# What is

# E S K Y D E C K

EPS CONCRETE FORMING SYSTEMS



Eskydeck is a stay in place form work system for casting of One Way Ribbed Slabs. Advantages of the one way ribbed slab are numerous including savings on weight and materials, long span capabilities, and simple penetrations between ribs. In the past the main disadvantage has been the complex form work required. Eskydeck not only provides simple formwork but has combined acoustical and thermal properties often required in today's projects. Other suspended slab systems using removable form work require additional operations to obtain the properties already included with Eskydeck. Floor to floor heights are often considered to be greater using the Eskydeck system compared to flat slab systems. Floor to floor heights using Eskydeck can most often be maintained even with the increased depth of the system because dropped ceilings are not required. Most utilities and ductwork fits within the void space between the ribs. The beam form with 70mm EPS (expanded polystyrene) below every rib providing acoustical and thermal break between floors also provides space for plumbing or electrical lines to cross from space to space.

Ribbed slabs have been used for centuries, are suitable for medium to heavy loads, can span reasonable distances, and are very stiff minimizing deflections. Eskydeck system meets the requirements of a proven ribbed slab design for increased structural capacities allowed for in most codes. It can also be engineered as T-beams. The cost of the Eskydeck form work is offset by the reduction in the quantity of concrete and steel and temporary support requirements. Additional savings can be realized by the reduction in overall weight often reducing support wall, column, and beam requirements as well as the entire footing of a building. The stay in place form work also saves time and labour to remove temporary form work and install thermal and acoustical insulations allowing faster project schedules.

Eskydeck is one of many ribbed slab form work systems available; however Eskydeck has capabilities not found in other systems. Eskydeck with its component based system allows for changes in slab depths and heights simple by changing panel sizes. This makes the forming of dropped areas or step downs quick and easy. The use of block out forms makes it possible to form edge beams and flush beams with minimal additional materials. The light weight components require no cranes or lifts to install. All components can be cut to size on site when needed eliminating delays caused by waiting for as built measurements or changes to projects under construction. Angles, curves, cantilevers, are all quick and simple to fit Eskydeck to. The installation of the beam forms before any bearers or props makes temporary support installation faster. The beam forms take the place of the joists used in flat slab systems leaving only cross bearers and props for temporary support. Once the beam forms are installed and supported the panels and reinforcement can be installed from the topside. Eskydeck is one of the few ribbed slab systems that can be poured in two separate operations. Most of the structural requirements are provided by the beam section of the formwork. The placement of the concrete in the beams (often done at the same time as the support walls are poured) can be done by the same workers pouring the walls. It is not necessary to schedule sub trades to rough-in electrical or plumbing before the project can move forward. The Eskydeck form work provides a safe work platform to continue construction of the next level. Slab placement can be done at a later date after all sub trade rough-ins are complete and often without re installation of temporary support props. Eskydeck can also be placed in a single pour as with other systems.

The components of the Eskydeck system are manufactured from 100% recyclable products. EPS (expanded polystyrene) is an inert closed cell expanded polystyrene insulation material. It has excellent thermal properties and low moisture absorption properties. It will never rot and does not support mould or mildew. EPS is not a food source for termites or other vermin. EPS is one of the few foam plastics insulations available that contains no CFCs HCFCs or other refrigerant gases. It is non toxic and hypo allergenic, and will not irritate sensitive skin on exposure. EPS contains only air and is not subject to degradation over time. Eskydeck uses only certified EPS manufacturers meeting Australian Standards requirements. The metal beam jacket is also fabricated and provided by certified manufacturers also meeting Australian Standards requirements.

Eskydeck is marketed in Australia under the Eskydeck name however it is available in most parts of the world under the Fortruss brand name. Used in projects since 2005 the system has proven itself to be quick and reliable providing cost savings in both materials and project time schedules. The ever expanding product line of Fortruss is also made available to Eskydeck in Australia. Eskydeck manufactures all products and components in Australia.

# Understanding ICF

## Cutting through the Misinformation of ICF

There is no wall and floor system to match ICF and there is a lot of BS floating around about EPS.

