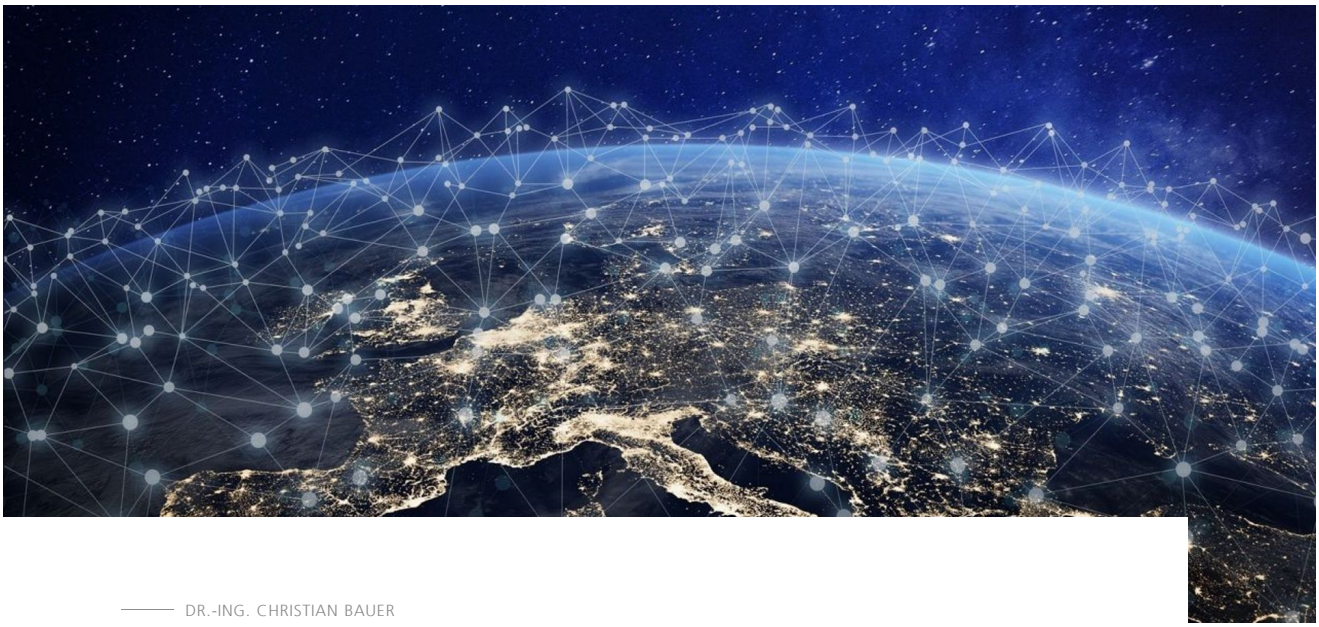

DR.-ING. CHRISTIAN BAUER

Winning with 5G

A wind of change is blowing through the manufacturing sector: The advent of 5G promises to rise smart manufacturing to the next level.

The new 5G cellular network will be many times faster than its predecessor, 4G. That in itself won't change things much for the average cellphone user. But for industry it opens up a series of long-awaited opportunities, including reliable data rates of up to 10 gigabits per second, wireless low-latency control systems, and the ability to connect more devices in a single network than ever before. In the not too distant future, industrial machines will be able to communicate with one another in real time and transmit huge quantities of data simultaneously. Benefits include smart production scheduling and the automated analysis of vast amounts of process data – and that's not all. 5G enables deeper data capture methods that can also be used with existing machines. Backward compatibility is no problem, because the new cellular communication standard can handle the increased data traffic without slowing down processes. In other words, companies can continue operating their existing networks and yet capture and evaluate more production data. Moreover, 5G is more stable than comparable network protocols such as Wi-Fi. One reason is that it allows companies to install their own standalone 5G networks in the 3.7 – 3.8 gigahertz frequency band, which is reserved for industrial applications. In this way, they can create a network of which they are the exclusive owners, and in theory is immune to interference by adjacent networks. All in all, 5G is a highly reliable infrastructure for digital communication.

Christian Bauer is member of R&D Basic Technologies Machine Tools at TRUMPF. He also represents TRUMPF on the board of the 5G Alliance for Connected Industries and Automation. In this role, he works together with other industry players to define specifications for 5G and its future evolution.
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However, we expect it to take at least another three years before the new cellular communication standard is universally adopted throughout the manufacturing industry. Nonetheless, it would be wise for companies to consider how they can exploit the new technology and start preparing a course of action. For example, it is technically impossible to make maximum use of all three strengths of 5G – high data rate, low latency, and high number of users – at the same time. Manufacturers therefore have to decide which of these is most important in their particular case. One possible solution is to split the proprietary network into subnetworks, each optimized for different functions (slicing).

For this and other reasons, it is high time to learn more about 5G, because it can be used to make manufacturing smarter in many more ways than are evident at first glance. But rest assured: TRUMPF is on hand to offer advice, support and all the expertise you need. TRUMPF is the co-founder and an active member of the 5G Alliance for Connected Industries and Automation and has been shaping the technological and regulatory framework for the introduction of 5G for many years now.

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