

## INTRODUCTION to Geodesic Domes



Kwickset Konstruktion Kits is an enterprise conceived by an engineer with a longstanding interest in cost-effective lightweight structures. Many years of experience in the engineering field (covering aspects of production, marine engineering and building) have resulted in the design of a lightweight dome structure which requires fewer materials and provides greater strength than conventional construction methods.

The main considerations in arriving at this design have been with the end user and the environment in mind. This has involved numerous years of evaluation of, and experimentation with, different concepts.

As most professional builders will agree, one of the most troublesome aspects of conventional building is the requirement for a substantial range of expensive and dangerous powertools. For the average **Do-It-Yourselfer** building a home is an extremely complicated and time-consuming undertaking involving a large investment in tools and countless expeditions to the hardware store.

The enormous waste generated at the end of the lifespan of a building, with virtually all the materials being discarded, can be reduced by incorporating the concept of "Deconstruction" into the design. This retains the complete shell in a relatively small package (for future reconstruction) thus also reducing the consumption of valuable trees.

For the budget conscious novice, in particular, the amount of material wastage due to miscalculations can prove to be time-consuming, frustrating and costly. This called for an approach which **totally** eliminates these irritations.

Conventional homes are very expensive to heat and cool, and interior designs are limited by supporting walls, i.e. you can't even place your windows where you like or where they would be most beneficial. In other words, you are really restricted and end up with a lot of useless space under the roof as well.

The challenges presented to the designer included:

How to overcome these shortcomings as well as making construction less expensive.

How to simplify construction so that almost anyone can build at least the shell of their new home without any building skills.

How to eliminate those countless and time-wasting expeditions to the hardware store.

How to construct it fast and achieve the satisfaction of seeing the end result looking really professional.

So, with the invaluable help of his long suffering friends who willingly put up with his sometimes outrageous impositions, he produced the Kwickset Konstruktion Kit for a geodesic dome-home.



(Alex Revel, BE (Mech.) U.T.S.) **19/11/1940 - 28/11/2009**

School of Mechanical Engineering

### ***A FREQUENTLY ASKED QUESTION: Do Domes Leak?***

This is probably the biggest common misconception about domes.

### **DOMES DON'T LEAK, ROOFS LEAK!**

As with any house or structure, if the roof is not applied correctly, it will leak. Domes are no different. You should ensure that your roof is applied correctly and you will not have a leaking problem. Fiberglass reinforced asphalt shingle is the most recommended roofing material as it is easy to work with and very attractive. It comes in a variety of affordable colours and textures. Other options include wood shingles and spray on roofs.

### **WHY A DOME?**

When Buckminster Fuller first discovered the dynamic structure of a geodesic dome in the 1950's, he saw it as a dramatic means of creating spacious, durable, energy-efficient housing, using a minimum of materials in a very economical way.

By merging the rigidity of the triangle (the strongest shape known) with the loadbearing strength of a dome, he created one of the strongest, most efficient and most versatile structures ever devised.

Since the days of Buckminster Fuller's far-reaching vision, geodesic domes have proven to be not only very practical, but also wonderful places to live in.

To build and live in your own dome-home is to experience living in one of the most exciting architectural environments ever designed – a warm, personal home with high, soaring ceilings and rooms filled with light and open space.

**Kwickset Konstruktion Kits'** dome home package makes it practical, economical and efficient for people to construct their own homes – without skilled labour or any special tools other than those supplied with the kit. The dome frame itself can usually be erected in a few days.

*Quality, Price, Versatility  
you can't find a better way to build your own home. Read on to discover more about the Geodesic Advantage.*

#### **1. Lower Material Costs.**

The structure of a dome requires approximately 30% less materials compared to a conventional structure enclosing the same space.

#### **2. Lower Labour Costs.**

The colour coded assembly system allows you to easily construct your dome-home yourself and start saving on your building costs.

#### **3. Energy Efficiency.**

Because less surface area is exposed to the outside elements, domes require some 25% less energy to heat or cool than conventional buildings. Since there are no corners, airflow is even and consistent – there are no hot or cold spots.

#### **4. Structural Integrity.**

Geodesic domes have the best strength-to-weight ratio of any structural design using similar material.

#### **5. Versatility In Design.**

Since no internal supports or loadbearing walls are required in a dome, you have complete freedom in designing an interior environment that suits your personal needs and wants.

#### **6. Investment Value.**

Fast completion and early occupancy results in a quicker return on your investment.

### ***The Entire Dome Shell Structure Goes Up Easily.***

The structural framework of a geodesic dome consists of 4"x2" wooden struts and Stainless Steel connectors, The colour-coded struts are bolted to colour-coded Stainless Steel connectors using an electric screwdriver and socket supplied with the complete **Kwickset Konstruktion Kit**.

Once the free-standing framework is erected, timber T-blocking and studs are screwed into every triangle at their marked positions and you don't have to measure anything. This facilitates installation of the plywood cladding and the addition of conventional finishing materials.

Then, to complete the basic dome shell, pre-cut, triangular plywood panels are screwed to the framework.