Breaking the cycle of misinformation about ICF - there are 2 basic facts:

1. **Concrete** - on its own fails to be a sustainable energy efficient product. It is still the most cost effective product over the life span of the building and you cannot deny the strength of concrete.

2. **EPS Expanded Polystyrene** - most people suffer from "The Polystyrene Cup Syndrome" when they hear about EPS. They are concerned that EPS is not biodegradable. Just think about it, do you really want a biodegradable house. Building the Eco ICF way allows us to build multigenerational buildings that will last over 100 years. It is the most cost effective insulating product known to man. It is 98% air, 2% product and on its own it has little structural strength.

Putting these two products together creates a third dimension which we call the ICF effect.

The thermal mass of concrete is locked up between two panels of EPS. This arrests the cycle of temperature in the concrete and keeps it at a constant. By keeping concrete at a constant temperature (a) it will last longer and (b) it will not matter whether you have a blizzard or a fire storm on the outside, the inside will remain a constant temperature.

The secret of the building science behind ICF is understanding what happens when you put concrete and EPS together.

To understand ICF more fully and to learn how to use ICF effectively in your home or building, talk to one of our accredited Eco ICF Builders.

*David Kuhnert*
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*David Kuhnert is a registered builder QBSA No. 10415, with 45 years building experience. He is willing to train the next generation builders in the ICF Industry. The company has the backing and support of many ICF experts around the world, including David Wester in Canada. David Wester is the Engineer/Designer behind the Eskydeck flooring system (a state of the art flooring system which can be used in conjunction with normal building practices in Australia, as well as ICF buildings). David Wester has 25 experience in the ICF Industry.*

# HOW Eco ICF
# WALL & FLOOR SYSTEMS
# WORK

## SIMPLY BETTER HOMES

Insulating concrete forms (ICF's) are an advanced system for building both a home's foundation and above-grade exterior walls. Interlocking hollow blocks of insulating foam are stacked on foundation footings, reinforced with steel rods, and filled with concrete. The forms are left in place, providing superior insulation. ICF walls are solid with no air spaces or seams, making cold spots and drafts a thing of the past.

The Eskydeck floor system fits perfectly with the Eco ICF walls. The benefits of using Eskydeck are

* Less bracing, faster completion time, less cost, no cranes
* Trade friendly installation of electrical and mechanical systems using conventional methods
* Controlled environment making decorative concrete finishes possible
* Superior Acoustic Performance
* Eskydeck is Australian made and cost competitive

Once the ICF walls are in place they are ready for standard interior drywall and your choice exterior cladding or render.

## THE PERFECT AUSTRALIAN BUILDING TECHNOLOGY

Given Australia's demanding climate, Eco ICF wall and floor systems are the perfect choice for long-lasting comfort, superior energy efficiency and outstanding protection. Eco ICF homes are protected from extreme weather conditions, whether it be bushfires, cyclones, high temperatures or freezing conditions.











