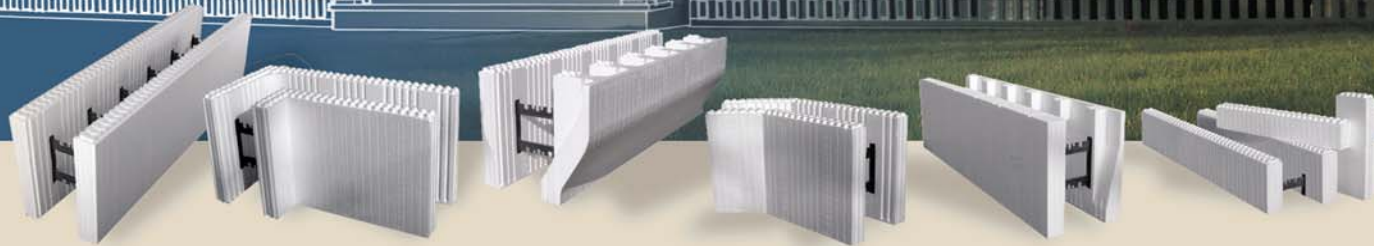




Good. Solid. Logix.™



Logix Insulated Concrete Forms

*The Role of a
Modern Method of Construction
in meeting the
Stern Review*

C-60 Industrial Partner Seminar Series

*Presented by: Jonathon Barnett
General Manager of Logix UK*

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 Ben Clayton KTP Associate*

An Overview of the Stern Review

Implications for the Builder / Developer

Introduction to Logix Insulated Concrete Forms

Questions and Answer Session



- ❑ The Stern Review is a Government funded review into the economic effects of Climate Change.
- ❑ 576 pages of economic complexity.
- ❑ It examines the scientific evidence for climate change.
- ❑ It then considers economic implications

- ❑ The Stern Review asks some basic questions.
- ❑ Option 1: Continue as we are.
 1. What would be the effects of option 1?
 2. What would be the economic implications option 1?
- ❑ Option 2: We take strong action to reduce emissions.
 3. Can we make a difference at this stage?
 4. What level of change would be required to make a difference?
 5. What would be the cost of this option?

