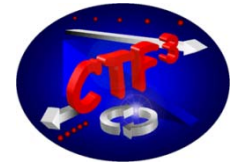
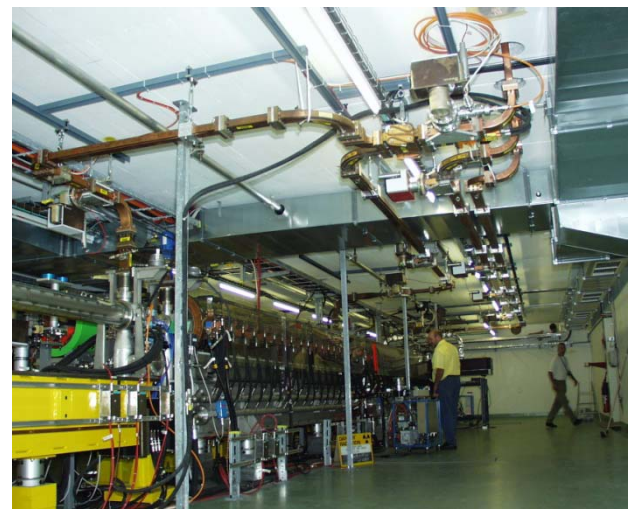


- CALIFES STATUS: Mechanics/installation
- Commissioning
- Power Phase Shifter
- CEA contribution to the White Paper for CTF3

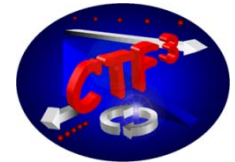


## Work done from July :

- RF network nearly achieved (thanks to CERN RF team)
- Installation of baking system on Gun and first sector (as above).
- Pump in short circuit (CA.VPI.210) repaired (...)
- Leakage of CA.MTV.420 repaired
- Photo-cathode ready to be produced in situ
- RF conditioning of LIL section ready to start (waiting for water circuit operational)



CALIFES RF network in CLEX gallery and in CLEX tunnel



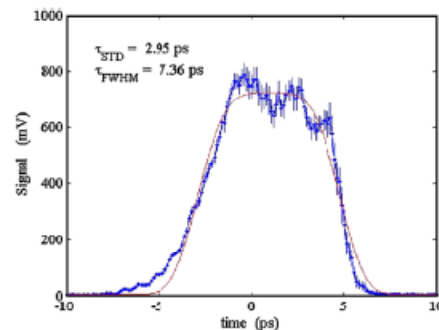
Work to be done during shutdown (6/10 - 21/10):

- Check the alignment of CA.VPI.210 chambers (bellow deformed)
- Perform the baking of the gun and the first Califes sector
- Complete the RF network and the RF conditioning
- Finish small mechanical installations (LIL protection covers, adaptation boxes and cabling of MTV, lead shielding of MTV cameras, mirror protection)
- Check the laser line alignment with more powerful pulses
- Command/Control of diagnostics : BPM, ICT, MTV, FC (already on progress)

Ready to start the commissioning on 03/11

## Laser system:

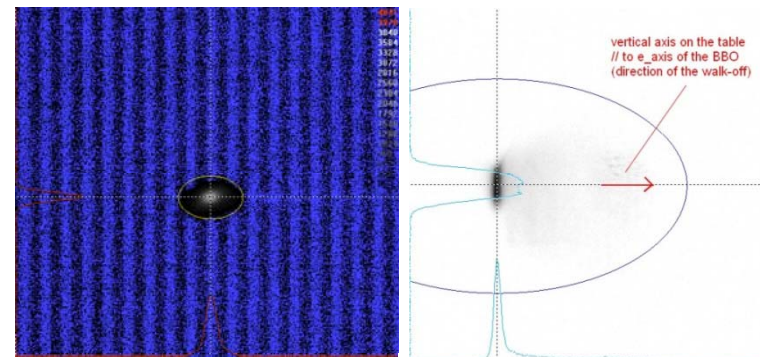
- UV Pulse Time profile measurement



Measurement with a scanning cross correlator on LCLS

→ Not yet foreseen , usefull ?

