

# DFI

## Enhancing Waste Management and Recycling Efficiency with AI & DFI's CMS100 Solution

### Background of Story

DFI Inc., a global leader in embedded motherboards and industrial computers, has teamed up with our long-term partner, [BVM Ltd.](#), to tackle significant challenges in AI-powered waste sorting and recycling. [BVM Ltd.](#), a prominent UK-based distributor and system integrator, boasts over three decades of experience in providing industrial PC solutions across the UK and Ireland. The powerful partnership enables the delivery of innovative solutions for multiple applications, spanning smart factory automation, the energy industry, and the AIoT and IIoT sectors. This collaboration exemplifies our commitment to driving technological advancements and addressing complex industry needs.



Industry: **Waste Management & Recycling**

Solution: **CMS100**

As the global volume of waste rises, there is a pressing need for more intelligent waste management approaches to prevent the accumulation of waste in our societies. In Europe, regulatory initiatives like the European Union's Circular Economy Action Plan and the Single-Use Plastics Directive are driving the transition to a more sustainable waste management system. These regulations mandate increased use of recycled materials in packaging and other products, incentivizing the development of higher-quality recycled outputs and stabilizing market demand. This not only addresses environmental concerns but also promotes innovation in recycling technologies, facilitating a more circular and resource-efficient economy.



### **The Challenge of Efficient Waste Sorting in the Face of Public Disposal Habits**

Efficient waste sorting poses a challenge for our client, complicated by public disposal habits. Despite regulations and public awareness, recycling efforts are hindered by individuals' tendency to dispose of all recyclables together. To overcome this, businesses are increasingly turning to AI technology to accurately categorize various types of waste. Furthermore, companies involved in waste sorting can leverage recycling incentives to drive the adoption of advanced waste management solutions.

On one side, a UK-based AI Startup showcased profound expertise in artificial intelligence (AI), while on the other, a globally renowned expert in waste sorting and recycling. Despite their individual strengths, both entities grappled with the critical aspect of integrating AI technology seamlessly into existing waste management systems. This lack of integration expertise posed a significant hurdle in developing a holistic solution for optimizing image processing tasks in waste management and recycling operations.

Recognizing the indispensable role of integration prowess, BVM diligently sought out a compatible technology partner and solution, DFI's CMS100. This innovative solution not only offered exceptional image processing power with PCIe x16 3.0, but also boasted a 125W TDP, providing the robust hardware infrastructure with enough power handling necessary for integrating AI capabilities into the existing machinery. Leveraging BVM's integration expertise, this collaborative effort aimed to bridge the gap between AI innovation and industrial machinery, effectively addressing the challenges faced by both the UK AI Startup and the world-leading expert in waste sorting and recycling.

# DFI's Response & Results

## 1. AI Image Recognition for Waste Sorting and Recycling

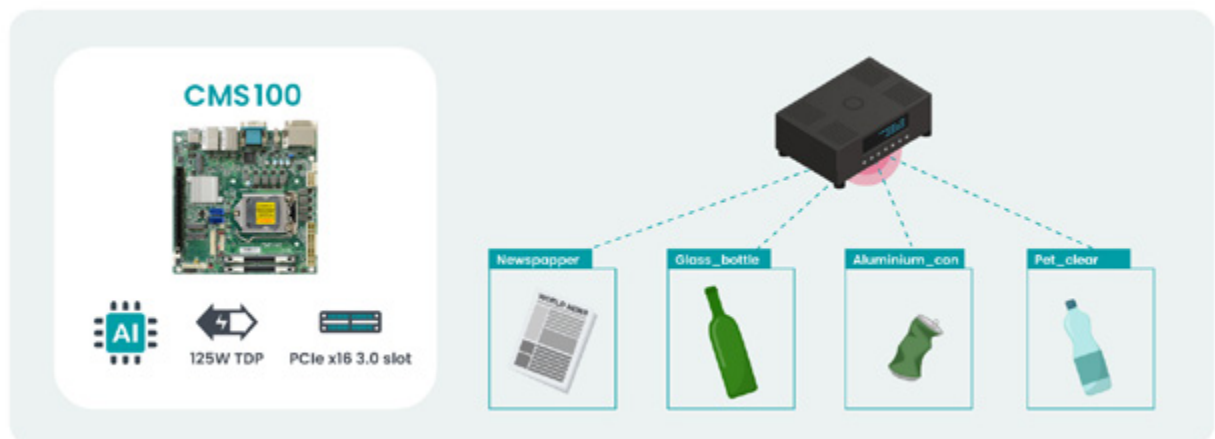
Leveraging cutting-edge AI image recognition technology, our waste management solutions empower facilities to automate the sorting and recycling process efficiently. By employing AI algorithms, our systems can swiftly identify different types of waste materials, such as plastics, metals, and paper, facilitating seamless segregation for recycling purposes. This advanced technology not only enhances operational efficiency but also ensures accurate sorting, leading to higher recycling rates and reduced waste sent to landfills. Ultimately, our AI-powered solutions contribute to a more sustainable environment by promoting effective waste management practices.

## 2. Integration of DFI's CMS100 for Comprehensive Solutions

By integrating DFI's CMS100 industrial-grade motherboard into our waste management systems and supplementing it with compatible external graphics cards, we create holistic solutions tailored to the unique needs of our customers. The CMS100's PCIe x16 3.0 slot offers ample expansion capabilities, allowing for seamless integration with additional hardware components for enhanced processing power and functionality. This Total Solution, comprising both software and hardware elements, equips waste management facilities with the tools they need to streamline operations, optimize resource utilization, and improve overall productivity.

