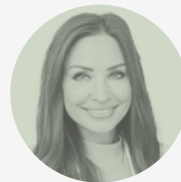
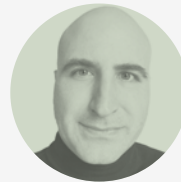


HYB25

Sustainability Tech Edition

Unlocking Smart & Sustainable Tech
Solutions for Hospitality



The Hotel Yearbook

Foresight and innovation in the global hotel industry

HYB



Sustainable Tech: Pioneering Green Hotel Buildings and Operations

Sustainable Hotels

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Just coming out of the hottest year on record, the hospitality industry is at a pivotal moment in its sustainability journey. With global climate targets, shifting consumer expectations, and increased regulatory pressure, hotels must accelerate their transition toward greener buildings and operations.

At Radisson Hotel Group, we aim to be pioneers in responsible business practices and are looking at which innovative technology we can pilot to drive meaningful change. From AI-driven energy optimization to carbon-neutral construction, we need to look beyond our traditional methods to deliver Net Zero 2050 and a sustainable future for the hotel industry.

THE RISE OF GREEN BUILDINGS

One of the most significant sustainability challenges in hospitality is the environmental footprint of hotel buildings. In existing lifecycle measurements of hotel buildings, the build phase represents only 13% of the emissions, whereas operations represent the remaining 87%, but by 2050, the carbon split in new construction will be almost 50/50. (Source: Embodied carbon vs. operational carbon | One Click LCA)

Radisson Hotel Group has embraced green building principles, integrating sustainable materials, energy-efficient systems, and advanced construction technologies. For example, state of the art hotel designs should prioritize:

- **Passive Design Strategies:** Optimizing natural ventilation, daylighting, and insulation to minimize energy demands.
- **Smart Building Management Systems (BMS):** These systems increasingly use AI or can be fully AI-powered to continuously monitor energy use and automatically adjust heating, cooling, and lighting taking into account predictions about building occupancy, load and weather, to optimize efficiency without compromising guest comfort.
- **Sustainable Materials:** The incorporation of recycled, locally sourced, and low-carbon materials significantly reduces construction emissions. This is taken into account in the main green building certifications such as LEED and BREEAM, and new technology is actively being researched by industrial companies such as ecofriendly alternatives to concrete, like AshCrete.
- **LEED, BREEAM and EDGE Certifications:** As part of our NETZERO2050, the focus on internationally recognized green building standards ensures that sustainability is embedded in every stage of development.

GREEN ENERGY: POWERING A CARBON-NEUTRAL FUTURE

Energy is a cornerstone of sustainable operations. Hotels operate 24/7, consuming high amounts of electricity and fuel for lighting, heating, cooling, and appliances. The transition to full electrification and renewable energy is imperative for reducing the industry’s carbon footprint.

Radisson Hotel Group is actively integrating green energy solutions into its properties, including:

- **Solar and Wind Energy:** 80 of our hotels run 100% on renewable electricity and an increasing number feature on-site renewables, mostly solar PV or solar thermal, reducing reliance on fossil fuels.



Radisson Blu Resort, Fiji Denarau Island, which has one of the largest PV installations in a Pacific resort

- **Geothermal Heating and Cooling:** This technology taps into the soil’s natural temperature regulation to provide sustainable climate control, significantly lowering energy consumption. This technology is being trialled in selected new hotels coming online.
- **Energy Storage and Grid Optimization:** Battery storage and smart grid systems enhance energy efficiency by optimizing power distribution and reducing reliance on peak-hour electricity from non-renewable sources.
- **Power Purchase Agreements (PPAs):** Partnering with renewable energy providers ensures that a significant percentage of our electricity consumption is sourced from clean energy. The issue in hospitality remains the uptake volume and the diverse asset ownership.
- **Hydrogen innovations:** Expensive but climate friendly technology that takes gas and converts it for emission free heat. Further roll out of this technology requires stability of subsidy and regulatory frameworks. The Radisson Blu Hotel Frankfurt has a large-scale hydrogen fuel cell installed.



