

Bakki-Nagy Imre, Csanády Etele, Kovács Zalán, Németh Szabolcs:

Electronic tools management for metal and wood industrie

In our research we inspected and revealed the possibilities of applying the electronic tools management for metal and wood industries. By virtue of this, there is no doubt about it, that this is a very important area in improving the competitiveness of metal- and wood industries. In the price of a product, the costs of tooling and tool management represents quite high rate. Because of that, the aim of these new tool management systems is to cut down the tool management costs but with improving the production process by necessity, they also cause increased product quality. This increased product quality principally materialize in the more precise surface finishes and more accurate sizes, which meet today's market demands.

In the research, we defined the optimal placing parameters of the RFID chip on the tool, according to the machining and technological specialties of metal- and wood-processing. According to this, for the wood-processing industry we have made new tool-fixing bodies which are differs from the ones used in the metalworking industry and suits for the specialties of the wood industry. On the grounds of our research, dating back for many years, we chose the most suitable RFID system and tested it in industrial circumstances. The woodworking tool lifecycle-management system have been tested among two CNC routers and is still operating with the newly developed RFID tool bodies. This whole system -which is totally new in the wood industry-, with the RFID chip read/write subsystem, the computer interface, and the read/write heads ensures the unlimited storage of tool data. The results collected up to now, show clearly that improvement of competitiveness became available with this system.

The efforts based on our metal- and wood industry research brought completely new results:

- 1.) We created the "thinking" tool which is differs from those used in the metal industry. We also modified the tool-fixing bodies with the placement of an RFID chip.
- 2.) The lifecycle-management system filtered out the badly designed tools both in the metal- and in the wood industry and proved superiority of diamond tools against the classic tools.
- 3.) According to our experiment, we built a widely applicable tool lifecycle-management system that can be used both in small as well as in large wood-processing facilities, and contains both the special software and hardware.
- 4.) With the help of the tool-lifecycle management system we managed to define a facility-size independent process plan, for applying this workflow both in small and large facilities.
- 5.) We also designed a smaller version of the tool-lifecycle management system, but outside parties should also be involved in the process to meet the exact needs.