

CHANGING AN INDUSTRY Market Rate Delivery of Low Energy Passivhaus Buildings

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Why Change?

Do we really need to have this conversation?

Nope, nope, so much nope

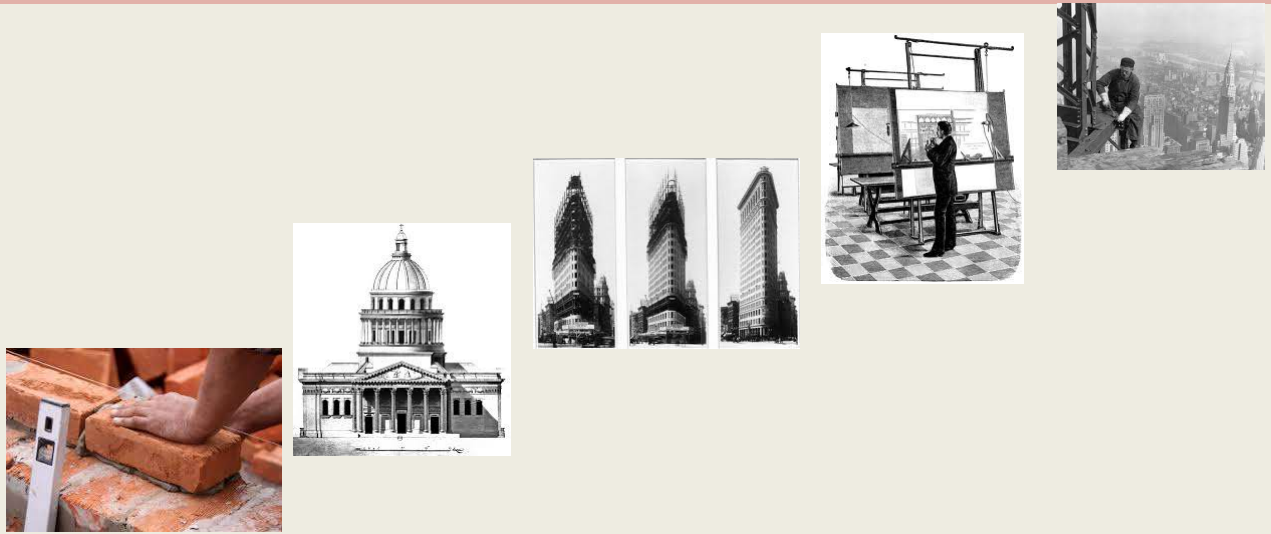
Global Energy Supply (Green) vs. Global Energy Demand (Red) graph showing a significant gap (OverSupply) from 1970 to 2020.
 Drivers of Climate Change bar chart: Residential & Commercial Buildings (approx. 15%), Everything Else (Industry, travel, agriculture etc...) (approx. 10%).





Proactive or Reactive

It's our choice



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What will YOU do?

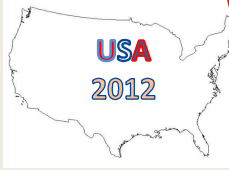
It's our choice




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We have no choice


From a 2012 Presentation




USA
2012




ICC
200
201
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01
CODE COUNCIL

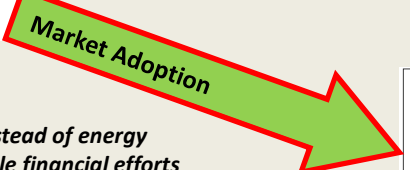





Code Adoption by State




National Legislation




Market Adoption




"Investing in value instead of energy consumption requires little financial efforts but rather creativity and intelligent solutions"
 ~ Wolfgang Feist





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Define the Problem


The first step in solving a problem

- Design & Construction
 - Broken process
 - Lack of integration
 - Lack of respect
 - Lack of basic physics
 - Lack of a useful feedback mechanism
 - Lack of components


危機 危机

"Forget everything you know and walk in backwards" ~ Katrin Klingenberg





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What do we need to do?