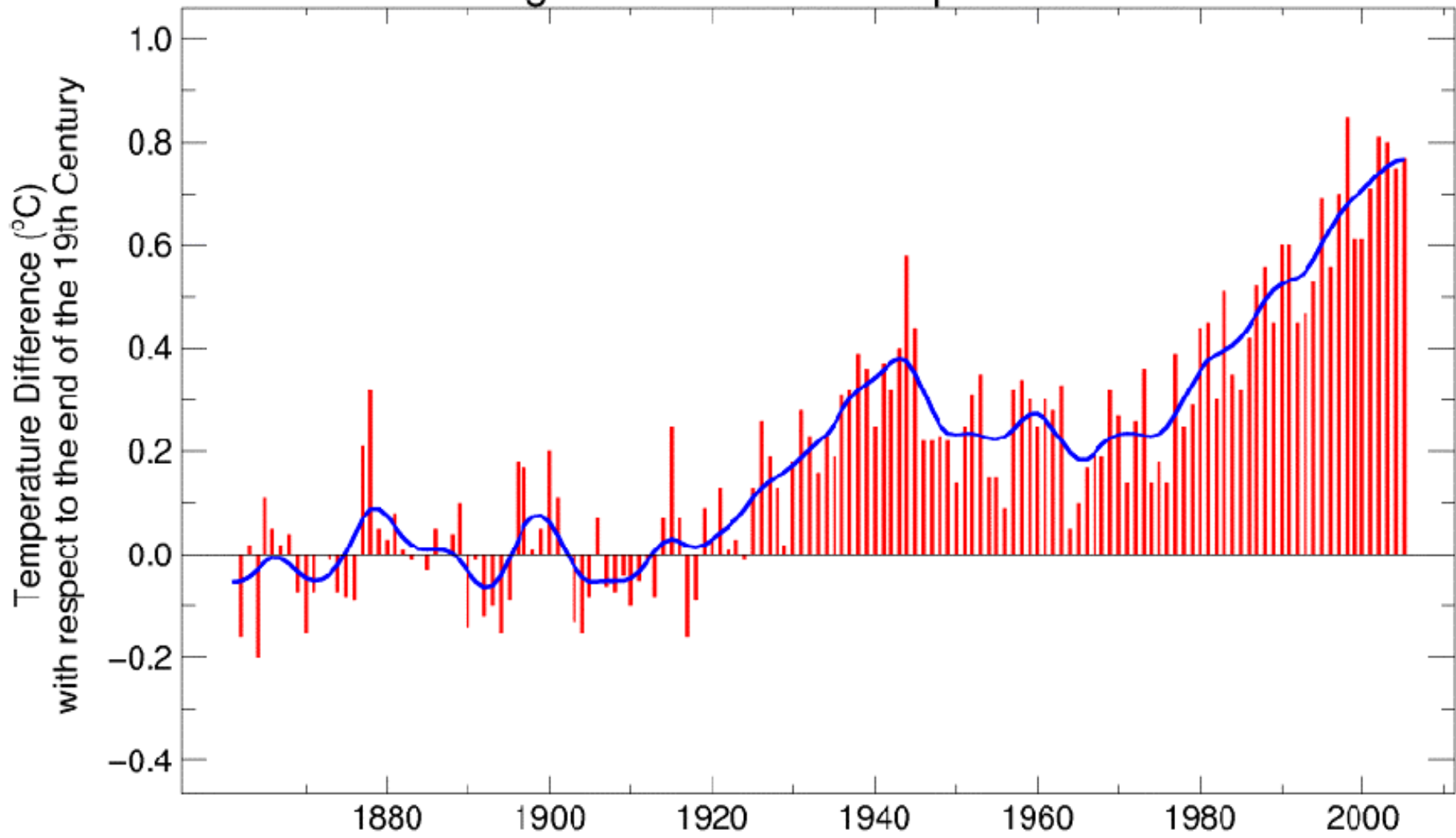
Option 1

☐ Nature's Evidence

- The earth has warmed 0.7°C since 1900
- All of the ten warmest years on record have occurred in since 1990
- Many plants have been moving northward at a rate of 6Km / decade.
- In temperate Europe plant flowering, and egg laying are occurring 2-3 days earlier each decade.

Figure 1.1

Global Average Near-Surface Temperatures 1861– 2005



Source: Hadley Centre, Dec 2005

Option 1

- Is climate change simply part of the natural variation of the earth's atmosphere?

- Natural factors can account for much of the temperature rise in the first half of the 20th Century.

- But natural causes alone cannot account for the levels of change we are now seeing.

Option 1

- ❑ Greenhouses gases, CO₂
- ❑ 1750: 280 ppm
- ❑ 2005: 380 ppm (up 35%)
 (currently higher than any point in the last 650,000 years)
- ❑ Total CO₂e: 430 ppm (up 53%)
- ❑ 2050: 550 ppm
 » (at current levels of emissions)

Option 1

- ❑ At current emission levels, global average temperatures would rise by between 2-5°C, or more.
- ❑ More heat waves:
 - for a 1°C average temperature rise, and 1 in a 100 event becomes a 1 in 10!
 - At higher latitudes and in continental regions temperature increases will be significantly greater than the average.

Option 1

- ❑ Erratic rainfall:
 - Reductions in rain and increased droughts for the Mediterranean regions and N. Africa.
 - Severe Droughts for much of S. America and Asia
 - Increased rainfall at high latitudes.
- ❑ End of the THC (North Atlantic Thermohaline Circulation)?
 - Gulf Stream and N. Atlantic Drift Already reduced by 30%.
 - Increasing cooling, but offsetting a proportion of regional warming.

Option 1

- ❑ Positive feed back caused by natural effects:
 - As temperatures rise plants absorb less carbon.
 - As permafrost melts potentially release large quantities of Methane.
 - As the sea warms it absorbs less CO₂.
- ❑ Positive feed back could add an additional 1-2°C to global temperatures by 2100.

Option 1

- ❑ Sea Levels will continue to rise.
 - Currently rising at 3mm year, this will accelerate as the glacial and polar ice melts.
 - During the last interglacial period (125,000) years ago, the melting of the arctic contributed several metres to sea level rise.
- ❑ SE England is sinking, combined with increased storm surges= greater flood risk.
- ❑ 17 million people, in the UK, live within 10km of the coast.

Option 1

- ❑ Using current formal models the review estimates that if we continue as we are the overall cost will be equivalent to losing 5% of global GDP.

That 5% of everything you earn,
and 5% of everything every business earns,
each year, forever.

- ❑ If a wider range of risks are taken into account the cost could rise to 20%

Option 2

- ❑ Some level of change is already built in.
- ❑ The seas have taken up around 84% of the total heating of the earth's system in the last 40 years.
- ❑ If emissions stopped today, it would still result in 0.5-1°C of warming.

Option 2

- YES, action taken now can help avoid the worst case scenario.

- It requires wide spread and urgent action

- Can we afford not to?
 - Without intervention we could well reach 1000ppm CO₂e by 2100, resulting in a 3-10°C temperature rise.

Option 2

- The level of temperature change will depend on the level of global emissions going forward.

