WebEX meeting – CERN/SLAK/KEK

CERN production

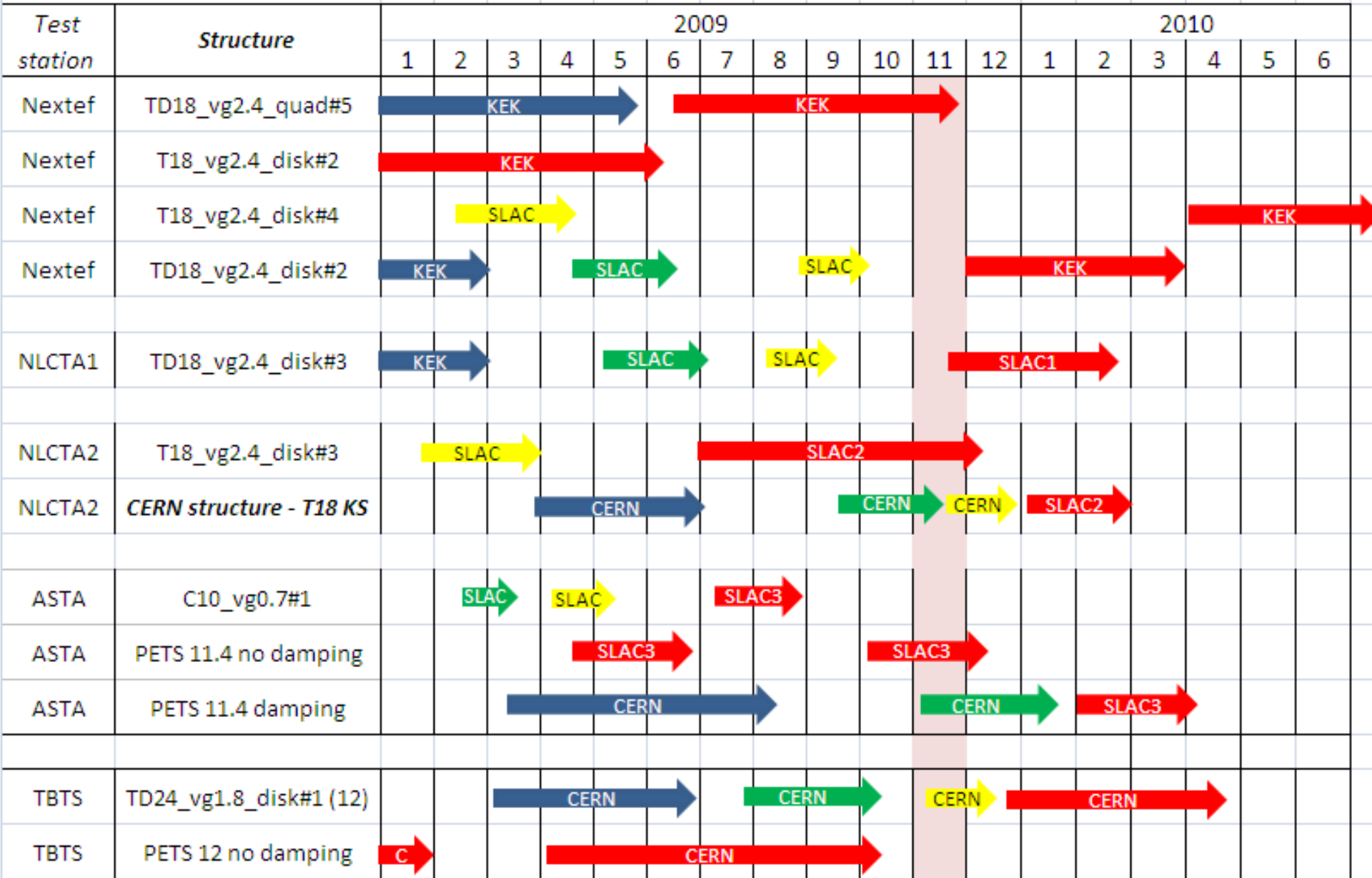
G. Riddone, 04.12.2009

Outline

- Accelerating structures
  - Manufacturing flow and status
- PETS
  - Manufacturing flow and status

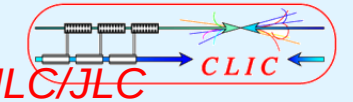
Status on 11.11.2009

Structures to be tested



Accelerating structures manufacturing flow

Based on NLC/JLC assembly procedure



High precision diamond machining

QC

Cleaning (light etch)

