



WP4 – rf system

WP4 kick-off meeting, 30-11-2017

W. Wuensch, CERN



WP4 – Participants



- 1. Sincrotrone Trieste
- 2. CERN
- 3. SINAP
- 4. Uppsala University
- 5. University of Melbourne/ANSTO
- 6. Institute of Accelerator Technology, Ankara
- 7. VDL
- 8. INFN
- 9. CNRS
- 10. University of Helsinki/HIP
- 11. University of Strathclyde

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https://e-groups.cern.ch/e-groups/Egroup.do?egroupName=xls-wp4&tab=3





Description of work (where appropriate, broken down into tasks), lead partner and role of participants

WP4 will define the RF system for the main linac of the FEL facility in the main and sub-design variants. A key goal will be to define a standardized RF unit which can be used in all main and sub-design variants. Making a standardized design available can simplify the preparation of future construction projects, stimulate the industrialization process and cost savings by future facilities.

WP4 is led by CERN and will be divided in three tasks:

Task 4.1 - Development of the design and costing tools needed to provide input for the global optimization done in WP2. This will be done in collaboration with the experts from existing facilities as well as the ongoing effort to optimize the CLIC klystron-based initial 380 GeV energy stage. CERN will lead this task.
Task 4.2 – Hardware development and prototype testing. This includes active contact and coordination with ongoing projects including CLIC, the CLEAR facility and X-band systems under development for deflectors in existing XFEL facilities to incorporate the latest developments there. CERN will take the leading role for this

task. The work will be supported by all WP4 partners.

Task 4.3 - Industrialized and cost reduction. Industrialization will cover the high-power RF system, klystrons, modulators, pulse compressor and waveguide network, as well as the tight-tolerance, high-gradient accelerating structures. The task will be led by CERN and carried out with the support of VDL ETG.





Deliverables (brief description and month of delivery)

D4.1 - A parameterized performance and cost model of the RF unit to be used by WP2 for the facility optimization. The model will be established in computer code and described in a report, (R, PU, M18).

D4.2 - A design report of the optimized RF unit. Based on the parameters emerging from the facility optimization, the design of the RF unit will be established at the component level and described in a report, (R, PU, M36).

D4.3 - A report on the design and fabrication procedure, optimized for series industrial production, of the accelerating structure which is an important cost driver for the facility, (R, PU, M36).





- Our task is to design and optimize the complete rf system for CompactLight.
- We will work closely with WP6, Beam Dynamics and Modeling. Initially this work will be iterative.
- Our deliverables are inputs to WP2, Facility Design, which is responsible for the overall design and deliverable which is the design report.
- CompactLight kick-off meeting at the CLIC workshop <u>https://indico.cern.ch/event/656356/overview</u>
- I will present an overview of our work package largely based on the information you all provide today.



WP4 – Overview



	Power Source	Waveguide network	Accelerating structures	Module integration	rf design/ optimization	Mechanical design	Layout/ integration	Costing/ industrialization	What I missed
Sincrotrone Trieste									
CERN									
SINAP									
Uppsala University									
University of Melbourne/ANSTO									
Institute of Accelerator Technology, Ankara									
VDL									
INFN									
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University of Helsinki/HIP									
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Technical area

Type of work