Stabilisation level (ppm CO ₂ equivalent)	Temperature increase at equilibrium relative to pre-industrial (°C)		
	IPCC TAR 2001 (Wigley and Raper)	Hadley Centre Ensemble	Eleven Studies
400	0.8 – 2.4	1.3 – 2.8	0.6 – 4.9
450	1.0 – 3.1	1.7 – 3.7	0.8 – 6.4
500	1.3 – 3.8	2.0 – 4.5	1.0 – 7.9
550	1.5 – 4.4	2.4 – 5.3	1.2 – 9.1
650	1.8 – 5.5	2.9 – 6.6	1.5 – 11.4
750	2.2 – 6.4	3.4 – 7.7	1.7 – 13.3
1000	2.8 – 8.3	4.4 – 9.9	2.2 – 17.1

Option 2

- ❑ Stabilising CO₂e levels at 440-460ppm, (about current levels) means reducing global emissions by:
 - ❑ **25%** when compared to 1990 levels,
or
 - ❑ **60-70%** compared to business as usual.

Option 2

- ❑ Climate change will effect a range of industries:
 - Agriculture,
 - Care and Nursing,
 - Manufacturing,
 - Transport,
 - and our individual energy related habits
- ❑ The cost of action can be limited to around 1% of global GDP each year.

Option 2

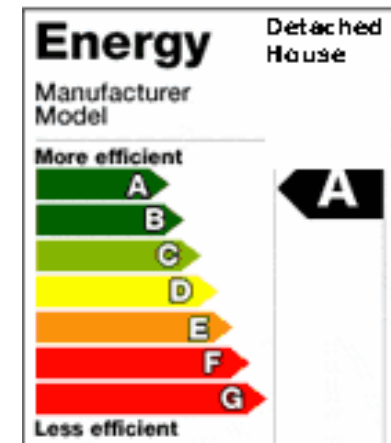
- ❑ Consumer Choice?
 - Consumer demand for more environmentally friendly products?
- ❑ Regulation:
 - Forced measures to implement changes
- ❑ Taxation Policy:
 - Tax will be increasing used to change our habits.
 - London Congestion Charge.
 - Climate Change Levy,
 - Carbon Tax

*Implications for the
Builder / Developer*

- You can expect to see further tightening of the Building regulations.
- Air-tightness Tests: Levels reduced further.
- TER (target emissions rate): Increases in the improvement factor (currently 20%)
- Reductions in allowable cold bridging.
- Energy Efficient appliances



- ❑ Consumer Pressures.
 - Increased demand for air conditioning?
 - Home information packs 1st June 2007, Energy Performance Certificate.
- ❑ Continued emphasis on density of housing.
 - High density housing is overall more energy efficient. Flats, Terraces, etc.
 - Greater use of basements. For houses of equal volume, a house with a basements is 10% more efficient.



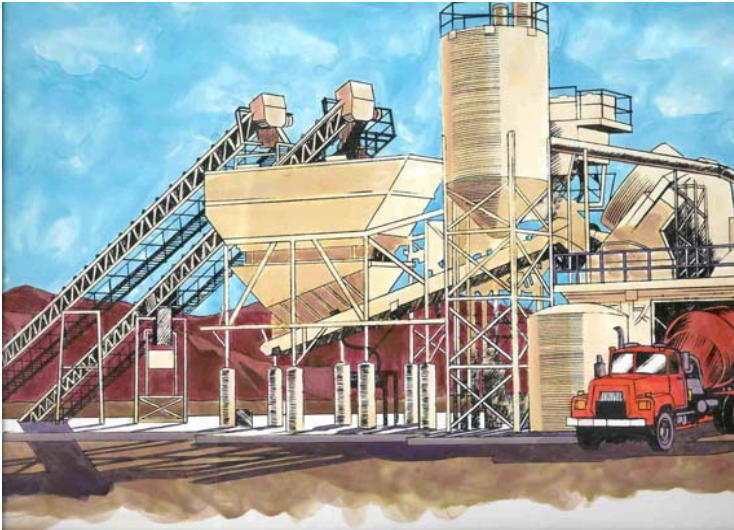
- ❑ Do these changes mean houses will cost more to build?
- ❑ Meeting these requirements using traditional techniques will need
 - extra insulation materials,
 - extra care and attention to details,
 - and slow building down.
- ❑ Cost of reworking buildings that fail is very expensive.

- Modern Methods of Construction offer Opportunities for builders to:
 - Meet the building regulation changes, easily.
 - Make their homes stand out from the crowd.
 - Sell earlier, at better prices
 - Increase margins by increasing plot density, through use of basements and building into the roof space.
 - Use less, skilled labour.

With no cost penalty compared to traditional methods.



*Introduction to
Logix
Insulated Concrete Forms*



Concrete

ICFs are the successful marriage of two proven technologies

Expanded Polystyrene (EPS)





- Longevity**
- Strength**
- Durability**
- Versatility**

- Exceptional insulation properties
- Safe
- Cost-effective
- Highly mouldable



An ideal marriage of building materials offering...



