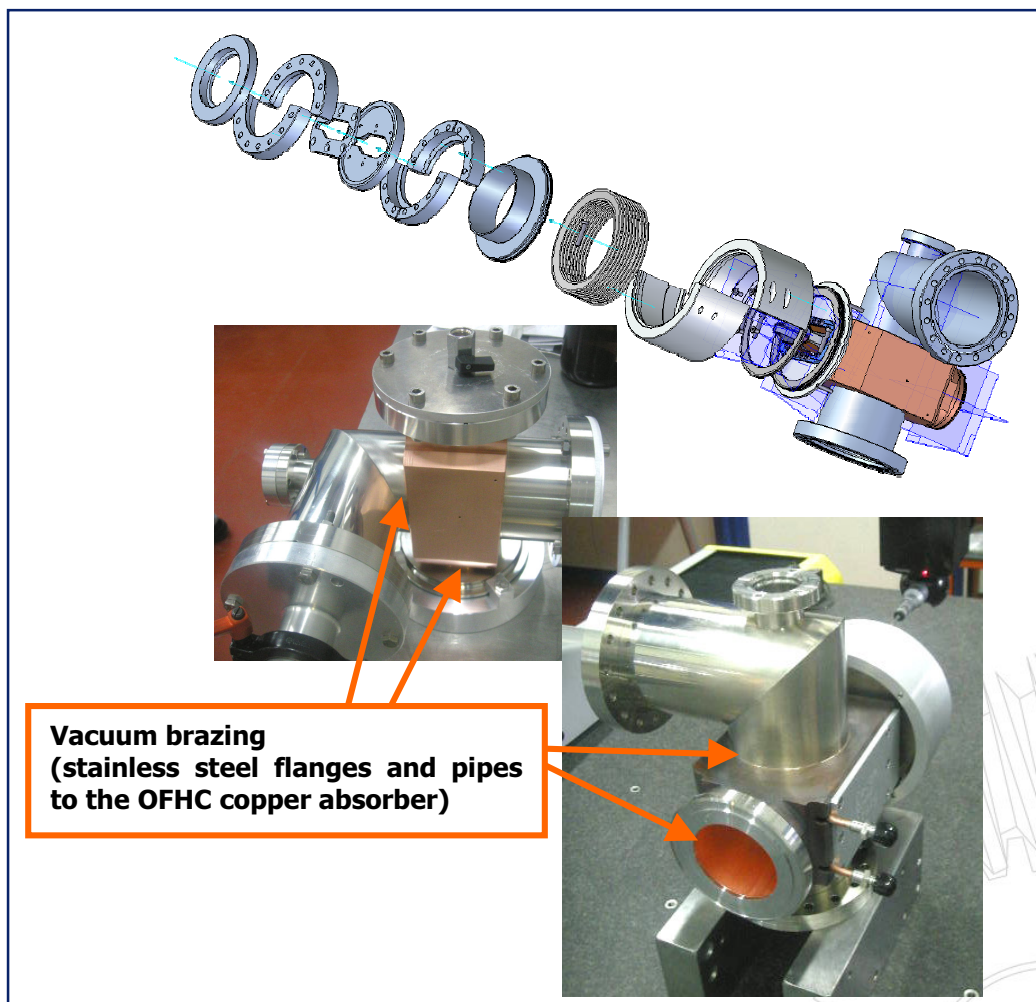


## VACUUM BRAZING

The vacuum brazing process, often applied for the leak tight assembling of different materials, requires a specific know-how, in order to prevent leakages for the brazed assemblies. The most critical aspects involved in this process are the material selection, the choice of the brazing alloy, the design and the preparation of the brazing joint, the optimization of the thermal cycle and the design of jigs for the stable positioning of the assembly in the vacuum oven. Thanks to the continuative collaboration with several research organizations, and to experiences in different kind of applications, CECOM achieved the required skill to guarantee the long reliability of supplied brazed components. Vacuum brazing is managed in outsourcing: for this process we can collaborate with different specialized companies.