## 3. Enhanced Waste Classification and Data Collection

Throughout the sorting process, our solutions go beyond mere identification by actively collecting valuable data on waste classification. By analyzing material types, such as plastics or metals, and identifying specific items like bottles or aluminum cans, our systems provide comprehensive insights into waste composition. Furthermore, our technology can recognize brand logos or text on packaging, enabling facilities to track the origin of materials and assess recycling trends. This detailed information not only facilitates more accurate sorting but also enables informed decision-making for waste management strategies, ensuring maximum resource recovery and environmental sustainability.



## DFI x BVM: Leading AI Solutions for Industry Challenges

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Through strategic collaboration and proactive problem-solving, BVM Ltd's client achieved significant enhancements in waste management and recycling operations. By integrating DFI's CMS100 system into their infrastructure, they experienced improved image processing capabilities with PCIe x16 3.0 and heightened system performance the 125W TDP offers. This advancement facilitated more accurate waste sorting and recycling processes, leading to increased productivity and overall operational efficiency.

The partnership between DFI Inc and BVM Ltd aims to overcome mandatory industry regulatory hurdles in Waste Management & Analytics. Through a proactive and collaborative partnership between BVM Ltd and DFI, a solution quickly emerged to address the client's enforced challenges in waste management and analytics industry regulations. DFI facilitated UL compliance for the CMS100-H420IB motherboard via a supported commercial proposal, leading to a successful integration into customer waste management lines. This partnership not only ensured regulatory compliance but also highlighted the importance of strategic distributor/OEM collaborations in overcoming industry challenges and driving meaningful progress.

Learn more about BVM : <https://www.bvm.co.uk/>



# CMS100 - Key Features



**DDR4**  
2 DDR4 SODIMM up to 64GB

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**4K High Resolution**  
Supports 4K/ 2K resolution

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**Quad Displays**  
DP++ + HDMI + DVI-I + LVDS/eDP, or DP++ + DP++ + DVI-I + LVDS/eDP

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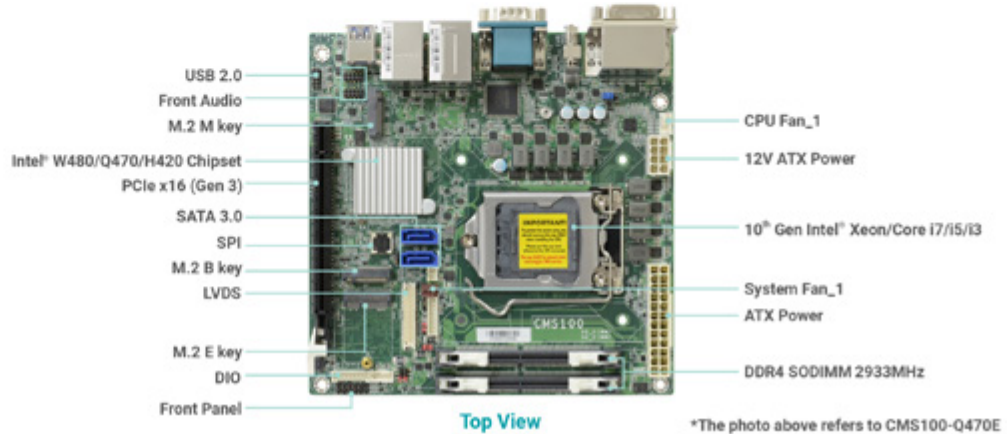
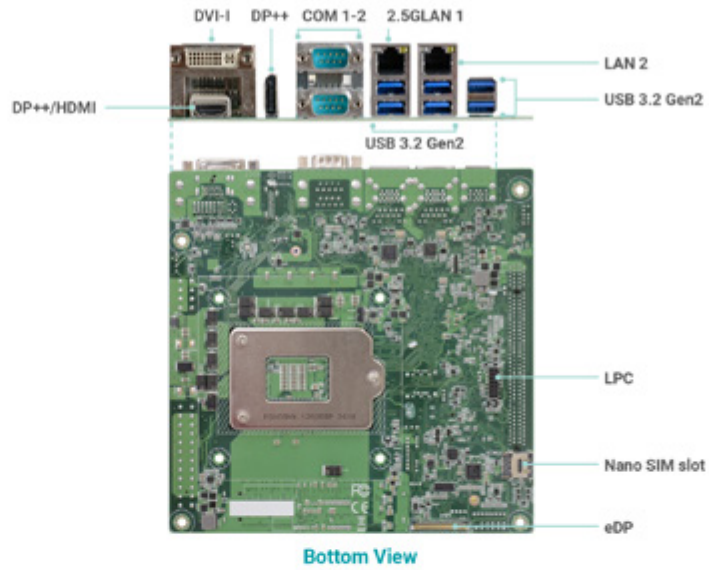


**Multiple Expansion**  
1 PCIe x16,  
1 M.2 2230 E Key,  
1 M.2 2280 M Key,  
1 M.2 2242/3042 B Key

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**Rich I/O**  
1 Intel 2.5GbE,  
1 Intel GbE, 2 COM, up to 10 USB



\*The photo above refers to CMS100-Q470E

# DFI

Founded in 1981, DFI is a global leading provider of high-performance computing technology across multiple embedded industries. With its innovative design and premium quality management system, DFI's industrial-grade solutions enable customers to optimize their equipment and ensure high reliability, long-term life cycle, and 24/7 durability in a breadth of markets including factory automation, medical, gaming, transportation, smart energy, defense, and intelligent retail.

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