***The colour –coded parts are cut and drilled precisely. They are easy to identify and they fit the way the instructions say they should.***

### **Quality Standards,**

### **Material Specifications,**

### **Attention to Details**

All of the **Kwickset Konstruktion Kits'** high quality components comply with Australian building standards.

The best timber available is used (fully graded and rated for strength) and each piece is inspected individually.

**Every mm, every angle is fully engineered. Kwickset Konstruktion Kits' designer knows how important it is that every piece fits perfectly-"The First Time". Kwickset Konstruktion Kits guarantees this with all their products.**

Kwickset Konstruktion Kits goes beyond the basics to assure that your dome home goes up quickly and easily, the way it should.

Each and every strut is beveled on one edge so the plywood panels sit flush on every triangle. This special edge also speeds up the process of adding the plywood because it helps to line up the edges where they belong. This is only one of the many steps taken to make assembly of your home smooth and easy for you.

Dome exteriors can be finished in a variety of ways with a variety of conventional finishing materials. Your choice depends on the immediate environmental conditions, your budget, building skills, available materials and your sense of aesthetics.

For example, cedar shakes/shingles and clear cedar siding give an exterior a warm, natural look that's easy to maintain. Other roofing styles include fiberglass reinforced asphalt shingles. A graceful deck can wrap around your dome to create an inviting porch or patio.

The versatility of a dome allows you to enjoy your building site to its best advantage- preserving the best views while harmonizing with your natural environment.

Because domes have less surface area exposed to the elements, heating and cooling bills are some 25% less than for conventional houses with the same floor area and insulation.

Window placement, deck, garage and interesting entranceways can make your home truly personal and unique. Explore all the possibilities to find an exterior that's perfect for your wants and needs.

By designing your own finishing touches, your home will never look like some conventional, pre-fab house.

In many cases, the inspiring design of the clear-span structure of a dome shell opens up new ideas for how a home could be finished on the inside. Since there are no load-bearing walls in a dome (the structure is completely freestanding and self-reinforcing even during construction), you have complete freedom in interior design. The interior can suit your own personal needs and wants without regard for "what ought to be". Without such conventional constraints, the possibilities are almost as limitless as your imagination.

Most people choose to have a second floor in part of their dome home. Kitchens, bathrooms and bedrooms can be arranged on two floors to suit your preferences. The other part of the dome can be left completely open. Your lounge room can soar up to 8m from floor to cathedral ceiling, filled with an abundance of natural light.

***Easily  
Constructed  
Without Skilled  
Labour or  
Heavy-Lift  
Equipment.***



All the components of a **Kwickset Dome** are pre-cut, pre-drilled and colour coded to make it easy to assemble them with precision and confidence. The largest piece for a 45' diameter dome is just over 3m long and is easily handled by one person. **Kwickset** domes are completely free-standing during construction. No shoring up is needed. No special tools (except those supplied) or expensive lift equipment, such as cranes are necessary to assemble a **Kwickset Dome**.

***The Only Tools You  
Need, Are Those  
Supplied With Your  
Complete Kit.***



You will need a Ladder or, for more safety and comfort,  
***"Mobile Scaffolding"***.

***Design the Home Interior of Your Dreams Without  
Limitation!***

**Many Choices in  
Window Design  
Are Available for  
A Dome:**

**Triangular Skylights**

are a natural choice in geodesic domes because they maximize the usable space in any panel. They can be used individually, or clustered to form a vast expanse of open space. Triangular skylights maintain the graceful slope and highlight the unique architectural structure of a dome. These types are also the easiest to install, since they do not require the construction of extra dormers.

**Standard, Conventional Windows**

can be used in a dome when they are framed upright in the lower sections of a dome, or in a dormer. Conventional windows are generally less expensive to buy than skylights. You can increase the headroom and usable space on the second floor of some domes by building dormers.

**There are other very good conventional shaped windows**

that are specially designed for use in a sloping roof. These can be readily adapted for use in a dome. These windows are also available through **Kwickset Konstruktuion Kits**.

**The Foundation of a dome differs only in shape from that of a conventional house. The type of foundation depends on the terrain of the land, the type of soil and local building codes. See your local building inspector for specifications applying to your site.**

## Optional Height

### Riser Walls.

Some domes come with riser walls. However, you can increase the height of any size dome by adding optional riser walls. Riser walls can be a maximum of 2.4m high.

Your Kwickset Konstruktion Kit comes with 11 fully assembled, colour coded riser wall sections to facilitate a standard door opening height of 2.1m and to allow for a minimum of 2 openings in your dome. You can use fewer riser wall sections to allow for more doors or extensions. Up to 5 major openings are possible on the ground floor of a **Kwickset Dome**.

### A Crowning Touch For Your Dome Home.



A cupola, 450mm high, is included in your Kit (at no extra charge) and easily installed enhancing the natural light and ventilation in your dome home. It also offers the possibility of adding a small third floor retreat, with a 360 degree view from the top of your home. A cupola can be an intimate and romantic sitting room, or it can be a great place for a home office or a study. You can use a ladder, conventional stairs, or a spiral staircase to gain access to the cupola room.

[Front Page](#)

[Domes](#)

[Bungalows](#)