- Create a better process
- Create a better integration
- Ease of use, where respect, humility and understanding
- Educate basic physics the profession in basic physics
- Design and install feedback mechanisms
- Create test, projects and market components

Create, test, re-
 market components









**SOUTH PASSIVE
PACIFIC HOUSE 17**



BUILDSMART
Energy efficiency made simple

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PASSIVSCIENCE
Knowledge saves power

Craft Solutions

Eliminate non-value added work

- Envision the product properties
 - The product will seek to create and leverage efficiencies in design, manufacturing and construction to create a market rate product as part of a solution for high performance construction in sector being served.
- Design
 - The product will allow designers flexibility but will allow designer to trade flexibility for reliable cost savings, quality control, ease of detailing, ease of energy modeling, robust durability
- Manufacturing
 - The product will embrace a lean standardized approach with minimized shop drawing, automated parts creation, single point entry, efficiency in factory motion
- Construction
 - The product will be intuitive to North American trades, consolidate or eliminate site labor, create simple solutions to complex issues






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Energy efficiency made simple

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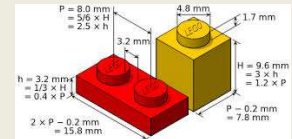
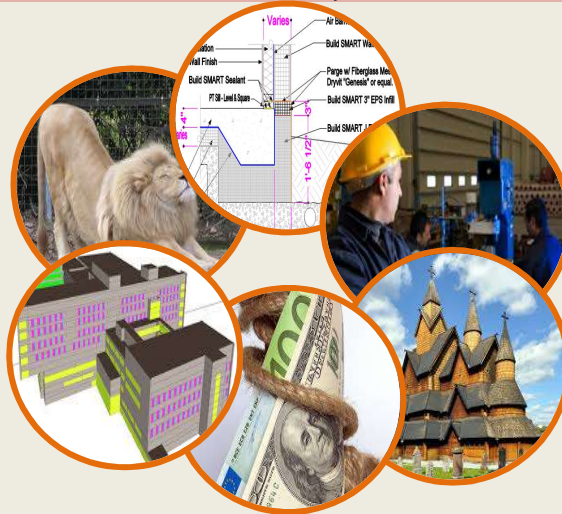
PASSIVSCIENCE
Knowledge saves power

Design

Allows designers flexibility, constrains flexibility for reliable cost, quality control, ease of detailing, ease of energy modeling, robust durability

Standard System

- Think Lego @
 - Design Flexibility
 - Ease of Detailing
 - Quality Control
 - Robust & Durable
 - Reliable Cost
 - Easy Energy Models







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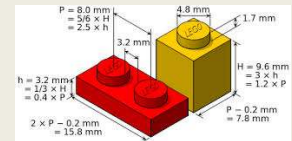


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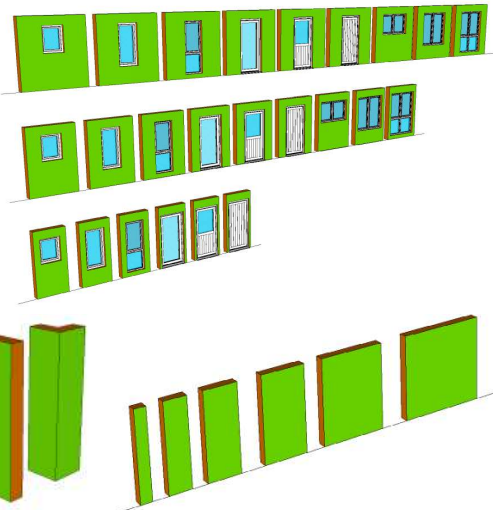
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Manufacturing

Embrace a lean standardized work approach, minimized shop drawing, automate parts creation, single point entry, efficiency in factory motion

