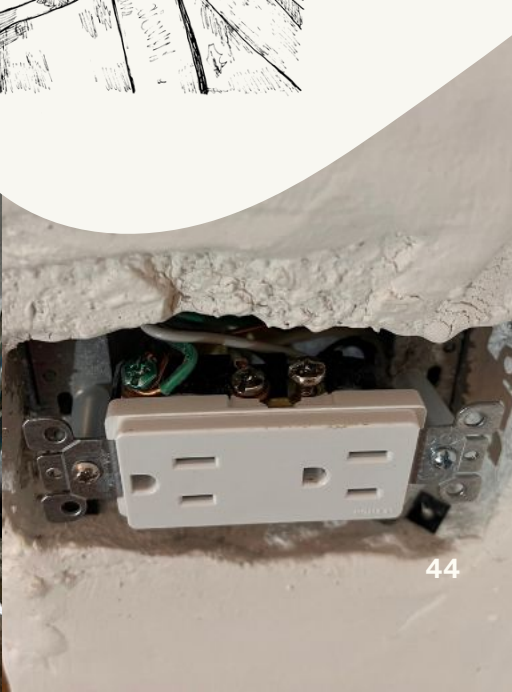
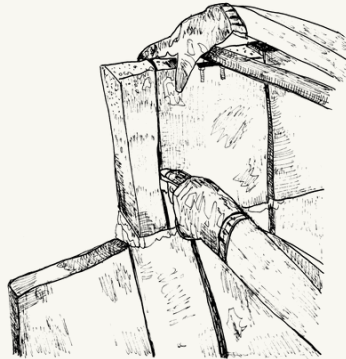
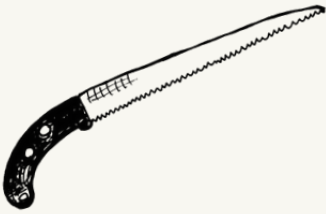
- **For Arches:** Bricks are stacked **leaning against the arch** form, which supports them as you build. Once the entire arch is stacked and the reinforcing layers of stucco are applied, the form can be safely removed.
- **For the Dome:** Bricks are stacked **row by row** using the compass arm as a guide. To prevent the bricks from falling inward as they're laid, we use stretchy ropes to hold them in place until the entire row is complete and cured. As each row cures, the ropes can be removed, and the next row can begin.



6. Installation of Electrical and Plumbing

Aircrete's soft, insulative properties make it incredibly easy to modify as you build. Installing electrical wiring and plumbing in an Aircrete dome is a **simple process**.

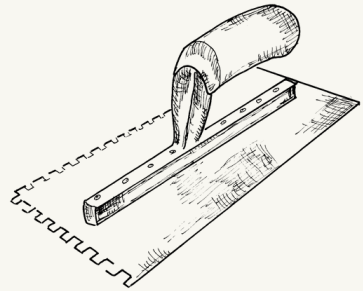
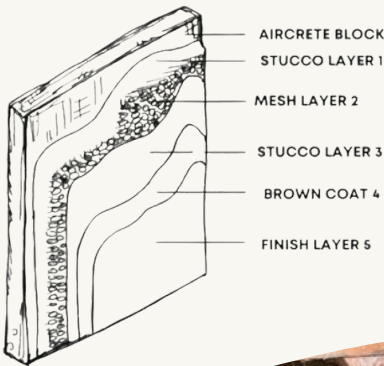
- **Carving Channels:** Once you've mapped out where you want your electrical outlets, lights, and switches, you can easily carve channels into the Aircrete walls to accommodate flexible conduit and wiring.
- **Conduit Installation:** Flexible conduit is installed in the carved channels, allowing you to pull wires through without difficulty. The same process applies to plumbing lines, making it easy to plan out the internal infrastructure of the dome.



7. Applying Strength Layers

After the structure is built and the electrical and plumbing installations are complete, it's time to add the **fiberglass-reinforced stucco layers**. These layers are critical for reinforcing the Aircrete dome and protecting it from external elements.

- **Base Layer:** The first layer of fiberglass-reinforced stucco is applied, often troweled on by hand or sprayed, and then smoothed. This layer bonds with the Aircrete core, creating a durable, protective surface.
- **Final Finish Layer:** After the base layer cures, a second, final coat is applied, which is smoothed to a fine finish. This stucco is applied both on the interior and exterior of the dome, covering up any exposed electrical or plumbing channels and adding structural integrity.



8. Finishing Up

With the structure complete and the strength layers applied, the finishing touches can begin.

- **Waterproofing:** A waterproofing membrane is applied to the exterior of the dome to **protect it from moisture**. These membranes come in a variety of colors, allowing you to customize the look of your dome to fit your personal style.
- **Interior Finishes:** Inside the dome, you can **plaster or paint** the walls to give the interior a smooth, clean finish. The same options for windows, doors, countertops, and flooring that you would find in any conventional building are available for an Aircrete dome.
- **Framing Windows and Doors:** Window and door framing is **done last**, allowing for any style or size that suits your needs. This ensures your dome is not only functional but aesthetically pleasing.