Diffusion bonding of couplers (H_2, 1045 °C)

Machining of couplers

Cleaning couplers (degreasing)

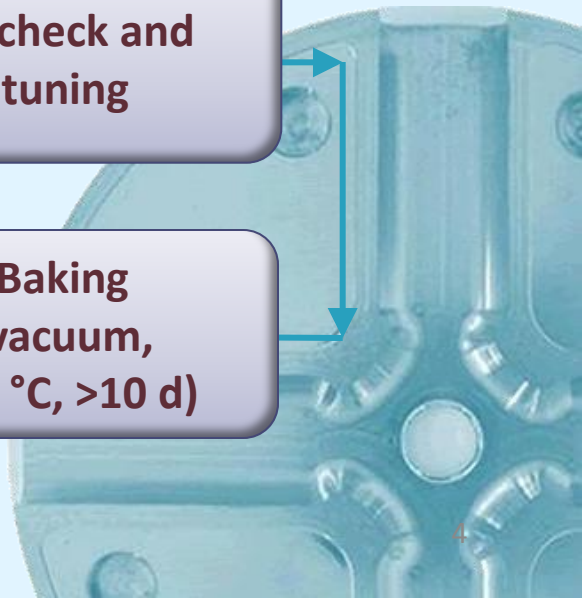
Diffusion bonding of disk stack incl. couplers (H_2, 1035 °C)

Brazing of cooling circuits , tuning studs,… (AuCu, 1020 °C)

RF check and tuning

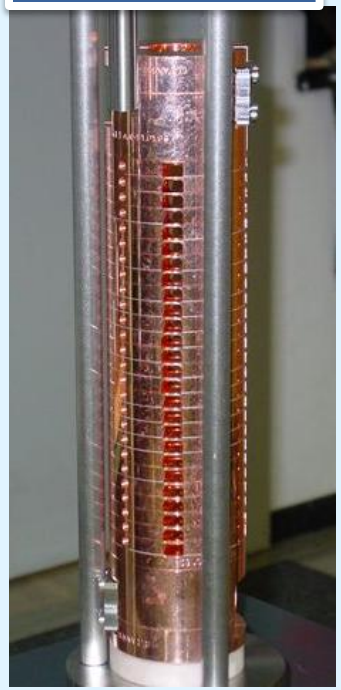
Baking (vacuum, 650 °C, >10 d)