### 1 Beam absorbers

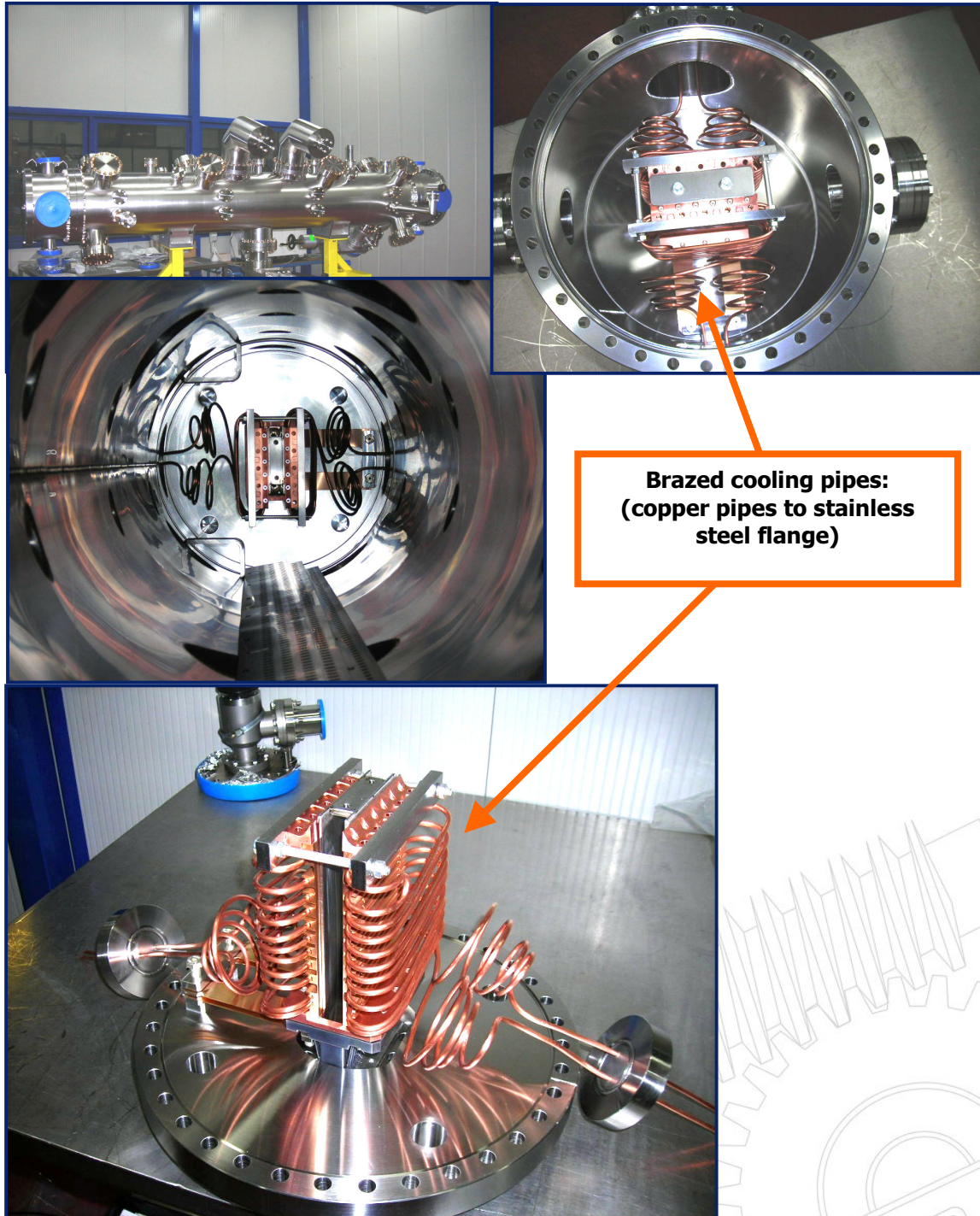
A special vacuum brazing process was applied to the tapered absorbers for the ALBA synchrotron (Fig. 1).



**Fig. 1: Pictures of the tapered absorber for the ALBA Storage Ring**

## 2 In-vacuum cooling systems

CECOM experience includes the construction of special in-vacuum cooling systems, in which the cooling circuits are obtained without any water-to-vacuum joint. A relevant example is represented by the cooling system of the "insertion device for in-vacuum undulator", produced for Diamond Light Source (Fig. 2).