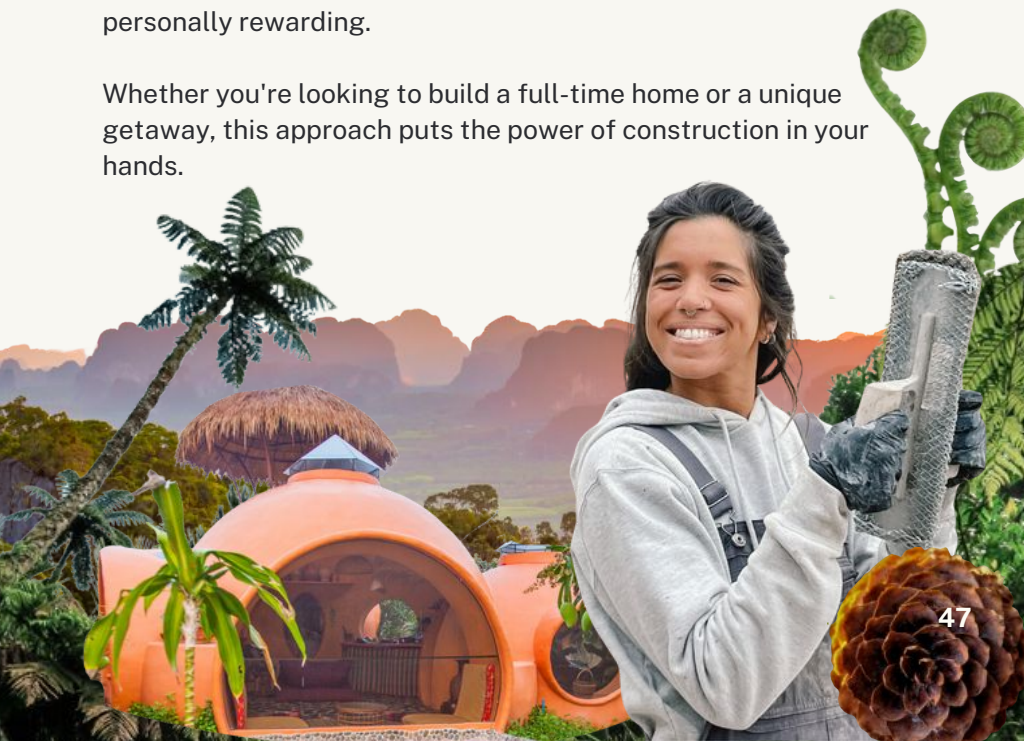


Conclusion

The Aircrete dome building process is radically different from conventional construction, but that's **precisely what makes it accessible to anyone** — even those with no prior building experience. Domegaia has pioneered these innovative techniques with a clear goal in mind: to **empower people to take control of their own home-building process** and make mortgage-free home ownership more accessible. By simplifying each step and offering easy-to-follow methods, from making the Aircrete bricks to setting up the compass arm, Domegaia's approach makes it possible for beginners to build their own dome homes with confidence.

This system, developed to be taught and replicated, enables people of all skill levels to create **strong, healthy, and beautiful** dome structures with minimal materials and straightforward tools. By breaking away from complex, traditional construction techniques, building an Aircrete dome becomes an achievable, hands-on project — one that is not only cost-effective but also personally rewarding.

Whether you're looking to build a full-time home or a unique getaway, this approach puts the power of construction in your hands.



OVERVIEW

Start Building your Dream
Our Courses and Workshops
Join our Builder Community
Stay Connected with Us

CHAPTER 4

What's Next?

It's Time to Start Building Your Dream!

You've taken an incredible step towards creating something extraordinary with Aircrete. Now, it's time to bring your vision to life. If you're looking for more guidance or inspiration, we've got plenty of resources to help you along the way.

Ready to Take the Next Step?



Start Your Dome Building Journey

Everyone has a unique way of learning, and we offer flexible options to help you get started, no matter your style, schedule, or experience. Whether you prefer reading, watching, or hands-on practice, **there's a path that's right for you.**

The Manual

AVAILABLE IN TWO OPTIONS

Digital and Paper



LEARN MORE

Aircrete Quick Start Course

1h 10min

ONLINE COURSE
INTRODUCTION



LEARN MORE

Dome Builders Academy

6.5hr ONLINE COURSE
+ MENTORSHIP



LEARN MORE

In-Person Workshops



FULL ACCESS
WORKSHOP PASS

VALID FOR 3 YEARS
ACROSS THE WORLD

LEARN MORE

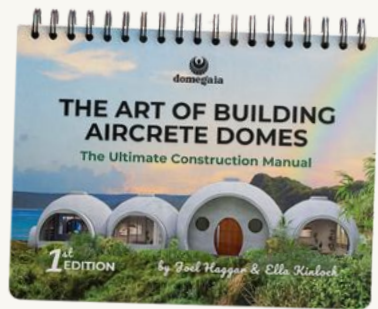
The Manual

✓ **Digital Downloadable Ebook and/or Print Book of 200+ pages**

X *Online Course*

X *Design Plans*

X *In-person Course*



Perfect for self-paced learners, the Art of Aircrete Dome Building Manual offers 200+ pages of step-by-step guidance, detailed illustrations, recipes, and printable on-site guides to help you build with confidence.

