

Innovate

Cleaner Steel Cuts the Chain

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The new stainless steel quality IDUN is the next step in the evolution of Seco Tools insert carriers. IDUN is a martensitic stainless tool steel, developed in cooperation with Uddeholms, a producer of high alloyed tool steel. It is developed from the material Mirax 40, which, with some minor adjustments, was turned into IDUN. The main advantage of IDUN compared to a traditional material is its corrosion resistance, which in turn brings a lot of benefits.

"When I realized what the new material will mean for us and how much it will contribute to our sustainability work, I was very pleased," says Susanne Evengård, manager of sustainable business at Seco Tools.

"Usually, you talk about three dimensions of sustainability: social, economic, and environmental sustainability. The benefits from IDUN fall under all three of these categories."

The standard material used in Seco's other tools need several processing steps before the material becomes the final tool. The most crucial step is nickel coating to make the tool resistant to corrosion. This is normally done by sending the tool off to an external facility, which requires additional transportation and adds to the overall lead time.

However, IDUN does not require nickel coating or blackening (the process that was used before nickel-coating). This has a lot of benefits. The most obvious one is that you get rid of nickel in the actual tool, which means that the people handling the tool don't run the risk of having an allergic reaction to it.

Another benefit of IDUN is the shorter production time. Fewer steps in the process means that the process from raw material to finished tool is almost halved. This is especially true when it comes to custom tooling, the department of Seco that makes tools based on specific customer requirements.

"In custom tooling, it's very important that the customer gets the tools fast, and on time," says Evengård. "Having fewer production steps makes the process quicker and more predictable. The produced products are ready directly after machining. No extra operation, like nickel-coating, heat treatment, or sandblasting, is needed. With IDUN, we can minimize negative environmental impact from energy usage, transportation, and hazardous substances. This way, we can create a more sustainable value chain."

In February this year, the only commercially-available tool made with IDUN, the R220.88 face milling cutter, was released. Designed for roughing and semi-finishing applications, the R220.88 is suitable for machining cast iron and steels in the general machining and automotive segments. But the development of the IDUN material has been underway for several years.

This is IDUN

IDUN is a martensitic stainless tool steel, developed in cooperation with Uddeholms. Its natural resistance to corrosion eliminates the need for nickel-coating.

That means savings in lead time, production cost and environmental impact, as well as reduced exposure to hazardous material for people working with the tools made from IDUN rather than coated with nickel.

"We started looking for alternative steel qualities about four years ago. We tried different materials from different suppliers, and found the Mirax 40 from Uddeholm," explains Harry Väyrynen, who is an R&D engineer with technical responsibility for Seco's tooling materials. "We tried some different hardnesses and with some adjustments based on our requirements Uddeholm came up with IDUN."

In 2016, IDUN was approved for production by Seco. But even though there is already one IDUN-based tool in the product portfolio, IDUN is still considered to be in a test phase.

"So far, we have had very positive results from IDUN, and the plan is to move the production more and more towards using it," says Väyrynen. "I think that over time we could produce between 50 to 60 percent of our milling cutters, and maybe one-third of our tools overall, from IDUN."

However, it's not only inner qualities that make it superior to other materials. Soon, Seco will start to polish the tools made from IDUN, making the tools stand out even more from those of the company's competitors.

"This material is made for polishing. It will give the tools a beautiful and more uniform look compared to the ones that are nickel-coated or blackened," says David Romlin, corporate product manager for indexable milling at Seco Tools.

"IDUN is also a very pure material with very low levels of impurities, which reduces the risks of cracks."

Romlin believes that in the transition towards a more environmentally and socially sustainable production process, it is important to talk about the work that is yet to be done.

"We still use nickel-coating, but we are working on minimizing it. We shouldn't shy away from talking about the benefits of the new material, while still using the traditional materials. We should always strive to improve our products and be transparent about the improvements."

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