- High strength
- High insulation value
- Versatility
- Ease of use
- Relatively low cost

Based on a finished wall



❑ Thermal:

- Standard EPS: U value $0.23\text{W/m}^2\text{K}$
- Neopor: U value $0.19\text{W/m}^2\text{K}$
- Exceeds requirements of Part L of Building Regs by 40%



❑ Acoustic:

- Combination of EPS and concrete means Logix ICFs easily meet the requirements of Part E of Building Regs



Based on a finished wall

Fire:

- 2 hour retardant rating

Air-tightness:

- 1 to 2 air changes per hour



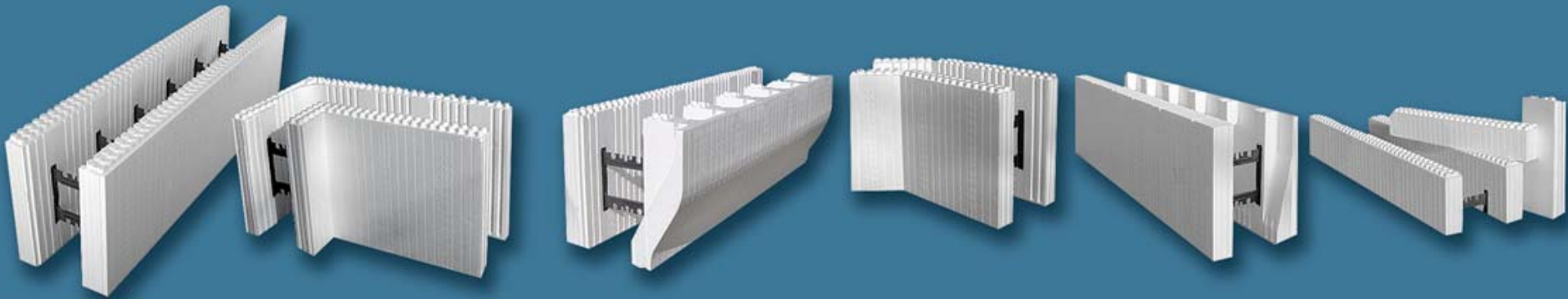


☐ Loadings:

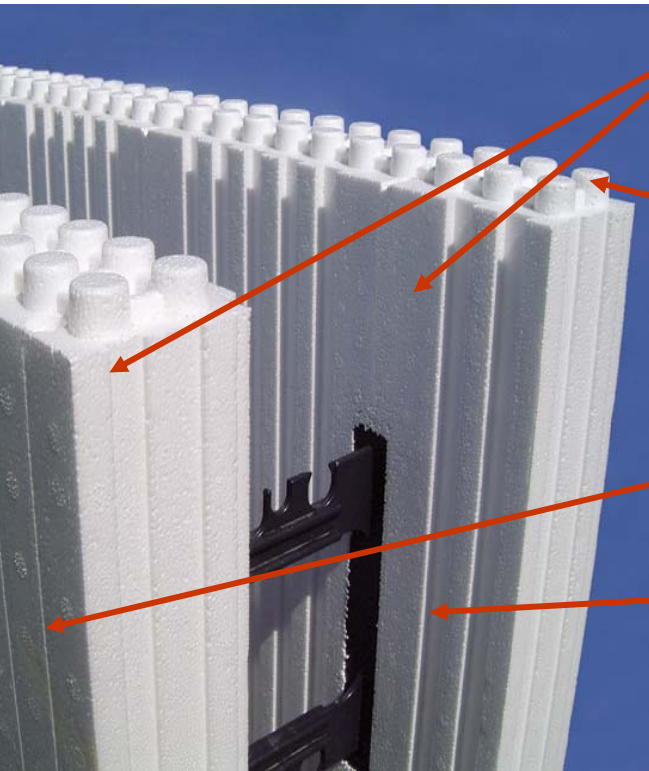
- Capable of withstanding wind speeds up to 250mph
- Adaptable to individual requirements of project
- Suitable for multi-storey constructions
- Suitable for basements
- Compatible with most flooring and roofing systems



“Like Lego™, only more fun...”