LEARN MORE



What's Included:

✓ **Step-by-Step Building Instructions**

Clear guidance for every stage of Aircrete dome construction, from foundation to finishing touches.

✓ **Essential Tools and Materials List**

A comprehensive checklist to help you gather everything needed for your project.

✓ **Aircrete Recipes and Techniques**

Proven formulas and methods for creating strong, lightweight Aircrete.

✓ **Design Principles and Tips**

Insights on dome architecture, efficient layouts, and structural integrity.

✓ **Illustrations and Diagrams**

Visual aids to simplify complex steps and enhance understanding.

✓ **Maintenance and Sustainability Practices**

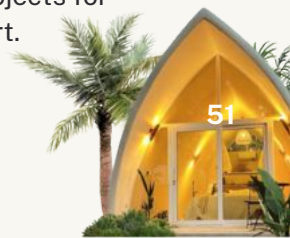
Advice on maintaining your dome and integrating eco-friendly features.

✓ **Bonus Floor Plan Example**

A sample layout to inspire your design while preserving flexibility for customization.

✓ **Community Resources**

Links to videos, workshops, and global builder projects for additional support.



Aircrete Quick Start Course

- ✓ Digital Download Files
- ✓ 1h10m Online Course

X Design Plans
X In-person Course



If you're eager to get started with Aircrete but need a fast track, our **Aircrete Quick Start Course** is the perfect solution.

This **online course covers all the basics**—how to mix, pour, and use Aircrete for your projects—in a clear, concise format. In just a short time, you'll be equipped with the foundational knowledge to confidently begin building with Aircrete, no matter your skill level.

LEARN MORE



What's Included:

✓ Introduction to the Domegaia Building System

X Design: Floor Plans, Doors & Skylight

X Building Preparation

X Foundation Guide

✓ Equipment Overview

✓ How to Make Aircrete

✓ Building with Aircrete Blocks

X Attaching to Foundation

X Closing the Dome Ceiling

✓ Domegaia Strength Building System

✓ Rasping and Mortaring Phases

X Doors & Windows

X Shaping Arches and Trim

X Installing Electrical & Plumbing

✓ Community Chat

✓ Live Instructor Help



Dome Builders Academy

- ✓ Digital Download Files
- ✓ 6h30m Online Course
- ✓ Design Architectural Plans

X In-person Course



Ready to dive deeper into the world of dome building? The Dome Builders Academy is a comprehensive detailed online program where you can learn everything at your own pace.

You'll gain access to step-by-step tutorials, detailed guides, and insider tips from seasoned builders. Whether you're just starting or looking to refine your skills, the Academy is designed to support you through your entire building journey.

[LEARN MORE](#)



What's Included:

- ✓ Introduction to the Domegaia Building System
- ✓ Design: Floor Plans, Doors & Skylight
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In-Person Workshops

- ✓ Digital Download Files
- ✓ All Our Online Course
- ✓ Design Architectural Plans
- ✓ In-Person Hands-On Course



We've helped over 1,000 people across 10 countries become confident dome builders with our [Workshops](#) – and we'd love to help you too.

Think of it as a hands-on, immersive experience where you'll mix, pour, and stack Aircrete with your own hands. You'll build, share meals, and create lasting memories alongside other passionate builders.

LEARN MORE



What's Included:

- ✓ Access to All Workshops Across the World for 3 Years
- ✓ Introduction to the Domegaia Building System
- ✓ Design: Floor Plans, Doors & Skylight
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- ✓ Community Chat, Live Instructor Help





LET'S CONNECT TOGETHER


Join Our Free Dome Builder Community


Looking for inspiration, support, or just a place to connect with other passionate builders?


Our [Free Online Community](#) is here for you! This vibrant space is filled with like-minded individuals from around the world, sharing their ideas, successes, and challenges. Whether you're seeking advice, showing off your progress, or looking for that extra bit of encouragement, this community is the perfect place to grow your skills and your dreams — all at no cost.

Stay Connected with Us

We love hearing from you! Whether it's through social media or in person, your experience matters. Sharing your journey can inspire others to take that first step, too.

 Instagram: [@domegaia](#)

 Facebook: [Domegaia](#)

 Youtube: [Domegaia](#)