

Why Build A Geodesic Dome For Your New Home or Business?



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Q: Why did the founder of American Ingenuity in 1975 decide on the dome shape for his commercial dome to be built in Melbourne Florida?

A: The dome, or partial sphere, is a geometric form that encloses the greatest amount of volume with the least amount of surface area. Historically, massive domes constructed of stones, brick or concrete were common in ancient Greece and Rome. In modern times, Buckminster Fuller was the first to formulate geodesic principles for constructing a spherical surface by triangular subdivision. However nearly all of Fuller's domes were built from wood framing with shingled roofs.

Ai's founder, Michael Busick, did not want to build his Florida commercial dome out of wood and shingles because termites eat wood, hurricane force winds rip off shingles and a wood dome has an increased shingled roof area causing expensive reroofing costs every 11 or 12 years. Instead Mr. Busick hired a University of

Miami architectural professor, engineering students and director of the Florida Solar Energy Center to come up with building materials specifically to build the geodesic dome. The materials were concrete, mesh and expanded polystyrene (EPS) insulation. Back in 1976 the first Ai dome was built by propping up precut EPS panels, hand tying road mesh on the exterior of the EPS and guniting concrete on to the exterior. Mr. Busick soon learned that guniting concrete over the entire exterior surface was a waste of concrete and labor. This is why he invented Ai's prefab panel and received a patent. **Building an Ai dome from prefab concrete panels makes construction easier than stick built construction or [pumping concrete on to an airform](#) and results in the dome exterior having a 225 mph wind and F4 tornado guarantee and super-energy efficiency.**

The process of stacking the panels, overlapping/locking the steel mesh of adjacent panels and filling the panel seams with special fiber concrete, produces 1) the structural components of the home; 2) the finished concrete surface; and 3) installs all the R28 insulation. Ai's component panel building system is the most simplified way to build a commercial or residential building on the market today.

During the past decade the buying public has experienced a substantial increase in the cost of construction, the cost of energy and the cost of borrowing. As a result, there has been increased interest in the use of kit home technology to help address these concerns. In the last decade, many people have discovered that the dome design offers a viable solution.

As a building concept, geodesic dome construction translates into a highly comfortable and livable building that has a maximum of floor area enclosed by a minimum of materials. These features combine superior strength and cost-effectiveness in a single structure. In short, the building concept of a dome expands the range of simple and economic building options.

Why build a geodesic dome – Strength and energy efficiency. The geodesic geometry intersects to form triangular elements, which have local, triangular rigidity, and so distribute the structural stress throughout the **geodesic sphere**. **The triangle shape is the strongest shape known to man – it will not collapse whereas all other shapes will.** Manufactured domes are constructed using a triangular network to form a spherical shape. This method provides for a free span, self-supporting structure requiring no internal supports such as roof load bearing partition walls. This allows for maximum flexibility of floor plan design and utilization of interior

space.

As an architectural form, the dome is one of the strongest structural forms devised and built by man. Domes that were built centuries ago enclose many of the great cathedrals of Europe. Domes are structurally superior to rectilinear enclosures. **The partial sphere is an aerodynamic shape that is very stable in high winds and can withstand heavy snow loads. For these reasons, domes greatly exceed the structural requirements of the major building codes in the United States.** Ai gives a 225 mph wind and EF4 Tornado warranty on the dome exterior walls. The interrupted R28 insulation causes cooling and heating bills to be 50% to 60% less than the same size conventional structure. In the Ai dome there is no wood in or on the exterior shell to interrupt the insulation, to rot, or to burn or for termites to eat. There is no roof to replace every 11-12 years. The exterior concrete is painted 4-5-6 years with breathable elastomeric paint.

One of the most exciting architectural environments ever designed, a dome brings its best attributes to your commercial or residential needs. It delivers a rewarding living experience filled with warmth, light and open space to those who choose to build a dome.