**Eskydeck Floor  Palmwoods**



**Eskydeck Floor Palmwoods**



**Completed ICF Home**

# Energy Efficiency
## in Eco ICF Homes

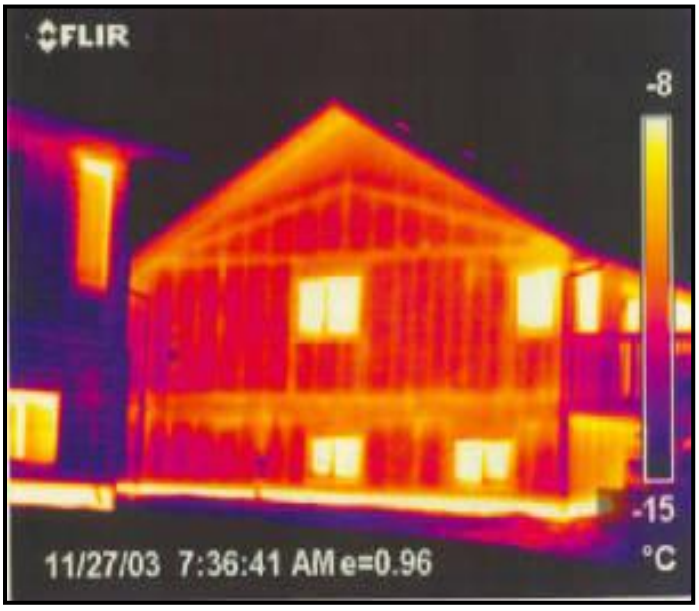
On average, Eco ICF homes use 40% less energy than identical wood-frame houses built to current building code standards. The insulating blocks used to construct Eco ICF walls and floors are made from high performance rigid insulation. Combined with the heat storing properties of the concrete core, Eco ICF walls and floors provide superior insulation and reduce the effects of wind and outdoor temperature swings on home comfort. 40% less energy use means 40% lower energy bills, year after year.

Eco ICF homes demonstrate the incredible energy efficiency that can be achieved using this advanced home building system. You can also be assured that as the requirement for energy efficiency increases in Australia, your Eco ICF home will always comply with the latest building regulations. Eco ICF homes are multi generational homes lasting in excess of 100 years.

### DRAFT FREE CONSTRUCTION KEEPS THE WEATHER OUTSIDE

In most homes, a significant portion of heat loss is caused by air leakage through the exterior walls. With traditional construction, exterior walls have hundreds of small joints where wall studs, floor plates and door and window framing meet. Every joint is a potential air leak that can let cold or hot air, dust and moisture into your home. However Eco ICF wall systems dramatically reduce unwanted air leakage. This prevents mould and dust accumulating in your home.

With ICF construction the exterior walls are a continuous structure from the base of the foundation to the eaves. By eliminating unnecessary joints, air leakage is kept under control. An advanced heat recovery ventilation system is installed to ensure superior indoor air quality.




FRAMED HOME LARGE HEAT LOSS




ICF HOME SHOWING LITTLE HEAT TRANSFER

# How **Radiant Heating** works

## THE NEXT STEP IN HOME HEATING/COOLING

Dependable warm-water radiant heating has been used for centuries. In-floor radiant systems combine this proven concept with modern technology and high performance materials to deliver the most comfortable home heating available.

At the core of every in-floor radiant system is a network of super durable seamless tubing. Developed in Europe more than three decades ago, this high tech tubing is designed to last the lifetime of your home.

Warm water pumped through the tubing gently heats the floor, which then radiates the warmth upwards. There are no heat vents or return-air ducts.

This whole system can also be used for cooling in warmer climates by pumping cool water through the tubing, thus making for a very comfortable home without the need for conventional cooling methods.

## THE "ULTIMATE COMFORT SYSTEM"

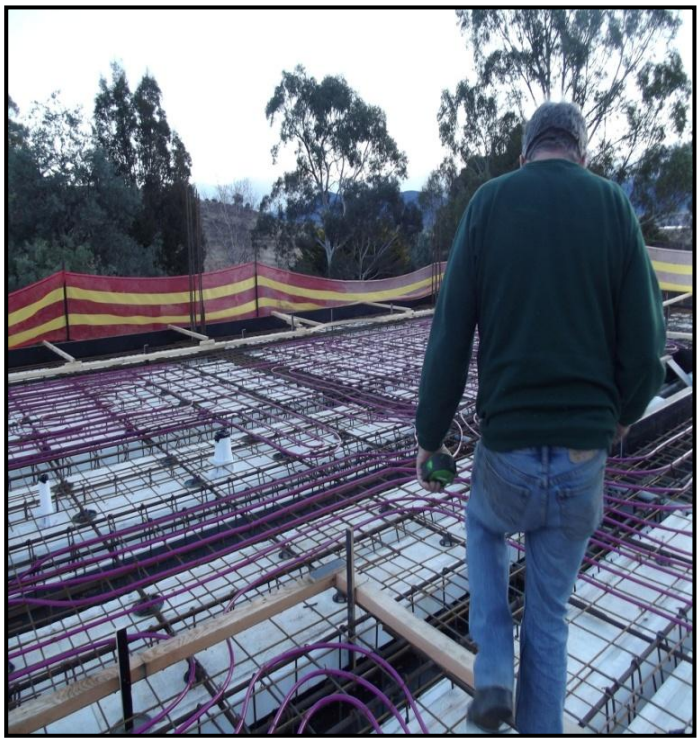
In-floor radiant heating systems have three main components:

* Radiant heat tubing is securely embedded in the concrete floor slab. The thermal mass of the concrete stores a large amount of heat energy which is gently released upwards into the home as radiant heat.

* Thermostat and control valves monitor temperatures in the home and send warm water to the tubing as additional heat is needed. The control system anticipates heat requirements, so the temperature in the home remains virtually constant.

* Boiler and circulation pumps produce heated water and power the system. Gas, oil or electric boilers can be used, depending on your fuel preference. These systems, which are much smaller than conventional furnaces, use no fans or blowers so in-floor radiant heating is virtually silent.





# Why Eco **ICF** Homes are **Whisper-Quiet**



## SOLID WALLS MAKE THE DIFFERENCE

A peaceful, quiet home without the intrusion of neighbourhood noises enhances your comfort and sense of privacy. Eco ICF homeowners often say that the quietness of their home is one of the things they value most.

Sound travels easily through air and the light-weight insulation that is typically used in frame walls.

In contrast, the layers of rigid insulation and steel reinforced concrete in an Eco ICF wall are ideal for absorbing sound, keeping outside noise it belongs.

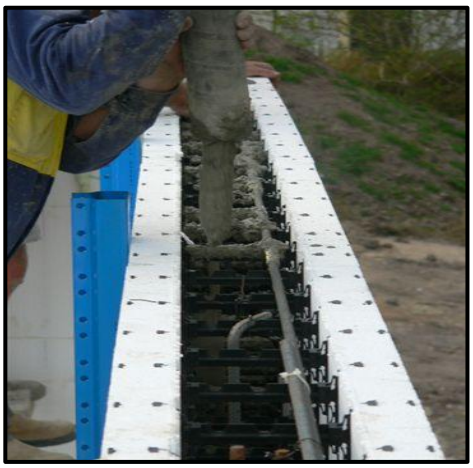






**NOISE**





## PROVEN PEACE AND QUIET

Laboratory testing has proven the effectiveness of concrete wall systems in controlling noise infiltration. With traditional construction, common noises are muffled by a frame wall but are still heard clearly within a house. Eco ICF systems can reduce the outside noise that enters a home by 60% or more. In practical terms, this means noise produced by lawn mowers, truck, aeroplane and motorcycle engines and emergency vehicle sirens will be reduced to inaudible levels by an Eco ICF wall.

# Healthier Living in
# Eco ICF Homes



## INDOOR AIR QUALITY - SOMETHING WORTH PROTECTING!

Eco ICF homes are designed to provide better indoor air quality. This can make a real difference to your comfort and well being. Current construction techniques mean that homes are more air tight. Air quality can suffer without a proper ventilation system. Heat recovery ventilators offer a reliable and energy efficient solution to indoor air quality. The ventilation systems in Eco ICF homes continuously remove stale indoor air from kitchen and bathroom areas and they replace stale air with fresh, filtered outdoor air that is circulated to every room in the house.

Simple wall mounted controls let you determine the level of ventilation, as easily as setting the temperature in your home.

## VENTILATION + MOISTURE CONTROL = A HEALTHIER HOME

An HRV system consists of an advanced heat recovery unit that salvages heat from exhaust air and uses this energy to pre heat incoming fresh air. The result is fresh and lower heating bills.

The whole house ventilation provided by an HRV also helps prevent moisture build up that can cause mould growth - a common trigger for allergies and asthma.

Because all the fresh air coming into your home passes through the ventilation system, it's easy to filter out dust, pollen and other airborne pollutants that can cause health problems for you and your family.