Packaging and shipping

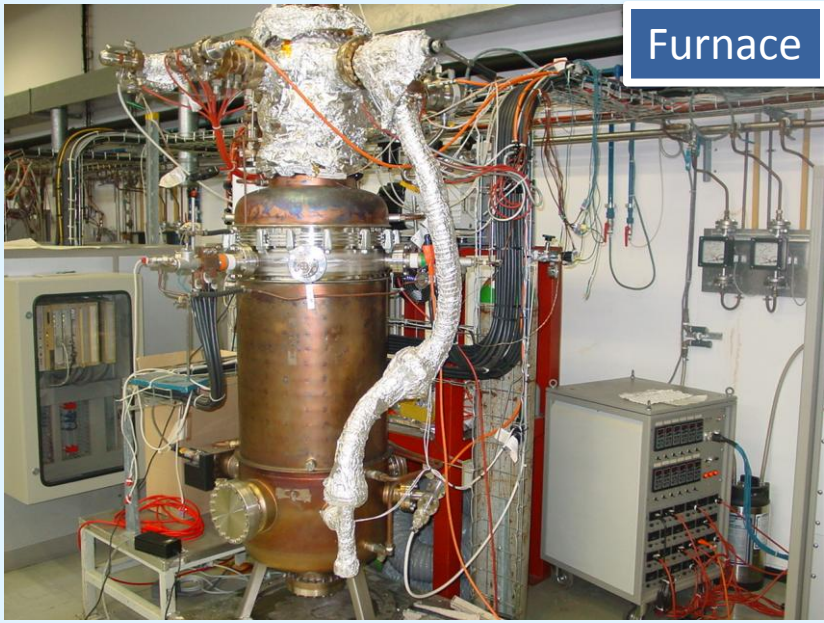


1st Baking @ 650 C

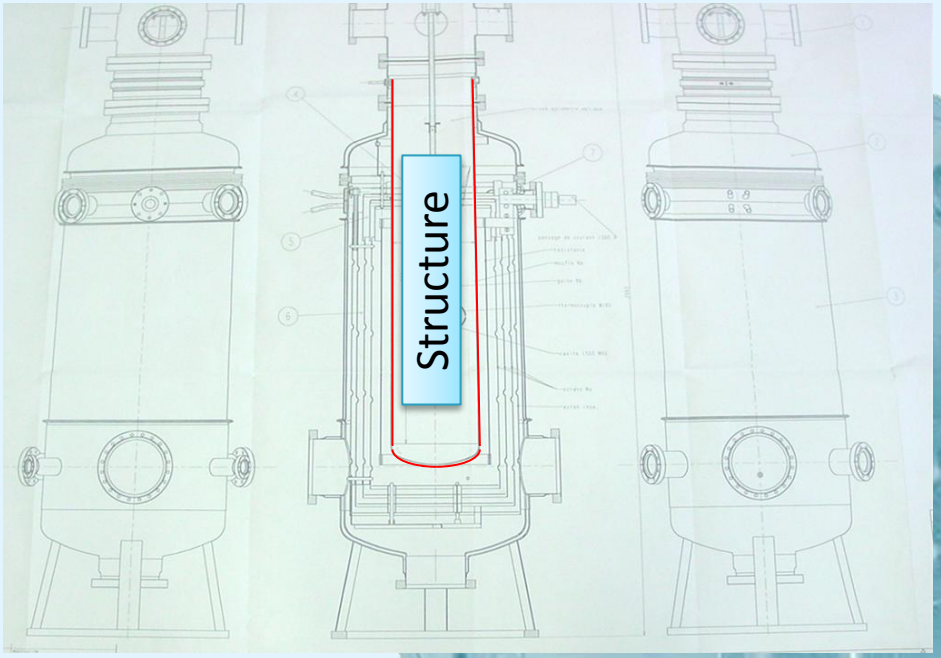
Acc. structure



Furnace



Flange and str. support



CERN status - assembly

11.4 GHz

- Two damped accelerating structures assembled TD18 (TANK) and TD24 (TANK)
  - TD18- old CERN procedure
  - TD24 diffusion bonding, no etching – to be baked
- Disks for two undamped T18 with SLAC/KEK mechanical design at CERN (*SEALED*) – **to be bonded – PRIORITY 2**
- Disks for undamped T24 (*SEALED*) at CERN – to be bonded

12 GHz

- Disks for two damped TD24 (TANK) at CERN for the two-beam test stand – bonded, **to be baked** – **PRIORITY 1**