- UV Pulse Transverse profile measurement



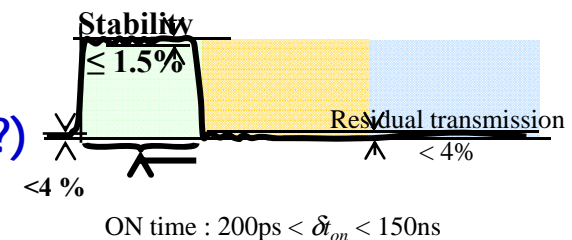
Measurement with a camera on virtual cathode

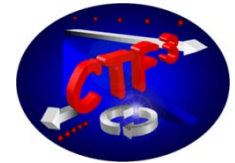
→ Presently done on a PC laptop

→ To be foreseen in control room ?

→ C/C of motorized mirror, where ?

- Number of pulses selection: 1, 32, 128, 226 (control of pulse picker)
- Pulse energy tuning (max of course !)
- Repetition rate selection (5 Hz, fixed ?)
- Laser stability (measurement of beam current ?)





## RF gun

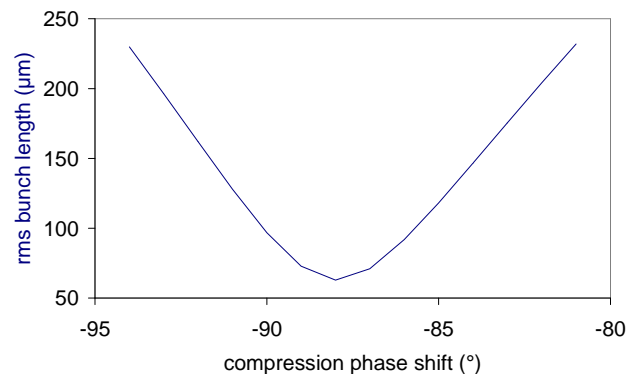
- Monitoring of vacuum level, water temperature, frequency tuning
- Beam current measurement (CA.ICT 0210)
- Beam transverse profile (CA.MTV 0215)
- Beam position (CA.BPM 0220)
  - no energy measurement, nor emittance at the gun output
  - 1. Scan the RF phase vs. bunch charge
  - 2. Scan the RF phase vs. beam position/profile
  - 3. Scan the coils current vs. beam emittance
  - 4. Scan the laser position on photocathode vs. QE
  - 5. Monitor the QE vs time

## RF system

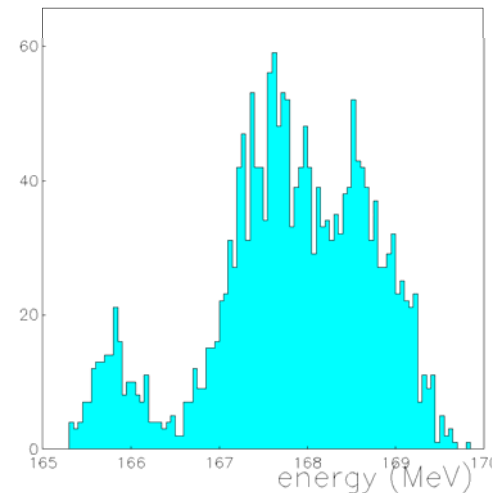
- RF amplitude and phase stability vs. time for each signal coming from: modulator, klystron, BOC, RF gun, LIL1, LIL2, LIL3
- Scan RF phase vs. energy and energy spread
- Scan RF phase vs. bunch length

## Beam dynamics

- Scan RF phase vs. energy and energy spread
- Scan RF phase vs. bunch length
- Quad scan for emittance measurement
- Beam losses from gun to end of line (CA.ICT 0210 , CA.FCU.0430 , BPMs)
- Beam loading effects : pulse charge vs. energy spread
- Time resolved energy using deflecting cavity and spectrum magnet



