

Waste-to-energy: The future of sustainable manufacturing in the F&B industry

Thermax is transforming food waste into a valuable energy resource, setting a benchmark for sustainability in the Middle East's F&B sector

by **Ryan Harmon** December 13, 2024 11:58 AM GST [SHARE](#)



The F&B industry in the Middle East is at the heart of the region's drive for sustainability and food security. With its significant reliance on energy and water-intensive processes, the sector faces immense pressure to innovate and reduce its environmental footprint. At the same time, the region's focus on domestic manufacturing and resource optimisation has created a unique opportunity for transformational change.

Enter [Thermax](#), a global leader in clean energy and sustainable solutions with over three decades of experience in the Middle East. By harnessing cutting-edge waste-to-energy technologies, Thermax is tackling one of the industry's most persistent challenges—food waste.

Sustainability challenges in the F&B industry

The F&B industry is one of the most resource-intensive sectors, consuming vast amounts of water and energy while generating significant waste. These challenges are amplified in the Middle East, where water scarcity and energy efficiency are pressing concerns. As [Ashish Bhandari](#), Managing Director and CEO of Thermax, explains, "The manufacturing industry is immensely prioritising sustainability and carbon footprint

reduction, as it is an energy and water-intensive sector that consumes significant amounts of both resources.”

The scale of waste generated by the F&B sector is staggering, encompassing everything from agricultural byproducts to food processing residues. Without effective management, this waste often contributes to environmental pollution, further straining ecosystems already under stress. According to Bhandari, the sector’s complexity adds another layer of difficulty, “From packaging and plastic to the food and beverage products themselves, each segment presents unique challenges.”

For many companies, the financial burden of adopting sustainable practices is a significant barrier. As Bhandari points out, “One of the major hurdles in implementing sustainable practices is the initial cost. While waste-to-energy solutions can provide economic benefits, many other sustainable initiatives require significant upfront investments.” Additionally, a lack of awareness about innovative technologies prevents some businesses from exploring their potential. “Many customers are unaware of the latest technologies and their ability to revolutionise food production,” he adds.

Thermax’s innovative solutions

Thermax is addressing the F&B industry’s sustainability challenges head-on with waste-to-energy technologies. By converting food byproducts such as chocolate, rice, and cocoa waste into valuable energy resources, the company is not only reducing environmental pollution, but also helping businesses optimise their operational efficiency. “We provide comprehensive build-and-operate solutions for energy-neutral plants,” says Bhandari. “The customer gives us the food waste, and we convert it into energy.”

One of the standout examples of Thermax’s ingenuity is its ability to recycle waste and turn it into energy for use within manufacturing processes. For instance, Bhandari highlights an application in potato chip production: “We capture the vapour generated from drying the potato wafer and utilise it to power the chillers within the manufacturing plant. We also recycle the vapour or water received during this process for washing potatoes and other plant operations.” This innovative approach reduces water usage and minimises energy consumption, making the facility water-neutral and significantly lowering its carbon footprint.

Thermax’s solutions extend beyond energy efficiency to water conservation, which is critical in the Middle East. The company’s technologies optimise water usage without compromising quality or efficiency, a crucial factor for the F&B sector. “By harnessing the power of innovative technologies, we reduce environmental pollution and contribute to a more sustainable future,” Bhandari states.

These tailored, scalable solutions are designed to meet the unique needs of the F&B industry. From small-scale operations to large manufacturing plants, Thermax's technologies are helping businesses adopt sustainable practices while staying competitive in an increasingly eco-conscious market. "Our commitment is to unlock the energy potential of food waste," Bhandari emphasises.

Real-world applications

Thermax's waste-to-energy technologies are driving real change in the F&B industry, with tangible benefits for manufacturers. By turning waste into an energy source, the company is enabling its clients to reduce costs, optimise resources, and meet ambitious sustainability targets. "The food and beverage sector accounted for 11% of Thermax's global orders in FY 2023-2024, making it a significant growth area," Bhandari notes.

The company's comprehensive build-and-operate solutions have been a game changer for many clients, particularly in the Middle East's resource-constrained environment. Thermax's projects are helping businesses align with regional and global sustainability goals. "We are significantly investing in digital technologies, providing our customers with advanced equipment to improve efficiency and optimise their water and energy usage," Bhandari shares.

This success underscores Thermax's ability to deliver practical, scalable solutions that address the unique challenges of the F&B industry. By demonstrating the viability of waste-to-energy systems, the company is inspiring more manufacturers to embrace sustainable practices. As Bhandari puts it, "Caring for the planet is essential for the well-being of the present and future generations. We must support businesses of all sizes as they strive to adopt more sustainable practices."

Building a circular economy

Thermax's waste-to-energy solutions are also contributing to a larger shift towards a circular economy in the Middle East's F&B industry. The company is turning one of the industry's most persistent challenges into a sustainable advantage by transforming food byproducts into usable energy. "By harnessing the power of innovative technologies, we reduce environmental pollution and contribute to a more sustainable future," explains Bhandari.

This shift aligns perfectly with the region's broader sustainability and food security goals. As Middle Eastern countries continue to prioritise domestic manufacturing, resource optimisation, and reduced environmental impact, solutions like Thermax's are becoming essential. The company's ability to integrate waste management into energy

production creates a closed-loop system that not only reduces the ecological footprint, but also enhances operational resilience.

Additionally, businesses implementing these solutions can enhance their brand reputation by showcasing their commitment to sustainability, a factor increasingly valued by consumers and stakeholders. "Every one of our major food and beverage customers is steadfast in their commitment to achieving ambitious and well-defined sustainability and net-zero goals," Bhandari highlights.

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Overcoming barriers to adoption

While the benefits of waste-to-energy technologies are clear, the journey to widespread adoption in the F&B sector is not without challenges. Two primary barriers stand out: the high initial cost of sustainable solutions and the lack of awareness about their potential.

Bhandari acknowledges the financial hurdles many businesses face. "One of the major hurdles in implementing sustainable practices is the initial cost. While waste-to-energy solutions can provide economic benefits, many other sustainable initiatives require significant upfront investments," he explains. This challenge is particularly pronounced for smaller businesses that may struggle to allocate the resources needed for such transitions.

To address this, Thermax provides comprehensive support, including financing options and tailored technical expertise, to help clients overcome cost-related concerns. These solutions make it easier for businesses of all sizes to adopt sustainable practices at their own pace, ensuring long-term viability.

The second challenge is informational. Many companies are unaware of the latest technologies or sceptical about their efficacy. "Many customers are not ready to believe that new ideas and cutting-edge technologies can pave the way for numerous benefits," Bhandari notes. To combat this, Thermax invests in educating its clients, showcasing the tangible benefits of its solutions through real-world applications and success stories.

Through these efforts, Thermax is breaking down the barriers that have traditionally hindered the adoption of sustainable technologies. By making innovative solutions more accessible and understandable, the company is paving the way for a more sustainable future in the F&B industry. As Bhandari emphasises, "By working together, we can collectively make a positive impact on the environment." This collaborative approach is key to driving industry-wide change.