THE DELUSION OF GREEN CERTIFICATION: the case of New Zealand Green office buildings

Completed Research

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INTRODUCTION

Sustainable Performance
Ecological Sustainable Architecture
Performance

Green Building
Past studies have shown that occupants of Green certified office buildings are not as comfortable as publicised. These buildings produced IEQ conditions that are not favourable to occupants.

–Onyeizu (2014)
Aim: the resultant consequence of Green certification on office buildings

Objectives:

- Investigate the current motivation for Green certification of office buildings
- Analyse the effect of Green certification on the façade and IEQ control systems in office buildings.

CURRENT MOTIVATION FOR GREEN CERTIFICATION

- Business venture – Owners
- Marketing tool - Developers
- Financial value – Real estate
- Out of date – Researchers
- Productivity - organisations

Motivation for Green buildings

- Lower Operating Costs
- Right Thing to Do

2008 2012
THE GREEN OFFICE BUILDING

A Green certified building = min 4 Star

- Energy efficiency
- Occupant comfort (IEQ)
- Lighting
- Temperature

<table>
<thead>
<tr>
<th>5 STAR GREEN CERTIFIED BUILDINGS</th>
<th>THERMAL CONTROL SYSTEM</th>
<th>FAÇADE SYSTEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 21 Queen Street, Auckland</td>
<td>Air conditioning system</td>
<td>Extensively glazing</td>
</tr>
<tr>
<td>2. 80 Queen Street, Auckland</td>
<td>Air conditioning system</td>
<td>Extensively glazing</td>
</tr>
<tr>
<td>3. 150–154 Karangahape Road, Auckland</td>
<td>Natural ventilation</td>
<td>50% glazing</td>
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<tr>
<td>4. 30 Mahuhu Crescent, Auckland</td>
<td>Air conditioning system</td>
<td>Extensively glazing</td>
</tr>
<tr>
<td>5. Sylvia Park Auckland</td>
<td>Air conditioning system</td>
<td>Extensively glazing</td>
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Thomas O’Connor (2003), an architect at Smith Group, Inc., comments
“I like a lot of glass in buildings, and that is the trend in design today. Glass is back, and it’s a 21st century material.”

Butera (2005) insists
“These buildings are the most dangerous type of buildings from the point of view of a dull and uncritical replication, hardly sustainable if well designed and definitely unsustainable if badly designed.”

For New Zealand, the LTV (Lighting, Thermal & Ventilation) Method for sub-tropical climates indicates a lower proportion of glazing (lower than 50%) in a building’s envelope (Hyde, 1998). This is in contrast to the 70% – 80% glazing used in office buildings.

Leaman and Bordass (2007)

“Green buildings are rated better for more all-embracing summary variables such as ‘comfort overall’ or ‘lighting overall’, but when these are divided into their components, the favourable responses are less clear-cut”
Motivated by Environmental sustainability
Less glazing
Passive/ adaptive IEQ

- More control over IEQ
- Adaptability to prevalent environmental conditions
- Less SBS with natural ventilation
- Energy efficient

THANK YOU