LOGIX ICFs



- ❑ 2no 70mm thick EPS panels
 - Competitors range from 38 - 65mm
 - Fully reversible
- ❑ Interlocks top and bottom
 - Repeated regularly for easy alignment
 - Secures courses without adhesive
 - Prevents weeping of concrete at joints
- ❑ External vertical cutting guides
 - Regularly spaced to aid accurate cutting on site
- ❑ Internal end cap guides
- ❑ Standardised features throughout the range
 - Permits multiple combinations of forms

For the building contractor

- ❑ Most builder-friendly ICF on market
 - Standard modules
 - Robust and solid, comprising 2 x 70mm EPS panels
 - Lightweight and easy to handle
 - Interlocking system easy to align
 - Web fastening surfaces
 - Widest and thickest available, making it easier to attach fasteners for wall finishes



For the building contractor

- ❑ Reduced build-time
 - Straightforward on-site installation
 - 0.5m² modules easily cut-to-size with hand tools
 - Rapid placement of steel reinforcements without slowing the build
 - Simple mechanical fixing of fixtures and wall finishes
 - Concrete-pour rate of one storey or 3m height per day
 - Bricklaying / external finishes moved off critical path
 - No timber shrinkage cracks



For the building contractor



- ❑ Efficient use of materials
 - Wide range of shapes and sizes reduces on-site cutting
 - Off-cuts used elsewhere in wall
 - Speed up construction from strip foundations, to reduce muck disposal
- ❑ All-year round construction
 - Protective EPS ensures optimum curing conditions for concrete
 - Less dependent on weather

Webs

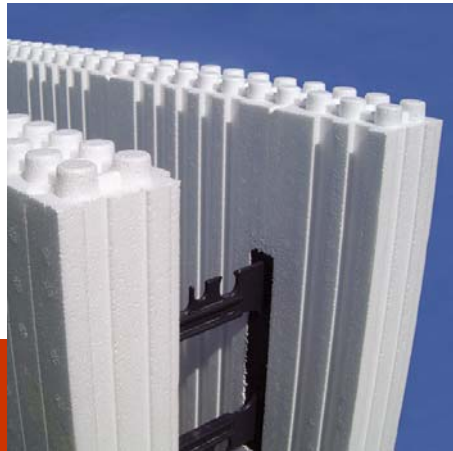
- ❑ Embedded into polystyrene during manufacture
 - Ensure complete integrity of block during construction
 - Allow faster build speeds
- ❑ Configured for securing reinforcement bars
 - Remove need for tying bars together
- ❑ Manufactured from non-thermally conductive polypropylene
 - Eliminate cold-bridging through the web itself
- ❑ Extends to full height of forms
 - Increase strength of block
- ❑ Easy to cut using hand tools
- ❑ High recycled content



Positioning of the Webs



- ❑ Positioned at 203mm intervals with 8" centres
 - Unrestricted flow of concrete during pour
- ❑ Allows easy poker-vibration in concrete settlement
 - Eliminates air-pockets in concrete
- ❑ Marked on external faces of forms
 - Guides the fixing of any screw fitments
 - E.g. wall surfaces finishes, brackets
 - Aides with placement of plasterboard and wall cladding




For the homeowner

- ❑ Energy-efficiency:
 - Enhanced levels of thermal insulation
 - Reduced fuel consumption and wastage
 - Contribute to lower CO₂ emissions
- ❑ More comfortable interiors:
 - Effective sound insulation
 - Helps protect homes from unwanted noise pollution
 - Airtight construction
 - Significantly reduces drafts

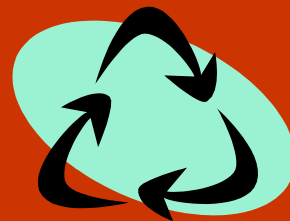



For the homeowner

- 
- ❑ Design individuality:
 - Virtually any wall feature can be realised
 - Compatible with most internal and external wall finishes
 - ❑ Peace of mind:
 - Confidence in the life-long performance of LOGIX ICF
 - LOGIX UK's commitment to quality
 - From in-house manufacture
 - Through to hand-in-hand support to its approved installers
 - ❑ Ecological impact:
 - Environmentally-friendly construction method:
 - High-recycled content of LOGIX ICFs
 - Complete recyclability of foam panels
 - Preservation of natural resources

Expanded Polystyrene (EPS)