- **Standard System** (inspired by Henry Ford – “Any color as long as it’s white”)
 - 8’ & 9’ Heights
 - 1’, 2’, 3’, 4’, 6’, 8’ Straight Panels
 - 2’ Inside and Outside Corners
 - Standard Passivhaus Certified Single & Twin Windows and Doors
 - Affordable (Data from 54 projects priced)
 - Single Family - \$20-\$30 (USD) per sq ft floor area
 - Single Family - \$260-\$390 (NZD) per sq meter
 - Multi Family - \$8-\$15 (USD) per sq ft floor area
 - Multi Family - \$104-\$195 (NZD) per sq meter
 - Eliminates Shop Drawings
 - Components pre-cut & jugged to reduce production time
 - EU Windows & Doors
 - Simplified Purchase
 - Delivered Installed & Airtight



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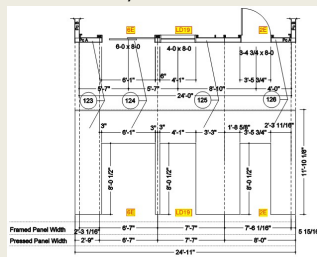
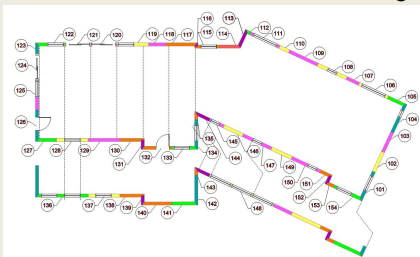
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Manufacturing

Two Systems, One Purpose – Making Passivhaus accessible to a larger market

- **Custom System**
 - ANY Height
 - ANY Configuration
 - ANY Munster Joinery Passivhaus Certified Windows and Doors
 - Affordable? - \$40-\$75 (USD) per sq ft floor area
 - Affordable? - \$520-\$975 (NZD) per sq meter
 - NEED Shop Drawings
 - ALL Components - custom cut and layout
 - EU Windows & Doors –
 - Simplified Purchase
 - Delivered Installed & Airtight (when size allows)



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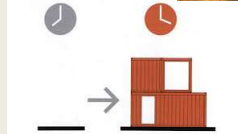
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Construction

The product will be intuitive to North American trades, consolidate or eliminate site labor, create simple solutions to complex issues

- Modular systems
 - Slab Foundations
 - Basement Foundation
 - Framed Walls
- Require basic skills
- Requires less labor
- Allows faster construction



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Construction

J Form



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Construction

J Form ~ Bottom Plate



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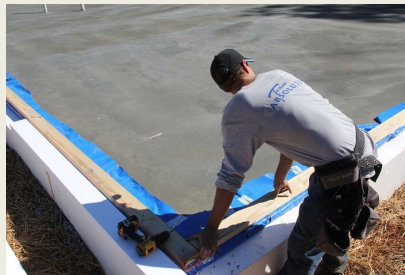


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Construction

J Form ~ Bottom Plate



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Construction

J Form - Finish



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Construction

Walls



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Construction

Walls



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Construction

Walls



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Construction

Band



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Construction

Walls



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Construction

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Construction

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Construction

Ready for Testing



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Construction

.5 ACH 50 – BEFORE LEAK CHASING!!



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Construction

.45 ACH 50



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Construction

Basement



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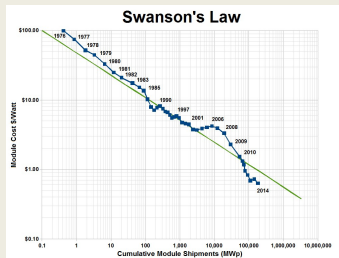


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Is this really the solution?

Of course not, it's a step on the way!



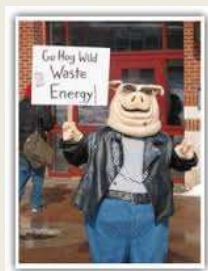
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Conclusion

And now a message from Dr. Feist

“Investing in value instead of energy consumption requires little financial efforts but rather creativity and intelligent solutions”

~ Wolfgang Feist Dresden Conference 2010



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Questions & Contact



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