

Rosenberger

Subproject:

Scalable High-Frequency Multiport Interconnect Technology and Attenuators for Cryogenic Applications

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State-of-the-Art of Technology

In cryogenic applications, the wiring of manipulation and readout channels are usually done in separate wiring.

At Rosenberger, such connectors and cable assemblies have been processed as single connectors often SMA and SMP series are used which are proven solutions in high-frequency applications.

Driven by previous customer inquiries, Rosenberger has already processed NbTi and stainless steel cables with promising results. These were single cables soldered in non-grouped connectors.

For processing multiport connectors, special equipment is required. The uniform and controlled heating of the parts to be soldered is a technological challenge. Due to the exotic and expensive material prices, such as NbTi, industry adoption is minimal.

Scientific and Technical Goals

- Development of a temperature-stable connector interface that can be further developed into a multiport connector, with less than 3 mm channel pitch.



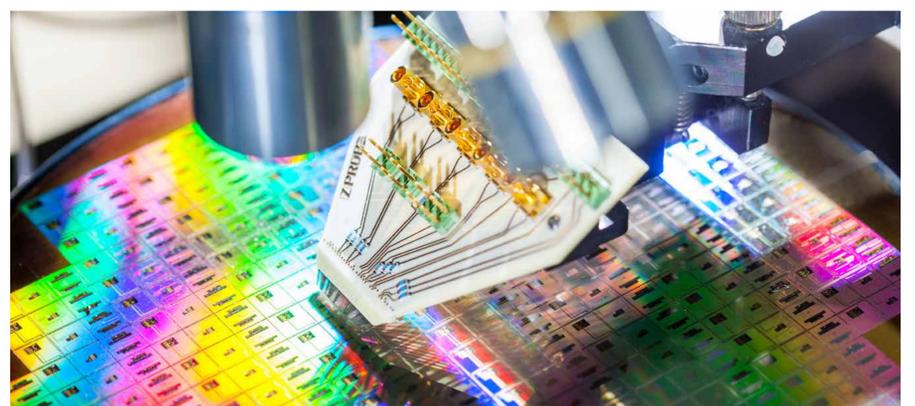
SMP cable assemblies from Rosenberger for cryogenic applications

- Development and production of planar substrates for attenuators that can be integrated into the connectors with corresponding channel pitch.
- Deepening the knowledge of soldering NbTi cables, especially in multiport connectors.
- Deepening the knowledge of soldering stainless steel cables, especially in multiport connectors.

Novelty and Attractiveness of the Solution Approach

These new products are distinguished from previous solutions. Including the main feature of miniaturization so the required installation space is greatly reduced. This enables the wiring of quantum computers with many qubits.

Developing a robust connector interface, a secure contacting technique for attenuator substrates and connector miniaturization is a kind of subsequent development. The main innovation lies in continuing the development of new technology processes for cable assembly manufacturing in both NbTi and stainless steel material.



Rosenberger probe with ultra-fine pitch contactors for direct wafer level probing

