

# Business for Sustainability through Innovation: Mapping Wistron's Operations to EU Taxonomy (FY22)

<b>Total Revenue of Wistron</b>		<b>984.6 B</b>
<b>Taxonomy-Eligible Revenue</b>	365 B	37.07%
<b>Total Capital Expenditure of Wistron</b>		1.36 B
<b>Taxonomy-Eligible Capital Expenditure</b>	0.20 B	14.96%
<b>Total Operational Expenditure of Wistron</b>		42.26 B
<b>Taxonomy-Eligible Operational Expenditure</b>	0.53 B	1.26%

Unit: billions (New Taiwan Dollars, NTD)

- Wistron is dedicated to developing low-carbon products and creating unique closed-loop recycling solutions in the industry through its two sustainable strategies: **Green Products** and **Recycling**. We strive to meet the market's sustainability transformation needs and respond to the challenges of global climate change.

Categories of products/ services	Activity under Taxonomy	FY2022 Sales revenue (NTD B)
NB	3.6 Manufacture of other low carbon technologies	365
Car: Electric vehicle ECU & MCU	3.2 Manufacture of low carbon technologies for transport	
Service: after-sales maintenance service	7.1 Installation, maintenance and repair of energy efficiency equipment	
	7.2 Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings)	
	7.3 Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings	
	7.4 Installation, maintenance and repair of renewable energy technologies	
Green services: recycling and reuse	3.17 Manufacture of plastics in primary form	
	5.5 Collection and transport of non-hazardous waste in source segregated fractions	

## Wistron Core Values



CUSTOMER FOCUS



INTEGRITY



INNOVATION



SUSTAINABILITY

wistron



## 【Green Products】 Manual Inventory Time Reduced by 80% with "Product Carbon Footprint System" to Realize Automatic Calculation

Enterprises should actively develop environmentally friendly green products in response to global climate change. Wistron measures the impact of products on the environment through product life cycle assessment (LCA) at the design stage. It includes the materials selection, energy and resource usage in manufacturing process, product distribution, product use and waste treatment. However, the LCA analysis method was found to be quite labor-intensive, a faster and more accurate system is required to provide sufficient carbon emission information for developers to evaluate during product development.

Therefore, Wistron developed the "Product Carbon Footprint System" in 2022 to connect with the internal system to automatically obtain product information. It includes component information from product BOM and carbon emission data in the manufacturing process, etc. Then, the LCA database is combined with it for automatic calculation. The system has the characteristics of Simplified LCA, which can quickly produce the carbon footprint of the product, and it is expected to reduce 80% of manual work time. In addition, Wistron can quickly increase product LCA coverage through the system. Developers are assisted to understand the carbon emissions and carbon emission hotspots of various parts and materials. It facilitates the selection of materials or further cooperation with our suppliers for carbon reduction. Therefore, it has become a powerful auxiliary tool for low-carbon and green product development.

### Implementation of three actions for innovative design of green products

The following explains how Wistron implements the innovative design of green product in the stage of product life cycle. It includes the development and the selection of new environmentally friendly materials, the introduction of new process technology, and the emphasis on its detachable maintainability. In addition, Wistron has established a long-term cooperative relationship with the suppliers who use green electricity because the traditional manufacturing process consumes a lot of electricity. From the design and development stage, incorporating recycling formulas and using low-carbon recycled materials in the production of casings, while also utilizing efficient manufacturing processes to reduce carbon emissions.

#### Design stage

#### Recycled Materials

In 2022, we successfully introduced high-recycled plastic (30% PCR) and aluminum (50% Recycle AL) into materials with the continuous testing and optimization of material and structural design by the R&D team. It is expected to increase to 50% of plastic recycled by PCR and 55% of aluminum recycled by AL, which will greatly reduce the carbon emissions of products in 2023.

Item	PCR recycled plastics	AL recycling aluminum
Year	Recycle Ratio	Recycle Ratio
2021	0%	0%
2022	30%	50%
2023	50%	55%
Results	<b>50%</b>	<b>55%</b>

#### Manufacturing Stage

#### Reduction in size

PCB (printed circuit boards) are found to be the parts of high-carbon emission according to the carbon-emission hotspots of the process analyzed by the product carbon footprint. We cooperate with Intel to introduce TK2 advanced process technology in order to effectively reduce the carbon footprint of products. It can place more parts in the smallest area, and successfully reduce the size of the 13-inch notebook PCB by 27.9%, thereby simultaneously reducing the carbon footprint.

Item	13 inch GLF	13 inch OEM
Thickness	0.6mm	0.7mm
Area	9,121 mm <sup>2</sup>	12,659 mm <sup>2</sup>
TK2 Technology	Yes	No
Results	<b>Area reduced by 27.9%</b>	

#### Disposal Stage

#### Automatic Disassembly

Wistron's biggest challenge in green design in 2022 was to improve the automatic replacement of laptop components. The reason was that it was necessary to overthrow the old design, introduce design thinking in a new way, and incorporate the consideration of automatic disassembly and assembly of robots. The successful design of GLF depends on the efforts of the R&D team. The disassembly and assembly operation time is greatly reduced through the modular design, and the generation of electronic waste is also reduced.





# [Recycling] The Key to Solving the World's Millions of Retired Electric Vehicle Batteries - Recycling and Reuse of Lithium Batteries

According to the data from the International Energy Agency (IEA), 26% of global carbon emissions came from transportation. Therefore, the promotion of electric vehicles is one of the priorities of the net zero policies of governments in various countries. Reuters estimates that the production of electric vehicles will reach 54 million in 2030, accounting for more than 50% of all automobile production, with the rapid development of the electric vehicle market. However, there is a potential environmental problem of batteries behind the high growth. The process of producing batteries uses a large amount of raw materials, including lithium, cobalt, nickel and other metal minerals. However, a large amount of mining will cause resource depletion. In addition, more than 12 million tons of lithium batteries will be decommissioned before 2030. Waste batteries that are not disposed properly will damage the environment; therefore, how to recycle batteries has become a new market opportunity for the green economy.

## Wistron Takes the Lead in Investing in Start-ups in Lithium Battery Recycling.

In 2020, Wistron GreenTech Texas began to pay attention to and seek the recycling of lithium batteries - a new technology for the recycling of cathode materials. In 2021, an agreement was signed with our technical partner. We utilized the patented technology, direct recycling and refining of lithium batteries, to recycle lithium batteries from both consumer electronics and electric vehicles.

According to the EverBatt data of Argonne National Laboratory in the United States, this technology can reduce water consumption by 69%, energy consumption by 73%, and greenhouse gas emissions by 68% compared with cathode materials refined by virgin (raw) materials.

## Establishment of Lithium Battery Recycling Production Line

The trial production line for recycling and refining lithium battery cathode materials was set up in Wistron Green Tech (Texas) in 2022. The trial production is expected to be officially launched in 2023, and the target is to implement an annual production capacity of 500 metric tons in 2025. After the new technology reaches the mass production target, and the output of the positive electrode material meets the industrial grade of battery manufacturing, Wistron Green Tech (Texas) will formulate a plan for future plant expansion, and continue to work with partners to establish a lithium battery recycling and refining plant with greater processing capacity to solve the environmental problems of global battery production and recycling, and become a new growth momentum for the development of Wistron's circular economy.

### Reduce Costs

**44%**

Costs reduction compared to using virgin material

**39%**

Costs reduction compared to hydro recycling



### Lower Environmental Impact

**68%**

Reduction of carbon emissions

**69%**

Reduction of water consumption

**73%**

Reduction of energy consumption