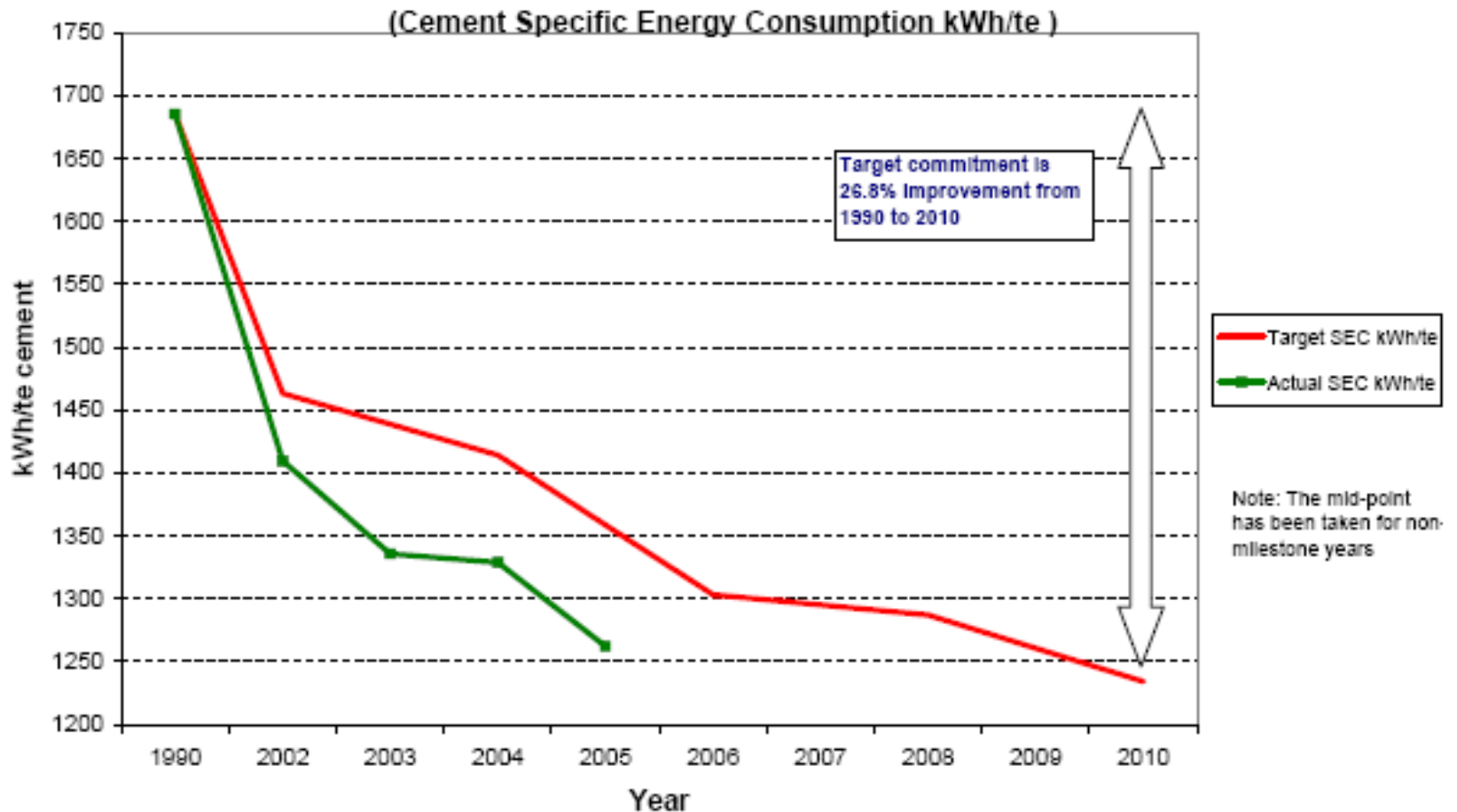
- ❑ Proven characteristics
 - Thermal performance does not degrade over time
 - Fully recyclable
 - 97% air
 - No VOCs, CFCs, HCFCs are used during manufacture
 - No chemicals are release in to the building after construction
 - EPS won't support mould or bacteria
 - Moulded at 25g/l to optimise thermal insulation and strength
 - In-house manufacture and quality control in UK facility



- 
- ❑ Concrete is a UK based Material:
 - 90% of Portland Cement is manufactured in the UK
 - The materials used to make concrete are among the most abundant on earth.
 - 85% of aggregates are used within 30km of the extraction site.
 - Over 7000 SSSIs in the UK have their origin in extraction site.

The Cement Industry has reduced emission by 25% on 1990 levels

Climate Change Agreement Performance and Targets 1990 to 2010



- Concrete has less embodied energy than kiln dried timber, kg for kg.
- The amount of cement used in a concrete can be substantially reduced by the use of recycled material, (GGBS, PFA).
- You may be using it already.
- C60 house uses 50% cement replacement.
- Recycled aggregates

