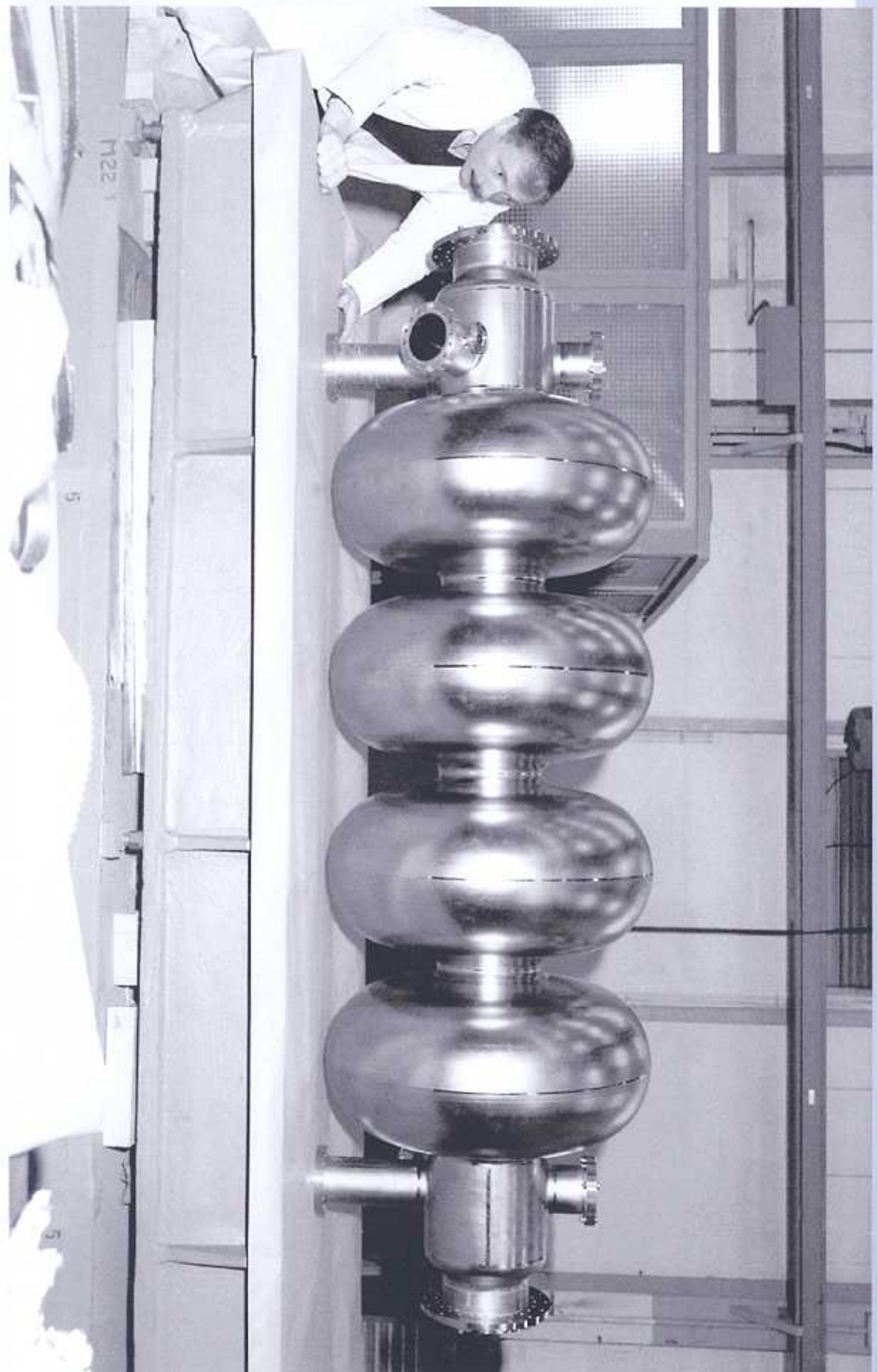


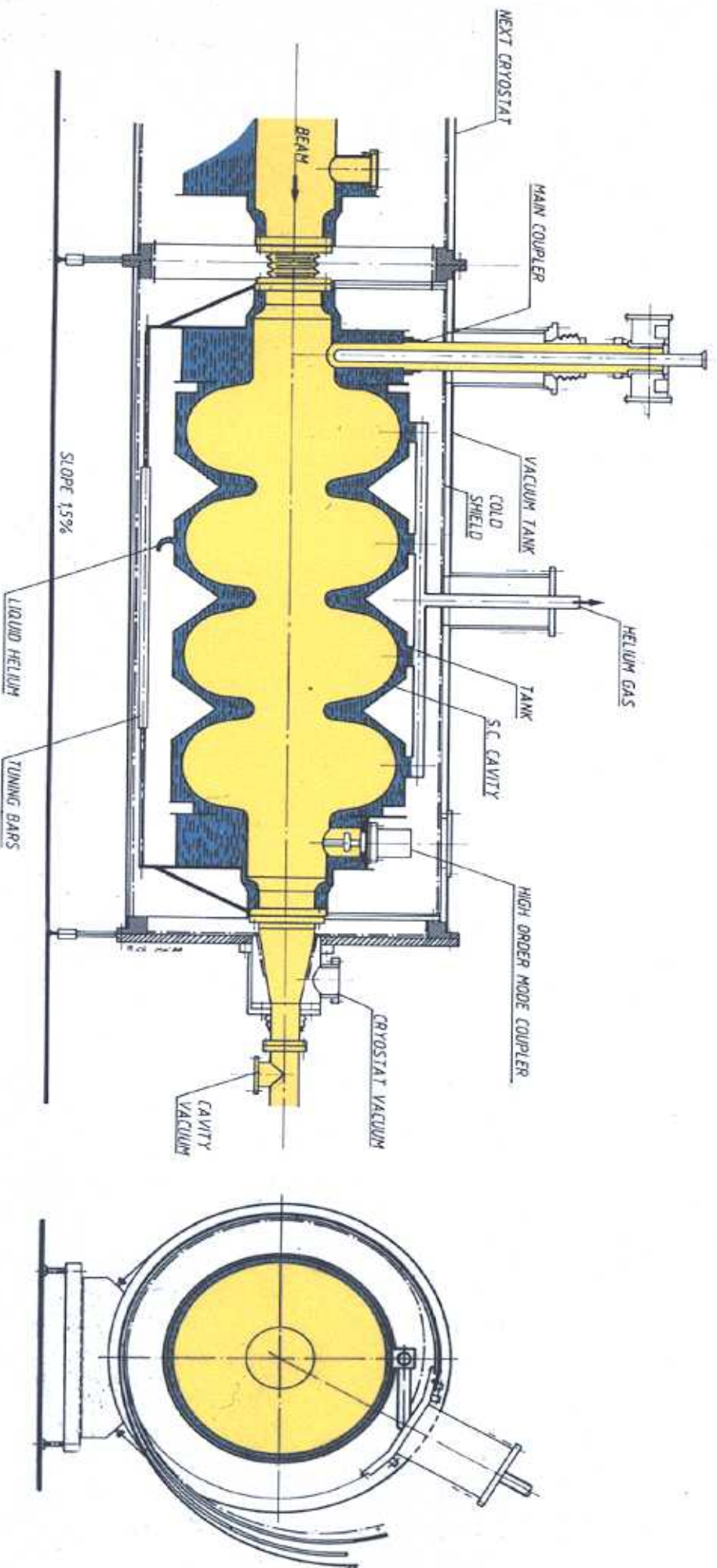
Operation of LEP Cavities

- 256 Cavities were installed (4 cavities per module)
of which 32 were Niobium
the rest Niobium-Copper
- No cavities were lost during operation
- No cavities degraded
- No more problems with power couplers
- One major intervention: exchange of HOM-cables
(heating at high energy and high beam current)

LEP Niobium Cavity



LEP cavity drawing



SUPERCONDUCTING CAVITY WITH ITS CRYOSTAT

LEP cavity production

- Cavities were produced by three firms in Germany, France, and Italy
- They came back to CERN for measurement
- The three firms then integrated cavities into He-tank, assembled criostats and connected four cavities together to form a module
- At CERN the power couplers were mounted and everything tested

Industrial production

- at the beginning nothing really worked (each firm had different problems). Very close contact with the firms was essential
- then a long period of smooth production followed
- Towards the end the good people that brought about the success were needed elsewhere which again lead to problems in the production
- Firms should be strongly encouraged to keep the same people from beginning to end

therefore:

- traceability of production, QA (e.g. ISO 9001), and good logbook keeping at the lab for testing and at the firms for production was essential
- for each firm one senior technician from the lab was responsible for communication and visited the firm at least once per month with exchange of proceedings
- the firms had free access to the lab
- we think it was important that we had full own experience of each step of production

Problem

- Our project catastrophes were discharges within the power coupler due to gas condensation in the warm-cold transition
- It led to confusion, frustration, panic of the management, and reorganisation (as always)
- However, after one stressful year the problem was solved (dc bias on the antenna and in situ baking of the coupler)
- **Be aware! a shortcut may take a long time and can be very expensive. Do not try to save time by reducing tests!**