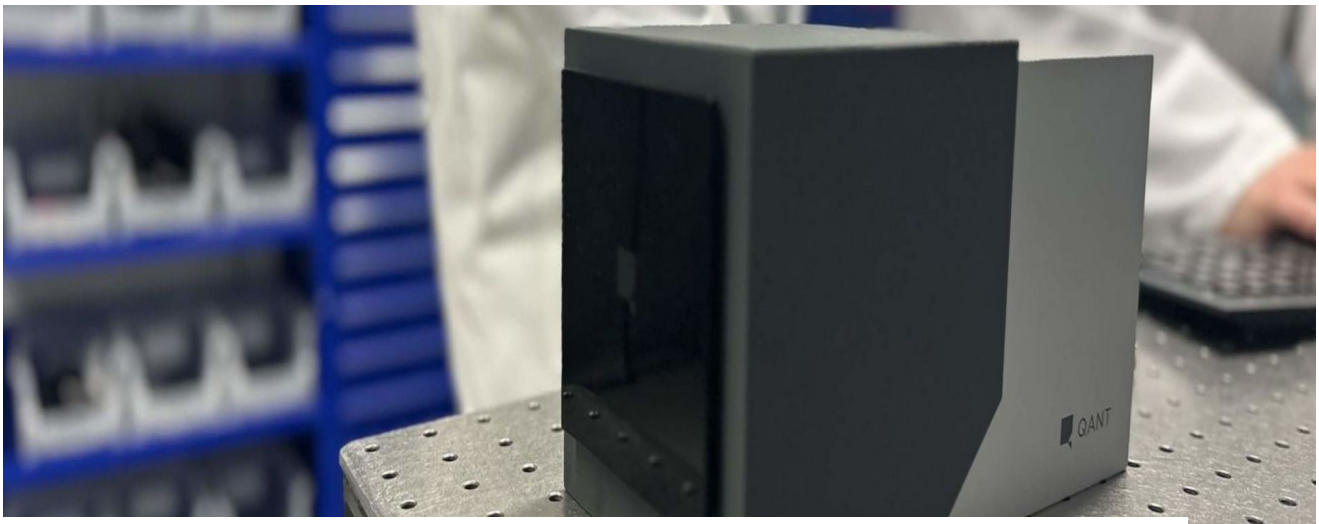


Compassionate quantum sensor comes to Hanover Trade Show

Small, lightweight and highly sensitive: With a magnetic field sensor the size of the palm of your hand, the Stuttgart-based start-up Q.ANT wants to open up industrial fields of application. One could be medical technology. In the near future, the quantum sensor should be able to control prostheses using muscle signals. And there's even more to this innovative technology.

Alongside quantum computing, quantum sensing is seen as a technological promise for the future. It could rapidly accelerate industrial progress and make things possible that are at best known from science fiction films. The magnetic field sensor from the independent, wholly owned TRUMPF subsidiary Q.ANT is a step in this direction. It enables the measurement of the smallest of magnetic fields, i.e. in the range of 300 picotesla, and that at room temperature. Until now, this sensitivity range could only be achieved by cooling the sensors to absolute zero (-273.15°C) or by heating them up to 150°C. In addition, industrial applications often failed due to the lack of sensitivity of the quantum sensors used.

In contrast, the sensitivity of Q.ANT's magnetic field sensor is high enough to make even human muscle signals visible in nerve tracts. The corresponding proof has already been provided under laboratory conditions. Three to four years of development work are still needed before the technology is ready for application. Then, magnetic field sensors built into prostheses will be able to detect muscle signals and trigger their corresponding movements. In this way, a prosthetic hand could close into a fist or reach for a cup. The sensors, including the control technology, are still too large to be integrated into prostheses. In the coming years, however, they should shrink from the size of a tin can to matchbox size.

Q.ANT founder and CEO Michael Förtsch, however, can also imagine areas of application in other industrial sectors that are already being considered, namely "anywhere where ultra-fine currents need to be measured, such as in the quality assurance of hard drives or to identify fault currents in power chips or batteries." Förtsch describes the area of human-machine interaction as a "medium-term goal." Quantum sensor technology makes many things conceivable, including the possibility that machines will one day be controlled by thoughts.

At the Hanover Trade Show, Q.ANT is using a demonstrator to show just how great the potential of its magnetic field sensors is for various industrial applications: a kind of quantum cube consisting of a wired hand made of glass, through which a weak current flows, and a sensor. "We read contact-free the magnetic field generated by the current from the demonstrator. This allows the sensor to open and close the prosthetic hand," Förtsch explains. At the Hanover Trade Show, the CEO wants to draw the attention of potential industrial partners to the new technology - in order to then ideally develop it further for a specific application.

About Q.ANT

Q.ANT is a high-tech start-up in the field of quantum technology and was founded in 2018 as part of the TRUMPF Group. The company works on technologies to improve the environmental perception of machines and the information processing of humans. To this end, Q.ANT develops quantum sensors and quantum computing chips based on its photonic quantum framework. With its four product lines photonic computing, particle metrology, atomic gyroscopes and magnetic sensing, Q.ANT is a partner for a wide variety of industries and application fields, ranging from medical technology and autonomous driving to aerospace, mechanical engineering and process technology. Q.ANT employs around 60 people at its Stuttgart site.