

Date: 15.01.2020

New chucks for standardized Processes

Every year, the production plant of Mitsubishi Motors Corporation, MMC in Kyoto builds engines for around 1.2 million vehicles. Numerous tools from MAPAL are used for machining the engines for the Mitsubishi vehicles. In 2018, the persons responsible at MMC decided to change over multiple production lines completely to shrink chucks from MAPAL.

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Mitsubishi Motors Corporation relies on shrink chucks and services from MAPAL

Cutting costs – automation – precision: These were the three keywords when the production of a new engine was being planned at MMC. “We wanted to bundle the work,” explains Makoto Nishida, head of production for drive technology at MMC. He adds: “Over the past months, we have focused increasingly on automating tool logistics, adjustment and maintenance.” The aim was to increase the cost-effectiveness of the new production line while maintaining at least the same level of precision.

Prepare tools for use more easily and quickly

“A further challenge we faced was preparing the tools for their application, in other words, simplifying the clamping and adjustment processes,” Makoto Nishida remembers. After all: “We experienced long non-productive times in preceding projects. Our aim was to reduce these significantly on the new line.” “MMC used various technologies for clamping the tools, mainly collets,” Koichi Fukui, application engineer responsible at MAPAL in Japan, describes the initial situation. This was one of the issues MAPAL addressed in order to fulfil the requirements of MMC to reduce variety and standardise processes. “We designed application-oriented shrink chucks for various lengths and diameters that are equipped with an RFID chip for automating the processes,” says Fukui. Shrink chucks achieve considerably better radial run-out values than collets and ensure reliable processes in the long term.



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"The concept that MAPAL presented convinced us. However, the question was whether we would manage to implement everything by the start of production, including the procurement of the suitable shrink unit and the structure for identifying tools with the RFID chips," says Makoto Nishida. It was in this situation that MAPAL offered to do all the necessary work, including setting up the tools. "That was a huge plus for us," Nishida praises MAPAL's commitment, "because it allowed us to focus on other unresolved issues relating to engine production."

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Shrink unit with length adjustment and large adjustment range

The persons responsible at MMC decided on a pre-adjustment and shrink unit suggested by MAPAL, which carries out the length adjustment of the tools. This unit allows the tools to be adjusted automatically. Furthermore, it was possible to design the shrink chuck without the length adjustment screw, which is usually required. This offers advantages not only with regard to automation. "We also extended the adjustment range from 10 to 30 mm," emphasises Fukui. This increases the number of possible regrinding operations for tools considerably and reduces tool costs.

MAPAL offers full service for tools and chucks

Setting up the new production line started in November 2018. "The MAPAL employees provided us with full service. They even documented all the adjustment parameters and all the chucks and tools used. I don't think we would have enjoyed this level of service with a different manufacturer," Nishida describes the cooperation. The production manager was slightly concerned about the short amount of time between the provision of the shrink chuck and the planned start of production. "There was no reason to worry. All chucks were delivered on time," says Makoto Nishida. And so production started as planned. Roughly 2,500 chucks from MAPAL are now in use.

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"MAPAL operates as a group"

Nishida also highlights the communication with the individual MAPAL locations: "With tool manufacturers who have their headquarters abroad, our experience has often been that communication between the branch in Japan and the company headquarters does not work properly. There are often delays when it comes to clearing up difficulties. But we can rely on MAPAL completely in this respect as well. The company operates as a group, and, as a result, communication works very well." MAPAL works according to the same standards worldwide and offers customers the appropriate service.

The persons responsible at MMC are completely satisfied with the support they receive from MAPAL: "The employees of the tool manufacturer visit us in production, help us to fix flaws in the process and assist with the pre-adjustment of tools. MAPAL sells not only tools, but also comprehensive service." True to the motto of being the customer's technology partner, further joint projects are already being planned: "For example, we want to replace the collets with shrink chucks on other production lines," concludes Makoto Nishida.

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Captions:



MMC produces engines for around 1.2 million vehicles annually at its Kyoto site. Masato Inove and Koichi Fukui, both from MAPAL, with Makoto Nishida, Haruko Takeuchi and Hajime Sekino, from Mitsubishi Motors Corporation.

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MAPAL has designed application-oriented shrink chucks for different lengths and diameters for MMC. They have an RFID chip for process automation.



The MAPAL concept impressed leading figures at MMC.

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Around 2,500 chucks from MAPAL, such as those Naoto Katayama from MMC, right, and Koichi Fukui from MAPAL are holding, are now in use.



MAPAL employees are always available to MMC with their expertise.

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PRESS RELEASE



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Working together for the optimum solution: employees from MMC and MAPAL.

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