CAN MACEDONIAN HOTELS BE GREEN

THE EVIDENCE OF HOTEL “FLAMINGO” GEVGELIJA, MACEDONIA

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Tourism industry has numerous positive impacts.

Tourists today do not only care about the quality of the lodgings and tourism-related services, but also about:

- environmental protection,
- waste treatment measures,
- energy efficiency,
- usage of renewable energy sources,
- green-house gas emissions, etc.

Modern tourists start to seek and would gladly pay more for a “green tourism” or “eco-friendly tourism”
Hotel managers had to re-arrange their priorities to meet guest’s requests in respect of their environmental needs.

Many studies debate the need of introducing environmental protection programs in terms of reducing the energy consumption, recycling, composting food scraps, etc.

Many academics note that hotels gain benefits:
- Improving the environmental performance,
- Reducing the operational costs,
- Sustaining the competitive advantage, and
- Increased demand for eco-friendly hotels.
Research Background *(Aims & Expectations)*

▸ **AIM:** To define the status of Macedonian hotel industry towards:
  - *the environmental awareness,*
  - *the implementation of modern environmental standards,*
  - *perception on the energy efficiency,*
  - *application of renewable energy resources.*

▸ Analysis is based on the case study of the Hotel “Flamingo”, Gevgelija, as one of the most representative 5* hotels in Macedonia.
Expected Outcomes

Answer to the questions:

- **Whether and to what extent** the hotel managers in the hotel complex “Flamingo” implemented and follow the environmental and energy efficiency standards?

- **Do they possess enough knowledge and capabilities for enforcing the eco-standardization in their daily hotel business operations?**

The expected outcomes were to estimate:

- The present environmental awareness in the 5* hotel industry in Macedonia,

- The level of the expected investments which could be part of future eco-friendly labeling process,

- The expected benefits for the hotel industry in Macedonia in general by introduction of eco-friendly labeling process,

- And finally, to define a new standard level that has to be followed by other hotels in order to obtain a “green” or “eco-friendly” label or certificate.
How “GREEN” is enough “GREEN”? 

The term "green hotel" was related to:

- regular daily or in cooperation with the guests, replacement of the linens and towels,
- re-setting the toilets flush and bath taps to spend less water,
- using additional room lightings instead of a main light,
- recycling some of the hotel amenities or used goods, and
- modest utilization of renewable energy resources, especially for heating water.
How “GREEN” is enough “GREEN”?

Modern “green” hotel must additionally apply:

- measures for energy savings and renewable energy,
- usage of bio-gradable cleaning products,
- natural materials,
- offer of organically-grown food and,
- recycling for all products and goods (waste oils in the kitchen, batteries, used lamps, TV or and other electric appliances in the hotel),
- implement “smart” room concept (HVAC, efficient lightings, full security control, etc.)
Typical energy utilization by sectors in hotel industry

- Heating: 28.00%
- Cooling: 31.60%
- Other equipment: 14.40%
- Pumps & motors: 7.60%
- Hot water: 8.50%
- Lightings: 9.40%
- Other: 0.50%
Hotel “Flamingo” Case Study

➢ The most important certification criteria:

- Adequate implementation of energy efficiency measures,
- Level of utilization of a clean energy resources,
- Efficient use of all water resources,
- The use and disposal of hazardous materials and chemicals,
- Waste Management,
- Hotel management,
- Hotel policy for environmental protection.
Hotel “Flamingo” Case Study

The term "smart" or “intelligent” hotel room means use of microprocessor operated and controlled station that monitors all parameters important for normal functioning of a single hotel room or a group of hotel rooms.

- Significant reduction of energy & water consumption;
- Reconcilable & smooth operation of all room devices;
- Maximum convenience & comfort for the guests;
- Increased reliability, security & quality of the hotel stay for the guests;
- Increase staff efficiency due to the continuous reception of on-line information; and
- Development of increased "environmental awareness" among guests and employees.
<table>
<thead>
<tr>
<th>Room status</th>
<th>Status of the HVAC System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room is available</td>
<td>(Anti-frost mode)</td>
</tr>
<tr>
<td>Room is available</td>
<td>Only the refrigerator from the mini bar is in function.</td>
</tr>
<tr>
<td>Room is occupied, but the guest is outside the room</td>
<td>(Economy mode)</td>
</tr>
<tr>
<td>Room is occupied, but the guest is outside the room</td>
<td>The refrigerator is in function, room temperature is set 3°C lower than the outside temperature. If the window is open, the HVAC system does not operate.</td>
</tr>
<tr>
<td>Room is occupied, and the guest is inside the room</td>
<td>(Comfort mode)</td>
</tr>
<tr>
<td>Room is occupied, and the guest is inside the room</td>
<td>All functions (temperature, air-flow, etc.) within the room may be set by the guest. If the window is open, the HVAC system does not operate.</td>
</tr>
</tbody>
</table>
Hotel “Flamingo” Case Study

The “smart” room system provides high security and comfort for the guests by implementation of the so-called monitoring and supervision system based on “read” or “read-write” smart-cards:

- These smart cards generate a computer log file where all activities for that particular room (“when”, “who”, “how”, “why”)

