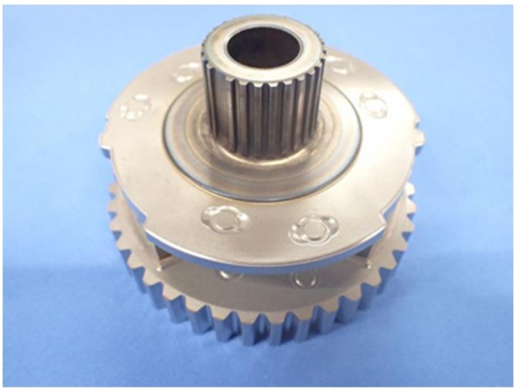
2025 JPMA AWARD

DEVELOPMENT PRIZE

C Process Development

C-2 Development of a Labor - Saving Production Line for Sintered Brazing Carriers

SUMITOMO ELECTRIC INDUSTRIES, LTD.



This process development is a labor-saving production line for sintered brazing carriers, from compacting to shipping. Sintered brazing carriers are manufactured by assembling multiple green compacts (bridged and splines). This process requires securing a large area for storing green compacts, manual assembly of the green compacts and insertion of brazing material, assurance of joined boundary surface integrity, and dimensional accuracy in the distance between parts. As a result, compared to general sintered parts, the manufacturing and inspection processes are more numerous and complex, leading to longer lead time before shipment and higher production costs.

The key points in the development of this production line were not only to enhance cost competitiveness through labor savings, but also to reduce work-in-process inventory, integrate inspection processes, and lower production energy costs to reduce CO_2 emissions. Since the production line handles multiple products, it was developed with a dual-line configuration: a “Manufacturing Line” for processes from compacting to sintering, and an “Assurance Line” for heat treatment and quality assurance. The “Manufacturing Line” was designed to enable continuous and synchronized production from compacting through assembly, brazing material insertion, and sintering, with the goal of reducing work-in-process inventory. The “Assurance Line” was configured as a one-piece flow system connected by a belt conveyor, covering dimensional inspection, sintered joint verification, in-line induction hardening and tempering, magnetic particle inspection, and visual inspection, thereby ensuring product quality. By integrating the “Manufacturing Line” and the “Assurance Line”, we achieved a 90% reduction in lead time from compacting to shipping compared to the conventional process. Furthermore, through automation of assembly and material handling, production costs were reduced by approximately 30% compared to the previous production process.