Status - machining

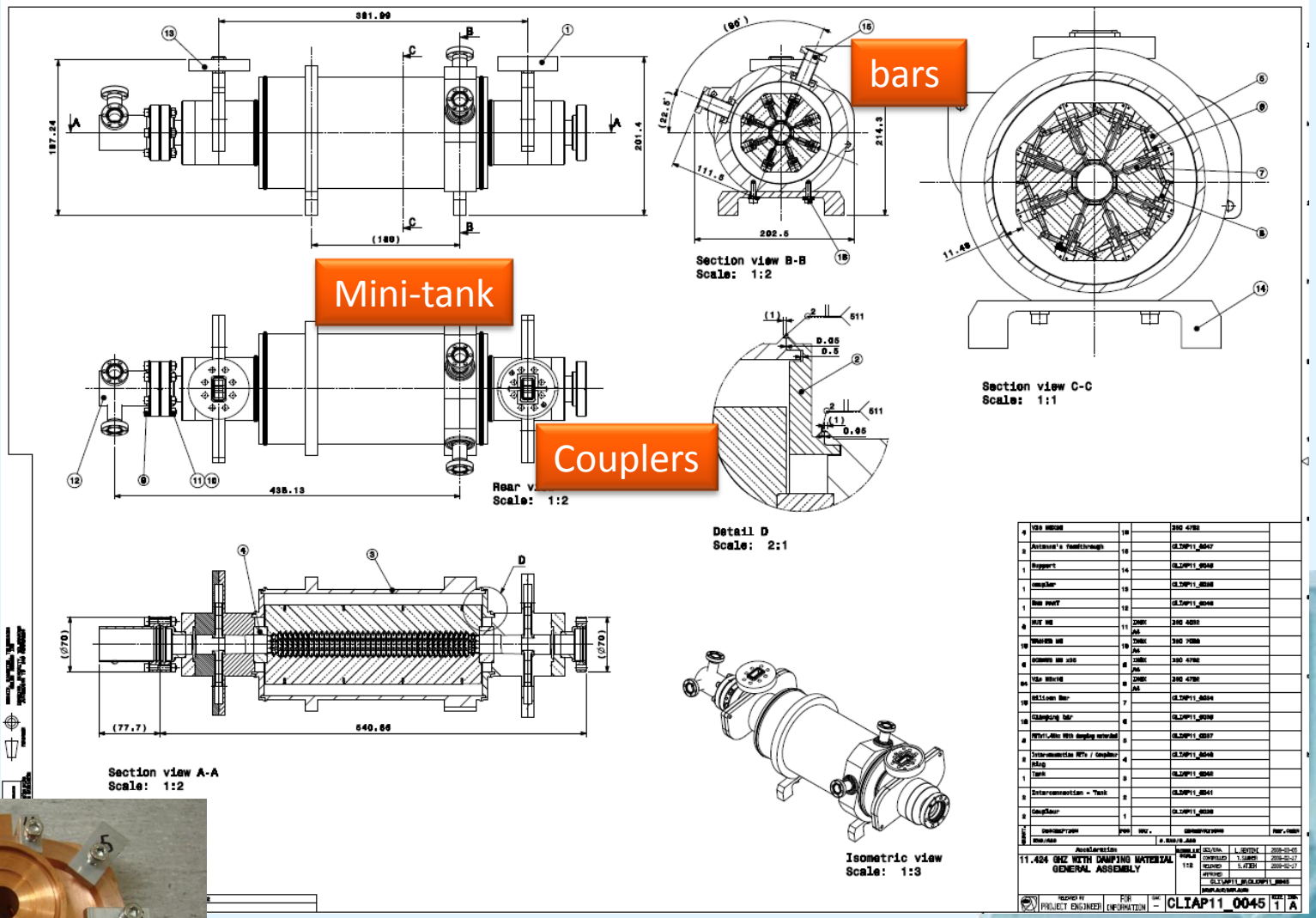
11.4 GHz

- Disks for two undamped T24 smaller diameter (45 mm, SEALED) end of Dec 2009 - VDL
- Disks for two damped CD10 (vg 1.35) (80 mm, SEALED) end of Dec 2009 - VDL
- *TD24 sealed to be launched in fabrication*

12 GHz

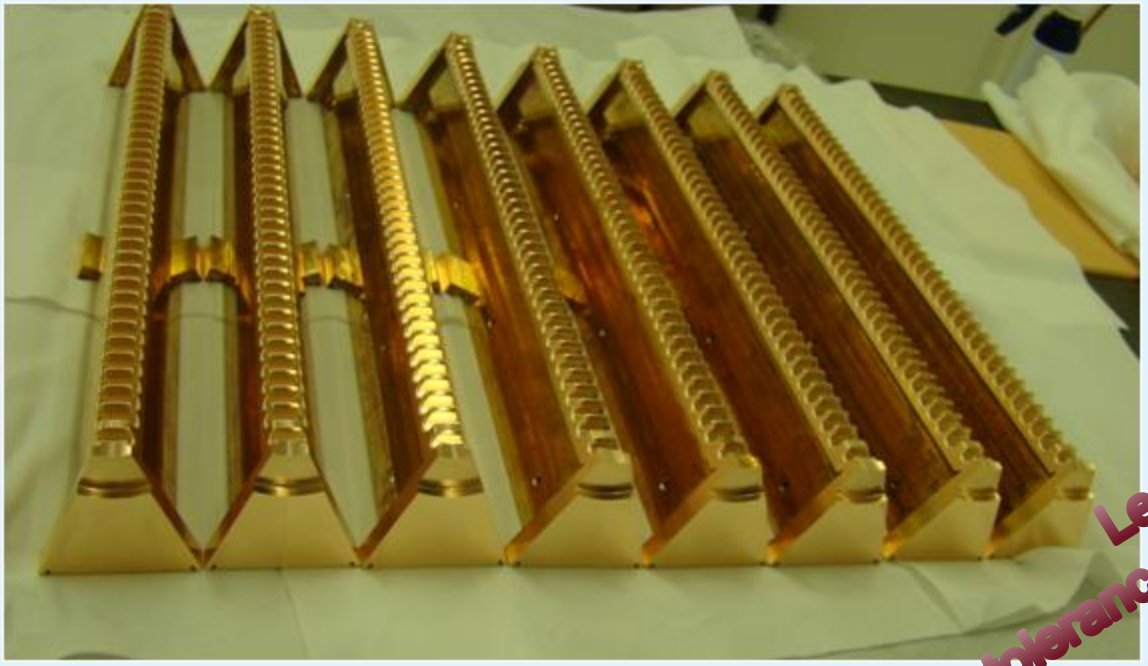
- Disks for one undamped T24 (80 mm, TANK) – Dec 2009/Jan 2010
- Disks for two damped TD24 smaller diameter (45 mm, TANK) beginning of Dec 2009
- *T24 sealed to be launched in fabrication (stand alone test)*

