

CNMI'S NEW ENERGY CODE

Stealth Fighters and Lotus Leaves

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Panel Discussion**

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SLAVERY

- Fierce debate reigned in the English Parliament of 1805 over the abolition of slavery. Slavery proponents pointed out that the trade accounted for 25% of England's GDP, and the country's economy would collapse if it were abolished.

THE BIRTH OF THE INDUSTRIAL REVOLUTION

“Parliament abolished slavery outright. Instead of collapsing, Britain’s economy accelerated. Creativity and productivity surged. Entrepreneurs seeking new sources of energy launched the industrial revolution and inaugurated an era of the greatest wealth production in human history.” Robert F. Kennedy Jr.

AMERICAN SLAVERY, 2008

“The practice of borrowing a billion dollars each day to buy foreign oil has caused the American dollar to implode. More than a trillion dollars in annual subsidies to coal and oil producers has beggared a nation that four decades ago owned half the globe’s wealth. Carbon dependence has eroded our moral authority and endangered our national security.” Robert F. Kennedy Jr.

OPPORTUNITY FOR ENERGY REVOLUTION

- “You never want a crisis to go to waste,”
- Rahm Emanuel, Chief of Staff
- “This is not a cycle, it’s a reset.” Jeff Immelt, CEO, General Electric Co.
- “There is nothing like \$147/barrel oil to create a crisis and trigger a reset.” Howard C. Wiig

\$100/BARREL OIL IS ENTIRELY POSSIBLE

- Oil production is set at about 83 million barrels a day. There is no more easy oil, except in Iraq.
- Economic recovery will increase demand.
- Chinese and Indian economies are growing.
- A production collapse could occur in Saudi Arabia, Iran, Venezuela, Nigeria or in the Gulf of Mexico—another Katrina.

HOW IMPORTANT ARE ENERGY CODES?

- Of all the renewable energy and energy efficiency options, energy codes emerge as the most cost-effective means of transforming markets from wasteful to efficient equipment and keeping money in the pockets of residents instead of shipping it to petro-dictators.

CNMI'S TROPICAL CODE

- On May 1, 2009, CNMI adopted the Tropical Code, a collaboration led by consultant Charles Eley with input from Hawaii, the US Virgin Islands, Puerto Rico, Guam and of course, CNMI. While the HVAC and lighting sections are the same as national codes, the envelope sections are perhaps unlike any in the world.



REFLECTANCE: WHAT MAKES THE CODE UNIQUE

- The Tropical Code calls for an aged roof reflectance factor of 55%. The initial reflectance factor must be at least 73%. The roof membrane must have an emittance of at least 75%.

STEALTH TECHNOLOGY ON ROOFS

- Titanium dioxide is the “ultimate whitener”. It is the brightener in paints, paper, pills, toothpaste—and even candy canes. The stealth technology has long been used in metal roof shingles which appear as conventional colors but have very high reflectance values, and more recently in roofing tiles which likewise appear as conventional colors.

Lotus Leaf: Purify Tropical Buildings



LOTUS NANOTECHNOLOGY

- A German company takes reflective technology a step further by combining titanium dioxide with the nano-structure of the lotus leaf. The leaf grows in muck but sheds the muck in the first rainfall, thus magically “purifying”. The symbolism has endowed the plant with spiritual qualities in Southeast Asia. The Lotus’ secret is a surface of nano-fibers packed so densely that molecules remain suspended and are easily shed. By imitating Lotus surface structure in reflective wall coatings, the German company prevents the growth of mold in tropical settings.

COOL ROOFS AND CLIMATE CHANGE

- The California energy code strongly emphasizes cool roof technologies. The researchers estimate that if 360,000 square miles of urban rooftops worldwide were a light color, enough solar heat would be reflected back into space to delay climate change by 11 years.

ALSO UNIQUE HIGHER WINDOW PERFORMANCE

- While the mainland code permits a maximum solar heat gain coefficient (SHGC) of .35, the Tropical Code calls for a maximum SHGC of .25 when windows are unshaded.

FINAL UNIQUENESS: COMFORT VENTILATION

- Section 4.2(4) of the Tropical Code calls for operable windows, louvers and doors that can be secured in the open position, and wiring for ceiling fans. This is to occupants to take advantage of cool outdoor conditions instead of air conditioning.

POSSIBLE ARRA FUNDS QUALIFICATION

- A comparison by Charles Eley of the Tropical Code to ASHRAE 90.1-2007 and IECC 2009 indicate equivalency in stringency. This would mean that CNMI is well on its way to qualifying for ARRA efficiency funds. The US DOE is still reviewing Eley's report.

SUMMARY

Abolishing slavery in England created the Industrial Revolution and unprecedented prosperity. When America abolishes its oil addiction, dollars and jobs will remain at home, creating prosperity. Energy codes are the most cost-effective means of reducing oil use. In tropical regions, using “stealth” reflectivity to shield homes from heat, and “lotus leaf” technology to keep roofs and walls clean is the best approach for efficiency, comfort and code compliance.

ENERGY CODE DETAILS WILL BE
PRESENTED IN THE “ENERGY
EFFICIENCY 101” SESSION THIS
AFTERNOON

QUESTIONS?



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