

# Development of elemental technology and promotion of innovation

## Basic view

Murata will accelerate technological innovation in order to ensure that we continue to create new value. We conduct development in-house, from materials to processes, manufacturing technology, product design, analysis and evaluation. In doing so, we develop and accumulate our own fundamental technologies and are creating technology platforms that can be applied to new developments. By adding core technologies acquired through M&As to Murata's unique core technologies that have been refined over many years, we will create further differentiated technologies and innovations.

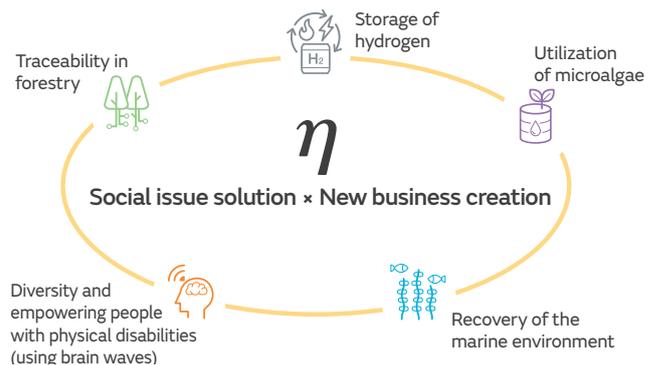
For the Companies to continue creating value as an Innovator in Electronics, partnerships and collaborations with external parties will be essential. As a mechanism to drive innovation, we will showcase our technologies to proactively promote collaborations with external parties. Through these efforts, we will utilize the technologies and experience we have developed through research and development in existing businesses, and combine them with software and communication networks to create new businesses.

## Platform technologies and core technologies

<b>Materials technology</b>	 Materials design  Materials processing
	Simulation and modeling technologies for material compositions, bonding states and structures, and electrical properties. Synthesis dispersion engineering of materials controlling particle sizes and crystal structures.
<b>Manufacturing technology</b>	 Laminating & stacking  Printing  Sintering  Surface treatment  Precision processing  Fine processing  Packaging  Measurement & testing  Equipment design  Automation  Industrial engineering
	Unique core process technologies to enable downsizing and high reliability of devices. Equipment design, automation, and industrial engineering technologies for high quality mass production at low cost.
<b>Device and product design technology</b>	 Passive device design  Semiconductor and MEMS device design  RF device design  Circuit design  Simulation  Modeling  Design for high reliability  Software
	Device design technologies using software, etc. for RF and other module products to achieve high performance, high precision properties, and high reliability under harsh environmental conditions. Modeling and simulation technologies for electromagnetic field analysis, thermal analysis, and stress analysis.
<b>Analytical technology</b>	 Materials characterization  Failure analysis
	Physical and electrical characterization technologies for material compositions and device performances through non-destructive analysis, thermal analysis, organic/inorganic analysis, and surface analysis, etc. Failure analysis technique for materials and devices.

## Initiative toward solving social issues × creating new businesses

In an attempt to directly solve social issues through Murata's innovations, we are promoting activities to generate creative and groundbreaking new businesses with emphasis on what makes Murata unique. In the  $\eta$  (Eta) Project launched in 2021, taking social issues as our starting point, we look into development themes to spark innovation that may become pillars of our business in 10 to 20 years from now, through cross-functional collaboration among members with various technical backgrounds who were selected via internal open recruitment. Through this project, we will identify tangible themes for new business creation, and will also develop an organizational foundation for taking on the challenges of new business areas and foster next-generation leaders. Promotion of these initiatives will enable Murata pave the way to the future and evolve through innovation.



For more information on the  $\eta$  Project, please see here. ▶