PETS with damping material – 11.4 GHz



Cooling circuits (brazed)

PETS bars



Length ~ 300 mm
Shape tolerance within specification - ± 7.5 µm

PETS main components

- Bars
- Couplers with flanges and cooling circuits
- Tank – gaskets
- Accessories
- Damping material (SiC)

Manufacturing flow 1/3

PETS couplers

QC

Cleaning (light etch)

1st brazing (body), vacuum, 800 C

2nd brazing (flanges, cooling), vacuum, 800 C

RF check

PETS bars

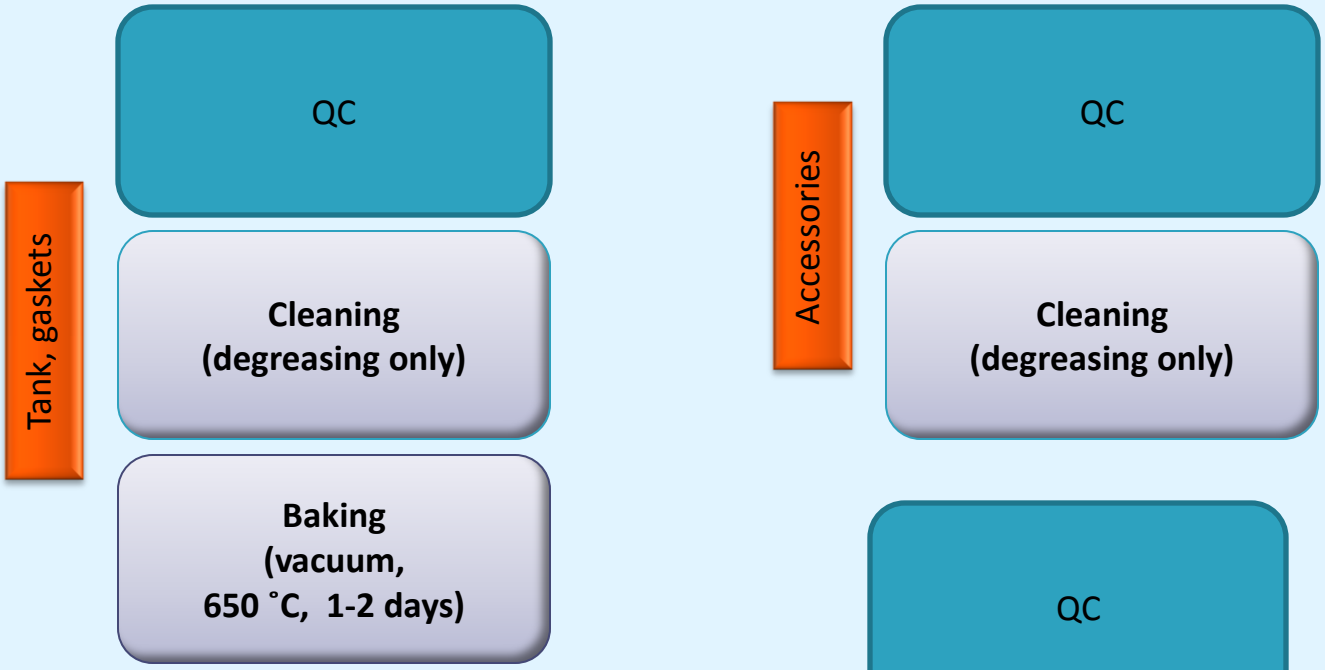
QC

Cleaning (light etch)