For Contractors



Insulating
Concrete
Formwork
Association

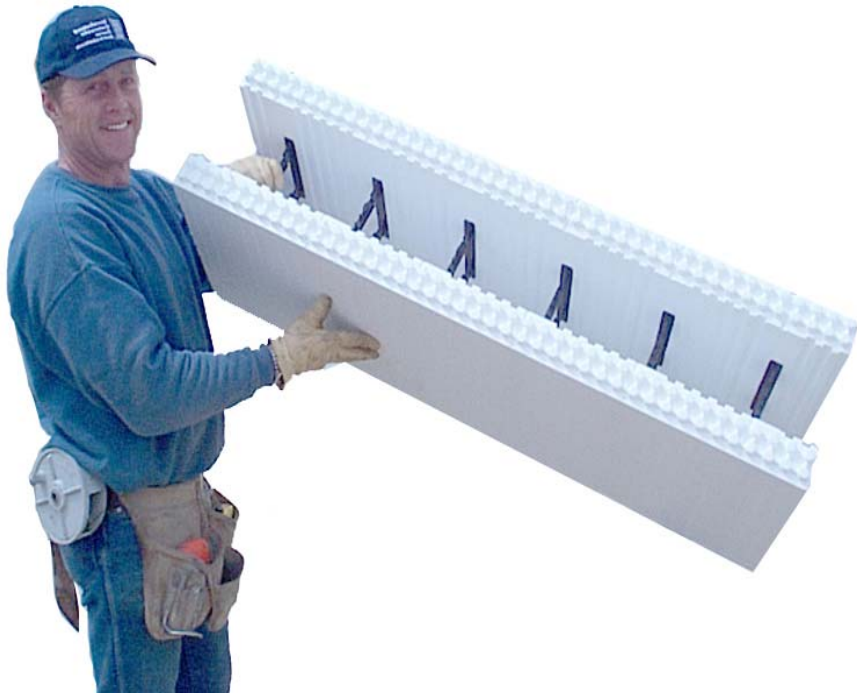
- Comprehensive product manual
- ICFA membership
- Approved installer network
 - Recommendations and referrals
 - Forwarding of leads
- Training programme
 - Off-site dry build
 - On-site practical instruction
- Technical and practical support
 - Installation advice
 - Estimating service
- Availability of alignment system



Multiple uses...



LOGIX ICFs...



***Building with
LOGIX ICFs,
Demo***

Useful tools and materials

- Hand Saw
- Cordless Drill
- Internal Vibrator
- Alignment System
- Foam Adhesive
- Fiber Reinforced Tape
- Zip ties
- Transit or laser
- String line and Chalk line
- Rebar Bender/Cutter

