# “Zero Energy / Carbon and Innovative Tropical Building Case Studies”

By: Gregers Reimann, managing director

IEN Consultants Sdn Bhd, www.ien.com.my

Synopsis

The biggest and cheapest carbon emission savings are found in the building sector. Therefore, the building sector will play a key role in achieving the low carbon sustainable society that experts are urgently calling for. This presentation will focus on Malaysian case studies of low energy buildings both for commercial and residential sector. The focus will be on the design strategies employed in the case studies, both with respect to innovative passive building design by working with the climate and with respect to innovative active design solutions for ventilation, cooling, lighting and controls.

The low carbon aspect of the presentation will focus on the operational energy, which constitutes the bulk of the life-time carbon emissions for most buildings. The case studies presented have achieved measured energy savings of 50% or more and often with an attractive short payback time from reduced monthly energy bills.

The presentation will also re-examine how to approach thermal comfort for people in an energy efficient way and with the added benefit of providing improved air quality.

Some of the case study highlights include:

- Case study no. 1: Zero energy bungalow (2016) in Kuala Lumpur with innovative natural cooling system that lowers the indoor temperature by 2-3°C, hence, eliminating the need to use air-conditioning. In fact, the bungalow does not have any air-conditioning installed.

- Case study no. 2: Innovative high rise daylighting system (2015) in Kuala Lumpur. Even though the occupants engage the manual façade window blinds, the daylight system maintains 7 meter perimeter zone of the office fully daylit.

- Case study no. 3: Energy efficient building retrofit project (ongoing) saving 50% of the energy consumption in part by a new approach to providing thermal comfort to the building occupants

- Case study no. 4: Innovative energy efficient and low exergy slab cooling as exemplified in two Malaysian offices buildings, the GEO Building (2007) and the ST Diamond building (2010).