Pulse length vs. LIL1 RF phase

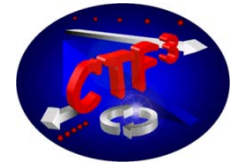


Energy spread

Simulation Aline

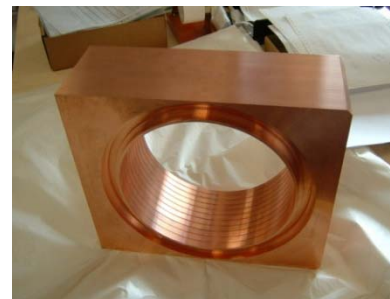
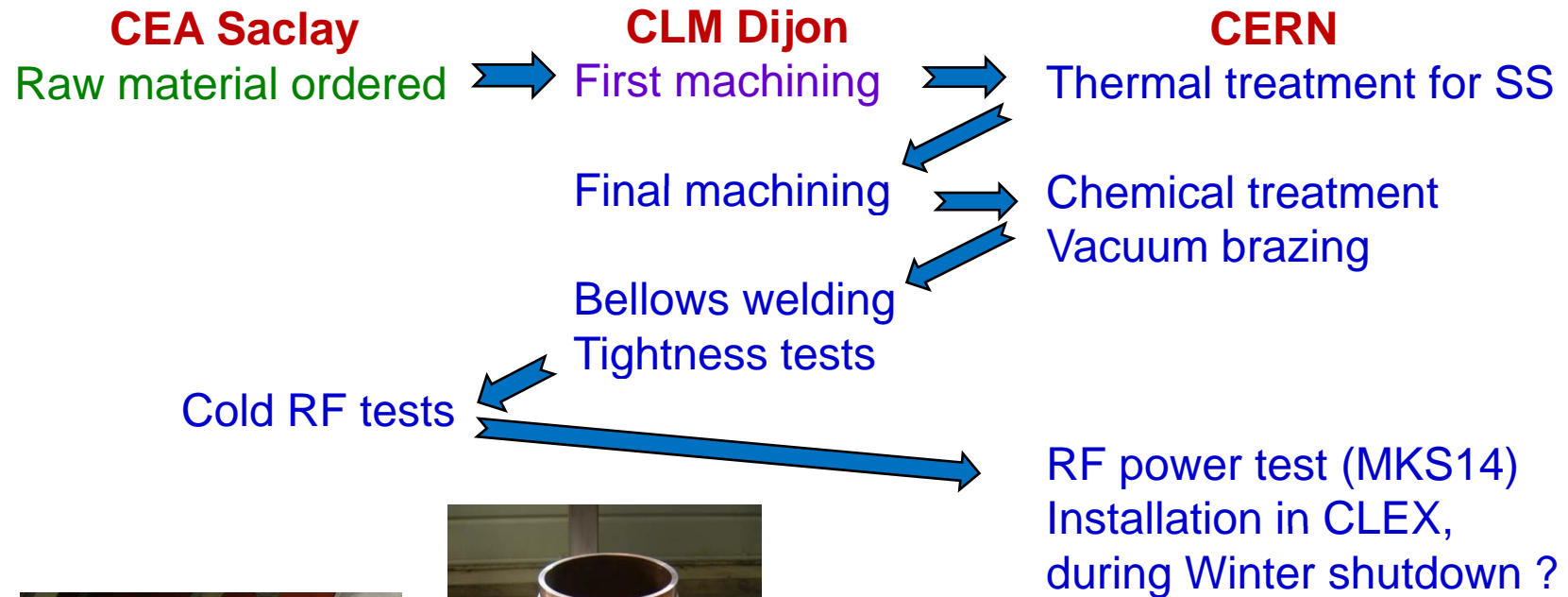
**Assistance of CERN Operation team is requested for commissioning**





## Sliding circular waveguide :

- 8 flanges to be matched to the actual sliding waveguide dimensions.



Modes converters :

**CEA Saclay**

**CLM Dijon**  
First machining

**CERN**

**ABMT Annecy**  
Thermal treatment

Final machining #1  $\Rightarrow$  Chemical treatment  $\Rightarrow$  Brazing #1

Final machining #2  $\Rightarrow$  Chemical treatment  $\Rightarrow$  Brazing #2

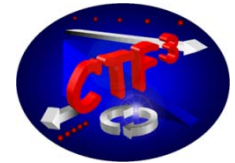
Final machining #3  $\Rightarrow$  Chemical treatment  $\Rightarrow$  Brazing #3

RF tuning  $\Rightarrow$  Final machining #4  $\Rightarrow$  Chemical treatment  $\Rightarrow$  Brazing #4

Cold RF tests







- Long term mission (2 years)
  - at CERN for CALIFES commissioning and further CTF3 activities.
- 12 GHz test stand: (604 k€ - 25 FTE months)
  - Modulator: purchase with CERN specifications (3 industrials already short listed), manufacturing management, factory tests, installation at CERN
  - pulse compressor: design study and specification (3 possible solutions under study : SLED2, BOC or innovative SLED), manufacturing drawings and management, installation at CERN,
  - purchase of RF components
- CLIC Module (249 k€ - 6 FTE months)
  - Design and fabrication of damped structures equipped with Wakefield Monitors and the associated electronics to be tested on TBTS in 2010.
- Test Beam Line (218 k€ - 5 FTE months)
  - 12 GHz RF network components for 8 PETS