

## PRESS RELEASE

### PARADIGM SHIFT ON HEAVY BUILDING MATERIALS FOR OPTIMISED ENERGY EFFICIENCIES IN MOST CLIMATES OF SA

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New research shows the lack of indoor comfort to be the main driver for energy usage in South African buildings. These findings were disclosed by Professor Dieter Holm at the 'Industrial and Commercial Use of Energy' Conference held at the Vineyard Hotel in Cape Town, from the 11-12 August 2010.

The South African climate is mostly characterised by large temperature swings typical of semi-arid highland conditions. This climate demands a building method that combines a good thermal Resistance (R) of the exterior envelope with an adequate effective thermal Capacity (C). "The greater the CR product, the smaller the indoor temperature swing. Neither resistance nor capacity can provide indoor comfort – and hence energy efficiency – on its own," explained Holm to a captivated audience of 150 experts attending the conference.

Holm illustrated that for structural, security, fire prevention and aesthetic reasons, South Africa has an established building construction of high mass (sod, adobe, fired clay), while thermal resistance of thatch is excellent. "More recent constructions (steel and fibre cement sheets, thin concrete block) are wanting," noted Holm.

The CR method was originally developed by the South African Building Research Institute of the CSIR (Johann Wentzel) and computerised in the training Program Termo by Ivan Steenkamp. Further improvements and extensions were made by Eddie Mathews using the Program Building Toolbox. The algorithm for exterior walls was redefined by Dieter Holm.

Most international leader countries in energy efficient building design are situated in climates with small daily temperature swings. Logically, their focus is on thermal resistance. Showing a map from his research that defines the target comfort temperature and range for each magisterial district in South Africa, Professor Holm demonstrated how the algorithm would assist designers, developers and legislators, alike, in applying Deemed-to-Satisfy Rules or Rational Designs.

The energy saving implications in energy constrained South Africa are obvious. Efficient buildings are much cheaper than building new coal-fired power stations, and buildings last four times longer. Hence the need for legislative intervention by SANS 10400X and guidance by SANS 204.

Holm predicted that the new paradigm will not only be aimed at buildings that are low consumers of dirty energy; conscientious architects design buildings that produce a surplus of clean energy that is fed into the public system for income and crises prevention.

"The appropriate combination of thermal mass and thermal resistance of the building envelope is of great importance with naturally ventilated buildings, making up the lions share of our building stock. This is also as valid with the perimeter zone of artificially conditioned (HVAC) buildings, which is strongly influenced by the exterior wall construction," emphasised Holm.

ENDS.

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