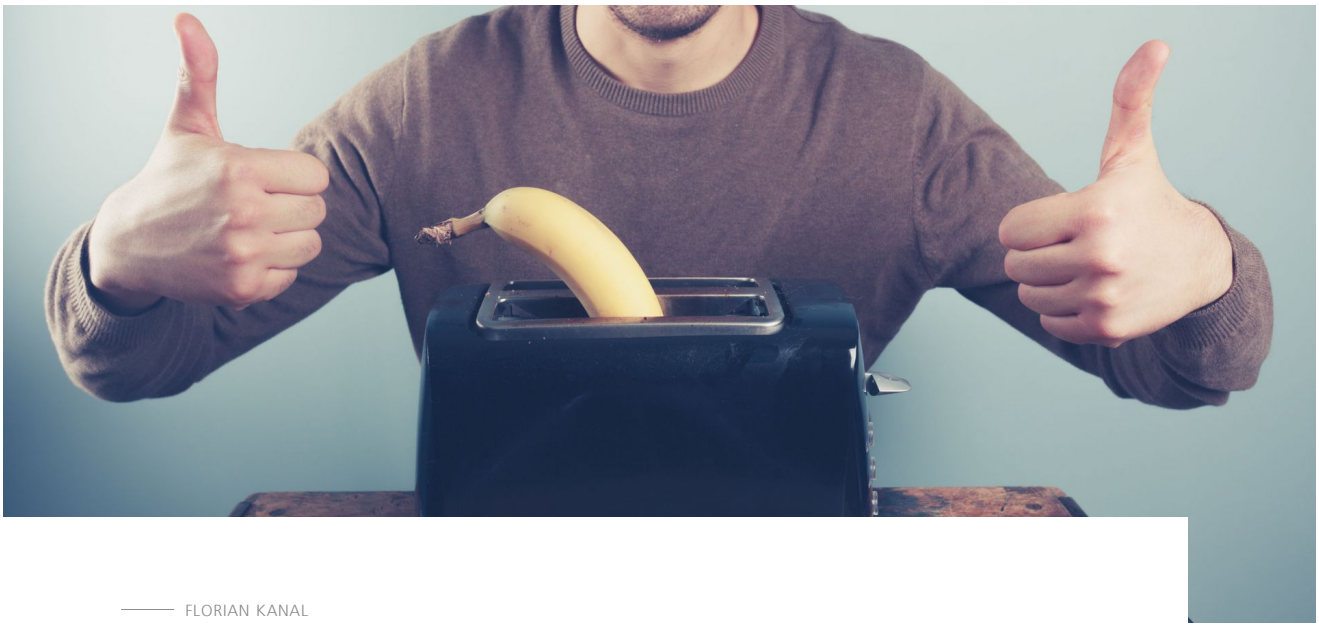

FLORIAN KANAL

Dumb parts in a smart factory

Industry 4.0 and digital manufacturing hold the promise of smart factories featuring smart machines. This is why we believe that a workpiece can be as dumb as you like. All it takes is a data matrix code — and the machine will know exactly what to do.

The goal of a smart factory is to get machines acting and reacting in harmony with the wealth of information flowing through the manufacturing environment. To achieve this, the machines need to be equipped with hardware and software interfaces, automated workflows and sensor systems.

This may be challenging, but it is perfectly feasible. Nevertheless, things get trickier when you bring workpieces into the equation, because how are they supposed to communicate with the machines? How do they say: "I'm Workpiece X. Please process me using Program Y!"

Why would you want brains when marking does the job?

The first reflex is to say: "Let's give the workpiece a tiny brain in the form of an RFID chip that transmits and receives information." But that presents all kinds of problems. RFID chips are foreign objects that you somehow have to mount on the workpiece. They might fall off, and they're not robust enough to cope with all sorts of standard production processes such as annealing, hardening, burnishing and acid baths. So a better, more practical idea is to give the workpieces their very own laser-marked Data Matrix code right from the outset.

That means the workpieces can leave all the thinking to the smart factory around them. By scanning the code, the machines get exactly the information they need to execute their part of the process. Once a machine has finished with the workpiece, a marking laser applies a new code and the process continues. Any conceivable information can be accommodated in the space of just a few square millimeters.

From the operations completed so far to traceability details, order numbers and quality control aspects: all the information is durably and permanently marked on the surface. Plus, if you are working in a laser machining environment, then 2D cutting machines can apply the marking themselves.

A sharp little guy to keep the factory smart

In all other environments, you can simply use a marking laser. The latest TRUMPF marking lasers are as quick and easy to add to a machine as a light, and once they are installed you can sit back and let them do their job. For a long time now, we've been offering our marking-laser hardware as a self-contained and extremely compact system consisting of easy-to-install components: PC, electronics, beam source and optics. And our marking-system software is compatible with a wide range of interfaces.

Users don't need to know anything at all about laser technology. The marking laser does everything you need in the background, keeping factories smart and letting workpieces be as dumb as they like. And this is just one of the many ways we help foster the smart factory vision.

FLORIAN KANAL

PRODUCT MANAGER FOR MICRO AND MARKING LASERS