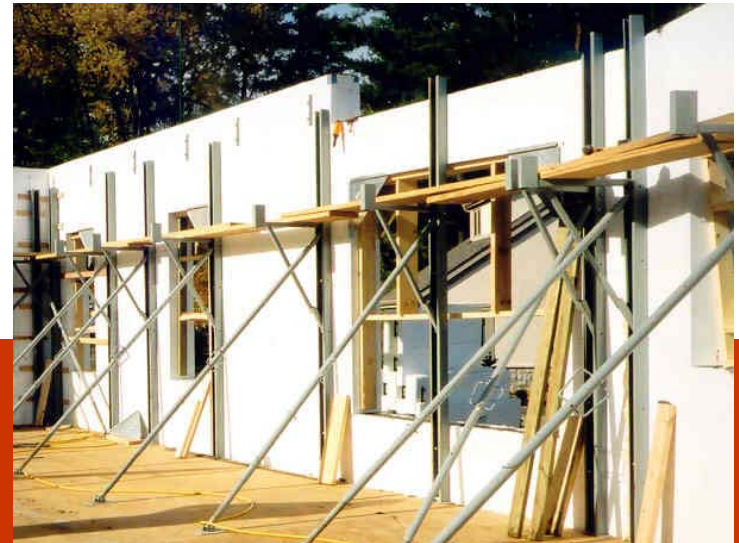


Stage 1: Footings / Slabs on grade



Verify that wall layout is in accordance with plans and specifications

Stage 2: Placement of first and following courses



Stage 3: Check level and square



Stage 4: Reinforcement – installed without tying

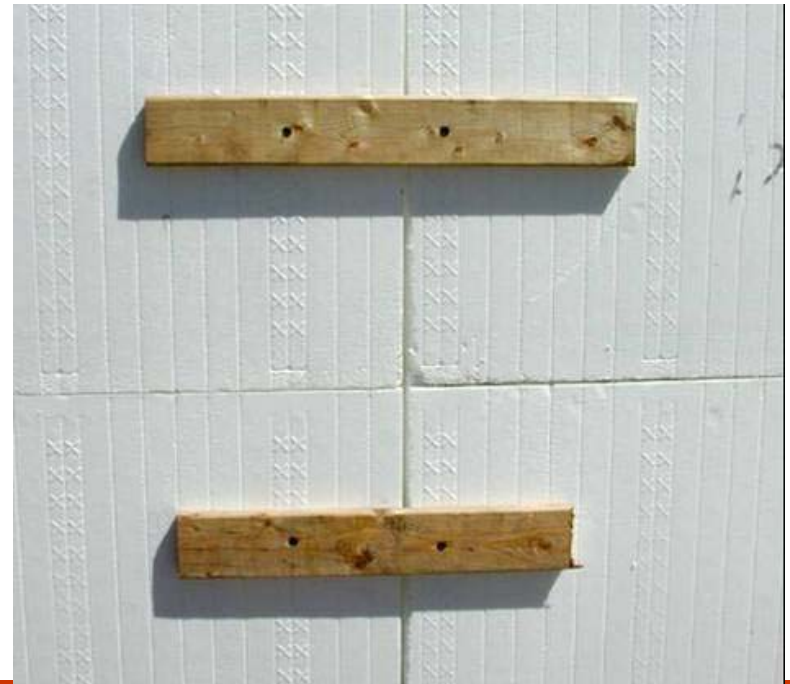


Project dependent

Stage 5: Install window / door frame / Service penetrations



Step 6: Wall alignment / bracing



Step 7: Concrete placement & Compaction



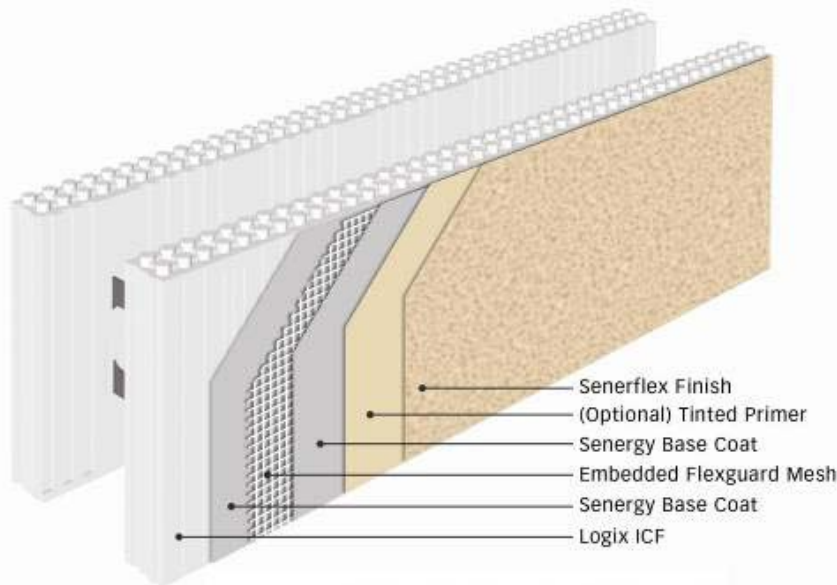
Step 8: Electrical and plumbing channelling



- ❑ Wiring should be in line with IEE 16th Edition. I.E.:
 - PVC cable in conduit
 - LSZH cable can run in contact with the EPS
 - Cables may need de-rating.

Step 9: Interior and exterior finishes

An Example of a thin coat acrylic render applied to Logix ICF blocks.



Suitable acrylic renders are also available from a number of leading suppliers including Remmers, Sto, Marmorit, Webbers, Heathfields, Dryvit, and others.

Bricks &lor Slips



Renders

- ❑ Some climate changes is inevitable
- ❑ There is still time to avoid the worst impacts of climate change, if we take strong action now.
- ❑ Emission need to be reduced by 25% from 1990 levels, globally.

- ❑ The challenges for builders and developers will continue increase.
- ❑ The builders who embrace the challenges before them have a real opportunity to set their business ahead of the crowd.
- ❑ Using Logix ICFs you can tackle these challenges – Today.

Logix Insulated Concrete Forms.

- Easy to use,
- Thermal insulation up to 42% better than Building regs.
- Air-tightness 1-2 changes per hour
- Fast builds
- Durable builds 200 yr+ buildings
- Reinforcement without ties
- Fire resistance
- Ex stock availability

LOGIX ICFs...

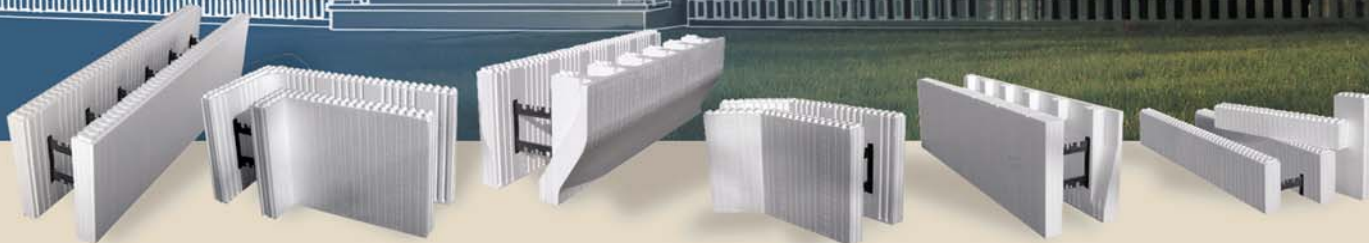


Any Questions?

www.LOGIX.UK.com



Good. Solid. Logix.™



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