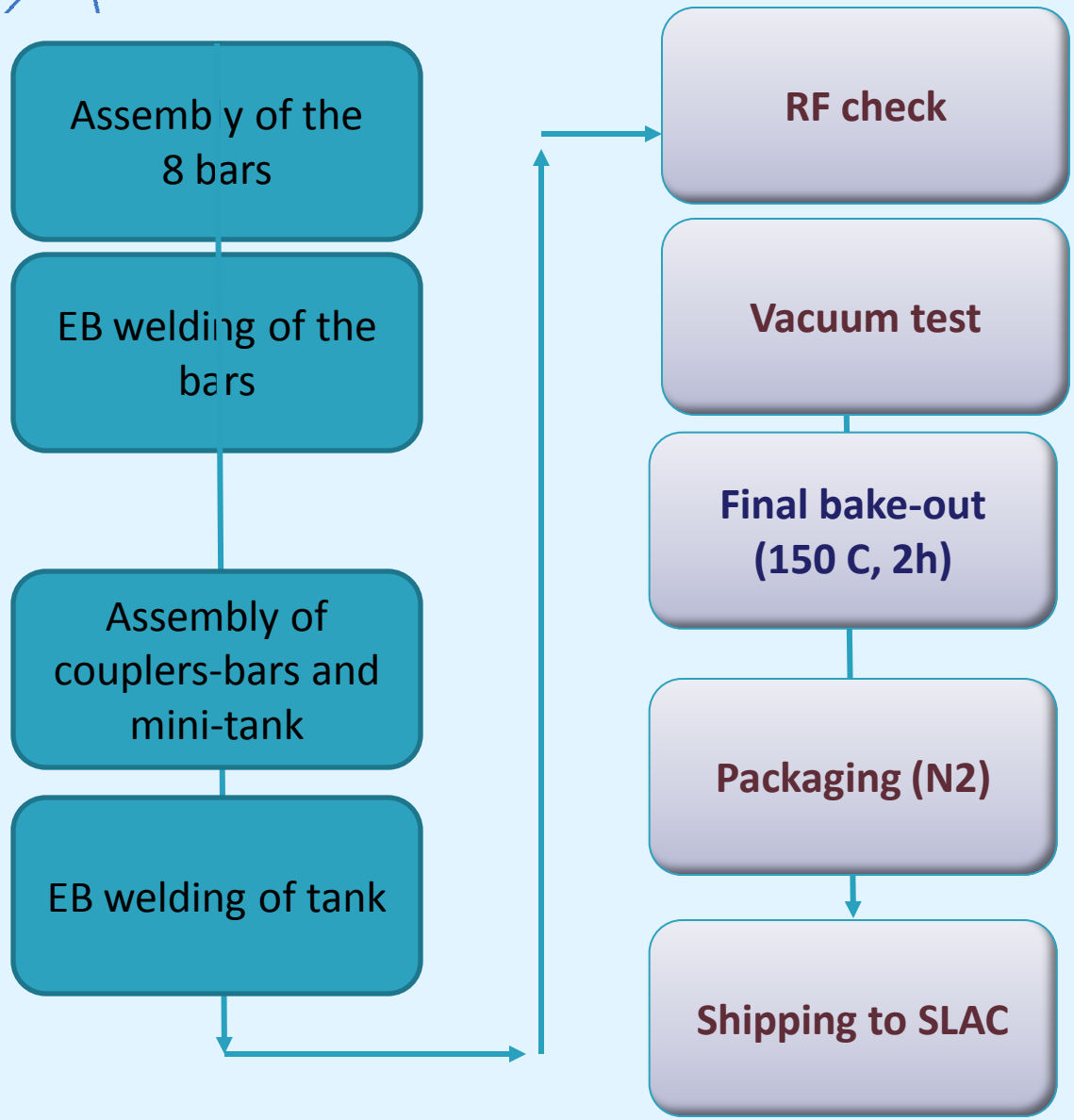
EB welding of the bars

Baking (vacuum, 200 C, 2 h)

Manufacturing flow 2/3



Manufacturing flow 3/3



Proposed schedule

SiC on the critical path (Boostec waiting for the new offer)

- Coupler preparation W49-50
- Bar preparation W50
- Tank preparation W50-51

Loads

- 3 loads completed, including leak test and vacuum tests
- Baking at 250-300 for 4 hours on 04.12.2009
- Next week shipping to:
  - x1 to KEK
  - x2 to SLAC