

New horizons for the FBK Clean Room

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Thanks to newly purchased equipment, we are moving from micro-fabrication to nano-fabrication of devices, for innovative applications in companies and in the space industry

It is the beating heart of the *facility* where the FBK sensors used in large physics experiments, or for cutting-edge industrial applications, are made.

The laboratory at **Fondazione Bruno Kessler** called **Clean room** – as fabrication requires an environment with cleaning standards similar to those of an operating room – has never stopped even in the year of the pandemic and has actually been renovated with equipment and machinery unique in the world.

Completed thanks to recent **ERDF (European Regional Development Fund) funding**, these innovations will allow for a qualitative leap, **from micro-fabrication to nano-fabrication**, and thus for entering the field of devices with the size of one billionth of a meter.

In this way, the current *facility* that covered already the entire process from the design to the fabrication of innovative sensors for research and high-tech companies, can also become a nanotechnology laboratory, and launch Fondazione Bruno Kessler and Trentino as a point of reference for excellence in the industry. Countless developments are expected in the fields of research and applications thanks to the ability to create nanometric structures. In fact, a new world is opening up: the world of quantum technologies at which Europe is looking and for which FBK will be ready to contribute together with the other local research players.

“The FBK facility”, said manager **Pierluigi Bellutti**, “is already well positioned in the international arena and, with this investment, it will certainly be able to grow further. With nanotechnologies, we will be able to make a leap forward by giving new opportunities to the Italian and European research world. For some time, through the development and production of special sensors, we have been contributing to CERN research and, thanks to solutions for satellites, to that of the Space industry, as part of the programs of the Italian and European space agencies, ASI and ESA respectively. With this improved potential, the development of solutions for companies committed to innovating their products in sectors in which the facility has been playing a recognized role for years, such as the medical, *automotive* and Industry4.0 sectors, will also find new opportunities.

This will be an advantage for the companies with which we already collaborate and will be an element of further attraction for other companies”.

“With the recent ERDF investment”, added the coordinator of the laboratory, **Lorenza Ferrario**, “we have managed to bring to the laboratories state-of-the-art equipment unique in the world, which has allowed us to introduce nano technologies for the electronic sector, one of the Key Enabling Technologies that Europe is promoting a broad social and economic development that is competitive with the rest of the world. In this way, Trentino is also actively participating in this development in the European context”.

“The nanotechnology infrastructure just completed at FBK”, stressed the director of the [Sensors and Devices Center](#) **Gianluigi Casse**, “is also critical for the manufacture of quantum technology devices. These technologies are enacting the second quantum revolution, which is the ability to manipulate and measure the quantum states of individual particles, and have enormous potential to dramatically increase the performance of sensors and computers. The FBK facility has the ability to combine a number of technology platforms that are essential to these devices (photonics, CMOS, MEMS and NEMS) and this makes it unique in Italy and one the few similar entities in Europe”.



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