First, I would like to express my sincere gratitude for the travel funding award provided by the Institution of Engineering and Technology (IET) for my research exchange at the University of Tokyo as part of my PhD in Engineering.

This generous support enabled me to collaborate with leading researchers in my field specialising in circular economy implementations in manufacturing and gain invaluable insights that will significantly enhance the quality of my research. The opportunity to engage with the academic community at the University of Tokyo toward the end of my PhD journey, a pivotal moment in my academic career, enabled me to explore my next career steps and foster international collaborations. This was only possible because of the IET's support.

Primary Objectives:

1. **Foster Collaboration and Knowledge Exchange:** The main objective of the research exchange visit was to enhance collaboration and knowledge sharing between researchers from the University of Cambridge and the University of Tokyo. Specifically, the focus was on exploring methods to map and measure circular economy implementations in manufacturing and industrial settings. This was facilitated by working with Professor Yusuke Kishita in the Department of Precision Engineering whose collaboration aimed to bring together complementary resources and expertise to explore circular practices and drive sustainability across industries.
2. **Access to Leading Academics in the Circular Economy Field:** The research exchange period provided an unparalleled opportunity to interact with renowned professors working on related circular economy research at the University of Tokyo and the National Institute of Advanced Industrial Science and Technology (AIST). The researchers I engaged with, have been developing innovative methodologies to evaluate the sustainability and level of circularity of products, services, and production processes as well as the recently launched ISO standards on the circular economy. These interactions provided deeper insights into comprehensive metrics that reflect the circularity of products and systems, beyond traditional recycling measures. Therefore, the ability to learn from the expertise of these researchers allowed me to deepen my understanding of advanced research methods and approaches to measuring sustainability and circularity further strengthening my PhD research.
3. **Engagement with Japanese Companies:** Interacting with leading Japanese companies allowed me to gather valuable data on their operational, social, and political contexts concerning sustainability and circularity. Japanese firms, known for their efficient and lean manufacturing practices, offered novel perspectives on leveraging these concepts for the circular economy. This engagement provided a comprehensive overview of circularity principles adopted by manufacturing companies globally, complementing my existing research on European and US multinational enterprises. During my stay, I conducted several interviews and factory visits with Japanese OEMs, these include:

    - **Denso Corporation:** Discussed advancements in the circular economy initiatives in the automotive industry, including parts repair, remanufacturing and plastics recycling. In addition, Denso is well-known for the developing QR

code technology that supports traceability across the value chain and, therefore, also information sharing for implementing circular and sustainable practices.

- **4REnergy:** Explored their advancements in renewable energy storage repurposing solutions post-first-use in electric vehicles through the integration of circular economy practices. This includes battery processing to extend their lifecycle in energy storage solutions with the implementation of closed-loop systems to minimise waste and maximise resource efficiency.
- **Hitachi Construction Machinery:** Investigated their circular economy growth strategy through visits to two of their main remanufacturing facilities in Japan and an interview with the head of circular operations. Key initiatives include extending the lifecycle of construction machinery through the expansion of remanufacturing product offerings and the application of digital technologies to support their operations.
- **Panasonic Corporation:** Observed their new service-based business models in consumer electronics. Some of these initiatives include refrigerator refurbishment in grocery stores, sharing platforms for electric bicycles, and maintenance/remanufacturing operations for machinery and vehicles.
- **Mitsubishi Recycling:** Learned about their electronics and consumer goods recycling program to reclaim valuable materials from used electronic and consumer goods by visiting their recycling facility.
- **Kyocera Corporation:** Examined their product redesign strategy for circularity.
- **Asahi Beer:** Understood their packaging reuse/recycling ambitions.

4. **Broaden Research Perspectives and Networks:** The visit offered a chance to engage with a diverse and dynamic research community, which broadened my perspectives and immersed me in a new culture. Through interactions with fellow researchers, I established long-term professional connections, exchanged ideas, and potentially initiated future joint projects.

Benefits:

The research exchange visits significantly enhanced the quality of my PhD research by providing access to advanced methodologies and novel insights. It opened opportunities for cross-university publications and fostered personal and professional growth through international exposure. Establishing collaborations with established academics promoted knowledge exchange across countries, essential for system-wide circular implementations. Ultimately, this visit expanded my research networks, elevated international visibility, and contributed to the broader goal of advancing the transition to a circular economy for a sustainable future. I am excited about the potential outcomes of this exchange and the ways it will contribute to both my professional growth and the advancement of our shared field of study. I have been sharing the knowledge and experiences gained during this exchange with my peers and the wider academic community to increase awareness of research and industrial practices across country boundaries. Thank you once again for the travel grant and support. I am deeply honoured to have received this opportunity and to unlock the new possibilities that it created to support the transition to sustainable and circular models.


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Panasonic