FONDAZIONE BRUNO KESSLER
MAGAZINE

FBK is partner of the SUPREME European pilot line for superconducting quantum chips

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The European Union has approved SUPREME, a new pilot line aimed at establishing reliable fabrication processes for superconducting quantum chips. Led by VTT (Finland) and involving 23 partners across eight EU member states, the SUPREME consortium will work together to strengthen Europe's emerging quantum technology ecosystem.

"By developing stable fabrication processes for superconducting quantum chips, we push the boundaries of what is possible in quantum computing, sensing, and communication", says **Pekka Pursula**, VTT's Director for Microelectronics and Quantum Research and coordinator of the consortium.

The **SUPREME consortium** will develop and optimise Josephson junctions, 3D integration and hybrid quantum processes, which will be validated with demonstrators based, for example, on 3D-integrated qubit assemblies for quantum processor units (QPUs) and travelling wave parametric amplifiers (TWPAs).

The **FBK Center for Sensors & Devices** will contribute to the project by leveraging its state-of-the-art cleanroom and laboratory facilities. *"We are proud to join the consortium, representing Italy alongside the University of Naples, in our joint mission to position Europe at the forefront of quantum technology"* comments **Federica Mantegazzini**, head of the **Superconducting Quantum Devices (SQD) Research Uni**t at FBK, who will coordinate the FBK activity within SUPREME. *"Drawing on our experience in design, micro-nano fabrication, and cryogenic testing of superconducting quantum devices, gained through the European projects Qu-Pilot and MiSS, as well as the national NQSTI and INFN initiatives, we are well-equipped to make a substantial contribution to the SUPREME mission."*

FBK is looking forward to collaborating with the SUPREME European partners and engaging closely with the University of Naples at the national level, reinforcing Europe's sovereignty in superconducting quantum technology. This partnership aligns with FBK's commitment to advancing quantum research and development across Europe.

Members of the SUPREME consortium

Research organisations and academia: VTT (Finland), coordinator; TNO (Netherlands); Delft University of Technology (Netherlands); Technical University of Munich (Germany); Fraunhofer Gesellschaft für Angewandte Forschung e.V. (Germany); Max-Planck-Gesellschaft (Germany); Leibniz Institute of Photonic Technology e.V. (Germany); The French Alternative Energies and Atomic Energy Commission – CEA (France); University of Naples Federico II (Italy); Fondazione Bruno Kessler (Italy); Institut de Física d'Altes Energies – IFAE (Spain); Silicon Austria Labs (Austria)

Large enterprises: Infineon Technologies AG (Germany); IQM Finland Oy (Finland)

Small and medium enterprises: Arctic Instruments Oy (Finland); Alice & Bob (France); QuantWare BV (Netherlands); Single Quantum BV (Netherlands); QphoX BV (Netherlands); Peak Quantum GmbH (Germany); Silent Waves (France); Amires, The Business Innovation Management Institute (Czech Republic); Qilimanjaro Quantum Tech S.L. (Spain).

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