

Popular science summary; Chip Management in Milling and Drilling of Ductile Cast Iron

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This paper presents a study focused on addressing the issue of chip carryover in machining operations for ductile cast iron components in the automotive industry. Chip carryover occurs when the metal chips resulting from a machining process such as drilling or milling, are not correctly removed from the workpiece. Hence, these small parts of metal remain with the part and get carried over to later stages of the manufacturing process, potentially causing problems.

To achieve this, the study conducts a comprehensive and cross-functional analysis of machining operations and their impact on downstream processes. A specific focus is placed on a milling center, evaluating tooling systems, cooling, lubrication, and chip removal solutions. By analyzing empirical findings, the research proposes innovative solutions to minimize chip carryover, ensuring improved product quality and reduced production costs.

The newly developed solutions involve implementing optimized sequences of operations and peripheral processes to prevent chip accumulation, thereby reducing the need for manual intervention. Through the implementation of these solutions, the study demonstrates their effectiveness in enhancing the efficiency and sustainability of the manufacturing processes conducted at this site.

This research underscores the significance of a holistic and cross-functional approach in developing and implementing improved production strategies. By providing an alternative to costly manufacturing issues, this study contributes to the ongoing efforts to enhance the efficiency and sustainability of manufacturing processes in the automotive industry, benefiting both the industry and the broader public.