Radisson Blu Hotel, Frankfurt with large-scale hydrogen fuel cell installed

By transitioning toward renewable energy, we are making strides toward our ambitious goal of becoming a net-zero organization.

GREEN OPERATIONS: AI AND SMART TECHNOLOGIES FOR SUSTAINABLE HOSPITALITY

Technology is providing opportunities for hotel operations, which enable more sustainable and personalized practices, but which take time to adopt. AI, IoT, and data analytics are driving tailored service offerings, efficiency, reducing waste, and enhancing decision-making.

AI-POWERED ENERGY MANAGEMENT

Artificial intelligence is transforming energy efficiency in hotels. AI-driven platforms analyze real-time data from sensors and smart meters to optimize energy use. Key applications include:

- **Predictive Maintenance:** AI algorithms detect inefficiencies in HVAC systems, identifying potential issues before they lead to energy waste or costly breakdowns.
- **Demand Response Management:** AI can predict peak energy demand and shift loads accordingly, reducing reliance on non-renewable sources.
- **Guest Room Automation:** Smart room technology adjusts lighting, temperature, and appliances based on occupancy, ensuring energy is only used when needed.

SUSTAINABLE WATER MANAGEMENT

Water conservation is another critical aspect of green operations. Radisson Hotel Group implements AI-powered water management systems that:

- Detect leaks in real time to prevent unnecessary water waste.
- Optimize irrigation for hotel landscapes, using weather forecasts and soil sensors to minimize excess water use.
- Monitor guest water consumption patterns and suggest behavior-based conservation strategies.

WASTE REDUCTION AND CIRCULAR ECONOMY

AI and data analytics are also reshaping waste management. Radisson Hotel Group is reducing food waste through:

- **AI-Based Kitchen Monitoring:** Smart cameras and machine learning track food waste patterns, enabling chefs to optimize inventory and portion sizes.
- **Composting and Bio-Digesters:** Organic waste is converted into energy or fertilizer, supporting circular economy principles.
- **Recycling and Upcycling Initiatives:** Advanced sorting technology ensures waste is properly recycled, while repurposing materials within hotel operations further reduces environmental impact.



Radisson Blu Hotel, Bengaluru Outer Ring Road which is the first LEED ZERO CARBON certified hotel in Radisson Hotel Group's global portfolio including a photo of the biogas installation

THE FUTURE OF SUSTAINABLE HOSPITALITY

As we look ahead beyond the coming years, the integration of sustainable technology will continue to evolve. Emerging trends shaping the future of green hospitality include:

- **Move towards Carbon-Neutral Construction:** Utilizing carbon-negative materials such as bio-based concrete and 3D-printed sustainable structures.
- **AI-Driven Sustainability Reporting and compliance:** Automating ESG (Environmental, Social, and Governance) reporting to ensure real-time tracking and compliance.
- **Blockchain for Sustainability Tracking in the supply chain:** Enhancing transparency in carbon offset programs and green supply chain management.

CONCLUSION

Sustainable technology is rapidly evolving and is essential to the needed Net Zero transformation of hospitality. By investing in green buildings, renewable energy, and AI-driven operations, the hotel industry can become more sustainable and efficient in its resource-use without compromising guest service. As we move into 2025 and beyond, we need to cooperate, share experiences and learn from each other in our commitment to a NetZero industry and a liveable planet for future generations.



Looking to find out more?

Visit the Hospitality Net World Panel

In the **Sustainability in Hospitality** World Panel, over 90 industry experts share their insights, solutions, and strategies to help the industry navigate growing environmental and societal challenges.

Sustainability Gives Hotels An Edge In The War For Talent. Or Does It?

How can sustainability be communicated beyond clichés and greenwashing?

Hotel Sustainability: Top 3 Technologies to Implement in 2020

Who makes hospitality sustainability happen: Governments, Industry, Consumers?

Climate Emergency And The Hospitality Industry: Are We On Track?



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