  - **WHO**: Guest, maid, waiter, room-service, maintenance & management;
  - **HOW & WHEN**: Room entry with a contactless card;
  - **WHY**: Supervision of the room’s front door, with alarm for unauthorized entry & Signaling the presence of the guest in the room;
  - **WHAT**: Various alarms, such as SOS alarms in bathrooms, rooms, common areas; etc.
About the investments

Investments were divided into three groups, based on the implementation time, such as:

- **the short time measures** (amendment of thermostatic valves, replacement of showers’ heads, temperature adjustment, etc.),
- **the medium term measures** (installing thermal solar systems for production of hot water, replacement and/or modernization of mixing valves and pumps, replacement of boilers, insulation of the water pipes, etc.), and
- **the long term measures** (installation of PV system, installation of new energy efficient facades on the building, etc.).

<table>
<thead>
<tr>
<th>Type of taken measures</th>
<th>Investment recovery</th>
<th>Energy savings</th>
<th>Cost savings (per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short term measures</td>
<td>&lt; 5 years</td>
<td>25 %</td>
<td>6,000 €</td>
</tr>
<tr>
<td>Medium term measures</td>
<td>&gt; 5 years</td>
<td>37 %</td>
<td>10,000 €</td>
</tr>
<tr>
<td>Long term measures</td>
<td>&gt; 10 years</td>
<td>70 %</td>
<td>20,000 €</td>
</tr>
</tbody>
</table>
## Effects of introduction of “smart” rooms

<table>
<thead>
<tr>
<th>Month</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>Rooms</td>
<td>Room A</td>
<td>Room A</td>
<td>Room B</td>
<td>Room A</td>
<td>Room A</td>
</tr>
<tr>
<td>Energy consumption (room is occupied)</td>
<td>712</td>
<td>816</td>
<td>661</td>
<td>773</td>
<td>749</td>
</tr>
<tr>
<td>Energy consumption (room is unoccupied)</td>
<td>72</td>
<td>272</td>
<td>31</td>
<td>78</td>
<td>70</td>
</tr>
<tr>
<td>Energy savings (B-A)/B [%]</td>
<td>-73.53</td>
<td>-60.26</td>
<td>-76.51</td>
<td>-79.67</td>
<td>-75.61</td>
</tr>
</tbody>
</table>

- Room with fully functional HVAC system (Room A),
- Room with HVAC system blocked (Room B).
### Water saving measures & results

<table>
<thead>
<tr>
<th>Number of rooms</th>
<th>Number of taken showers annually</th>
<th>Non-mixed tap (two-handle tap)</th>
<th>Cost (Euros)</th>
<th>Mixed-valve tap</th>
<th>Thermostatic mixed-valve tap</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>5,840</td>
<td>4,420</td>
<td>4,001</td>
<td>1,851</td>
<td></td>
</tr>
<tr>
<td><strong>Savings</strong></td>
<td></td>
<td></td>
<td><strong>419</strong></td>
<td></td>
<td><strong>2,569</strong></td>
</tr>
<tr>
<td>50</td>
<td>14,600</td>
<td>11,048</td>
<td>10,003</td>
<td>4,628</td>
<td></td>
</tr>
<tr>
<td><strong>Savings</strong></td>
<td></td>
<td></td>
<td><strong>1,045</strong></td>
<td></td>
<td><strong>6,420</strong></td>
</tr>
<tr>
<td>100</td>
<td>29,200</td>
<td>22,096</td>
<td>20,006</td>
<td>9,256</td>
<td></td>
</tr>
<tr>
<td><strong>Savings</strong></td>
<td></td>
<td></td>
<td><strong>2,090</strong></td>
<td></td>
<td><strong>12,840</strong></td>
</tr>
<tr>
<td>200</td>
<td>58,400</td>
<td>44,192</td>
<td>40,012</td>
<td>18,513</td>
<td></td>
</tr>
<tr>
<td><strong>Savings</strong></td>
<td></td>
<td></td>
<td><strong>4,180</strong></td>
<td></td>
<td><strong>25,679</strong></td>
</tr>
<tr>
<td>300</td>
<td>87,600</td>
<td>66,287</td>
<td>60,017</td>
<td>27,769</td>
<td></td>
</tr>
<tr>
<td><strong>Savings</strong></td>
<td></td>
<td></td>
<td><strong>6,270</strong></td>
<td></td>
<td><strong>38,518</strong></td>
</tr>
</tbody>
</table>

- **Expected savings for Hotel “Flamingo” are:**
  - **840 EUR** – introducing new mixed-valve taps
  - **5,280 EUR** – introducing new thermostatic mixed-valve taps
Future trends

- Introduction of a new “SMART HOTEL” concept
Conclusions:

- **Tourism** is one of the fastest growing industries worldwide,
- Macedonian Government takes serious steps towards further investments and improvements in this industry,
- **Development of “green” hotels** is an imperative,
- **Hotel “Flamingo”** is a nice example towards achieving these goals,
- **Needs of eco-labeling and eco-certification** in the Macedonian hotel industry and tourism is very important,
- Yes, Macedonian hotels could be “green” with some financial and education investments in the hotel business and hotel’s staff.
Acknowledgement

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Thank you very much!