**Fig. 2: In-vacuum cooling circuit for the DLS "insertion device for in-vacuum undulator"**

### 3 RF-components

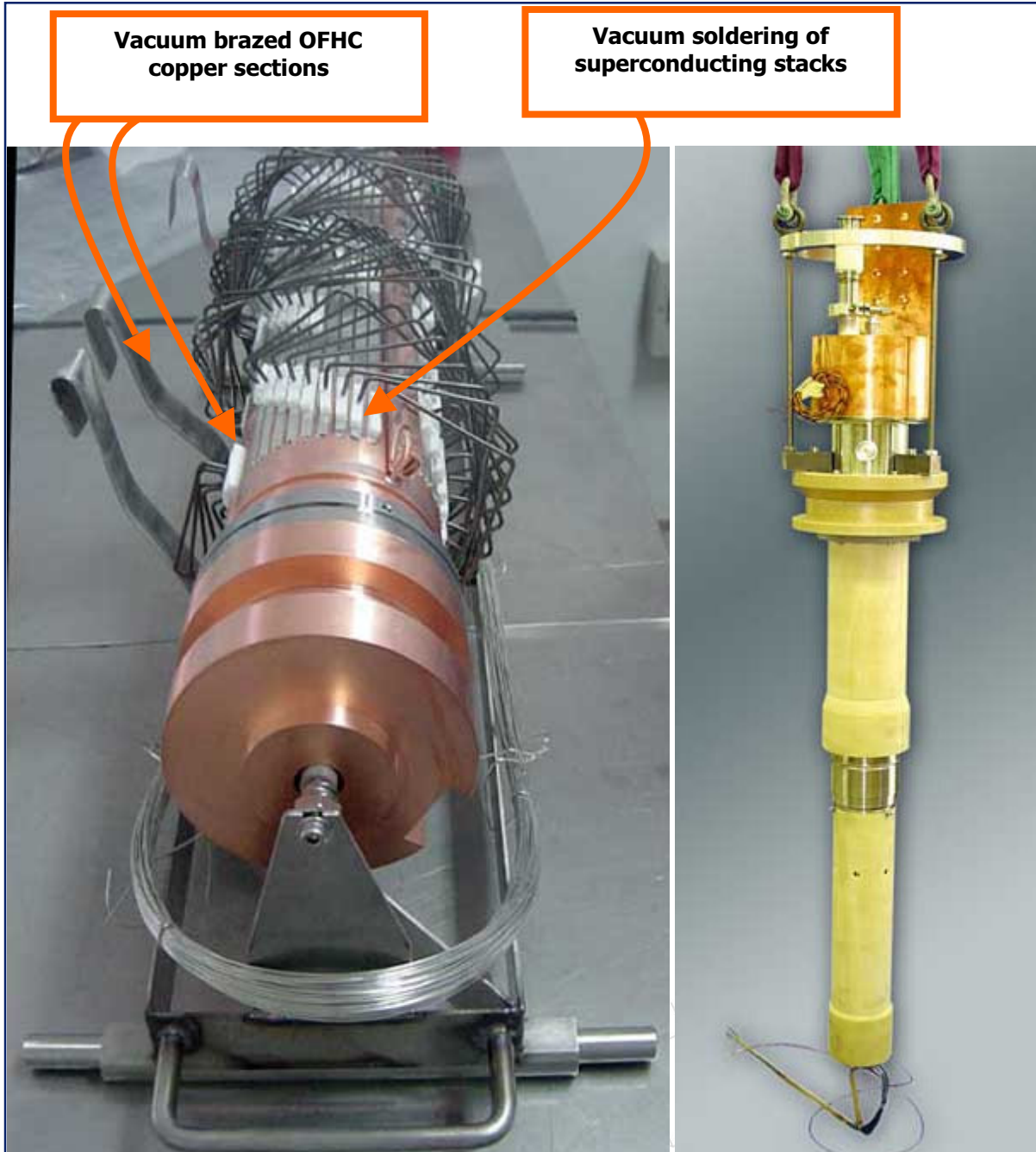
The RF deflector for SPARC (INFN) is an important example of simultaneous vacuum brazing (Fig. 3).



**Fig. 3: RF-deflector for SPARC (LNF-INFN)**

#### 4 Sections of HTS current leads

13kA HTS current leads produced for CERN (Fig. 4) are an important example of critical application, involving several special processes (Fig. 4). The performances and the leak tightness of the product were respected also during and after prolonged permanence at cryogenic temperature.



**Fig. 4: HTS current leads for CERN**