



Experience from the **European XFEL**.

Installation of HLRF in a Single Tunnel

First Baseline Assessment Workshop

BAW · KEK · Tsukuba, Japan

September 7 to 10, 2010

Wilhelm Bialowons · DESY & GDE



Outline

- Introduction
 - References
 - The **European X-Ray Free Electron Laser Facility**
 - Overview
 - Parameter List
 - Tunnel Layout
- High Level RF for European XFEL
 - Modulator
 - Pulse Cable
 - Pulse Transformer and Klystron
 - Wave Guide Distribution



Outline

- HV Pulse Cable Test
- Procurement Procedure
- Test and Test Facilities
- Installation and Commissioning
- Summary



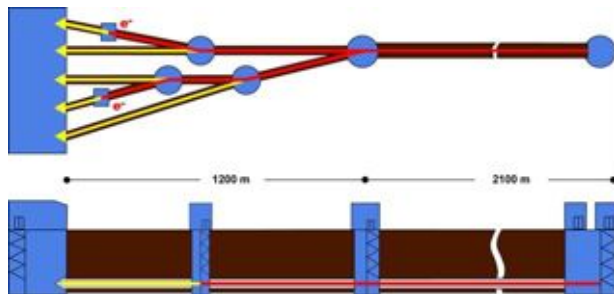
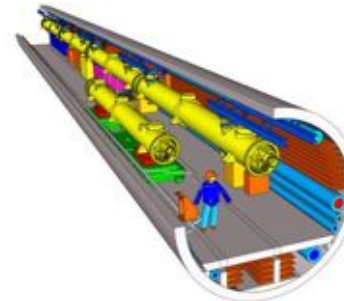
Introduction: References

- Stefan Choroba, *Design and Status of the XFEL RF System*, 22nd Particle Accelerator Conference, June 25 to 29, 2007, Albuquerque, New Mexico, USA (JACoW: TUXC03).
- Valery Katalev and Stefan Choroba, *Waveguide Distribution System for FLASH*, 6th Workshop on CW and High Average Power RF, May 4 to 7, 2010, ALBA, Barcelona, Spain (InDiCo.cern.ch: 73280).
- Stefan Choroba, *Specification, Procurement, Production, Assembly, Testing, Installation and Commissioning (of the XFEL RF System)*, unpublished.
- Jörg Eckoldt, *Pulse Cables for XFEL*, September 5, 2007, XFEL Project Meeting (DESY EDMS: 933641).

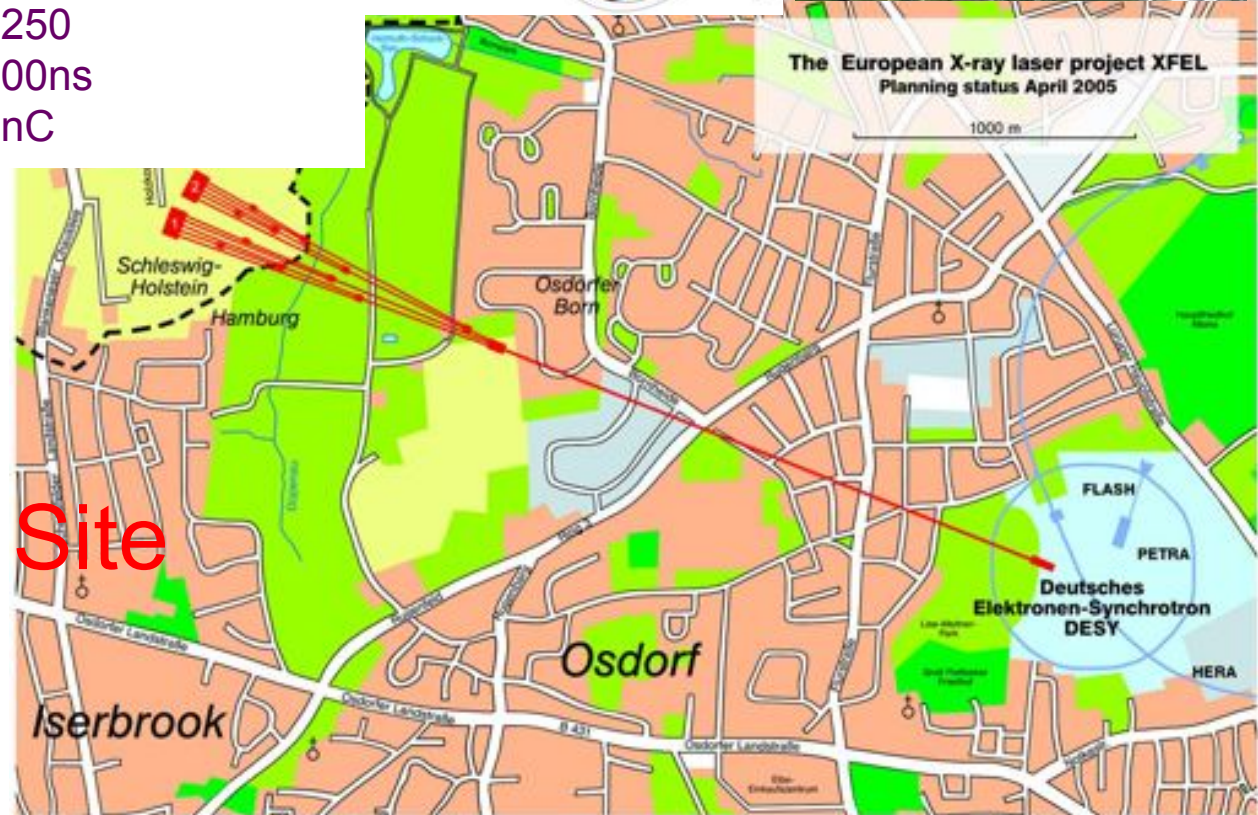


Introduction: XFEL Overview

Beam energy: 14 GeV (20 GeV)
 Wavelength: down to 0.1nm
 Beam pulse length: 650μs
 Repetition rate: 10Hz (30Hz at low energy)
 No. of bunches per pulse: 3250
 Bunch to bunch spacing: 200ns
 Bunch charge: 1nC



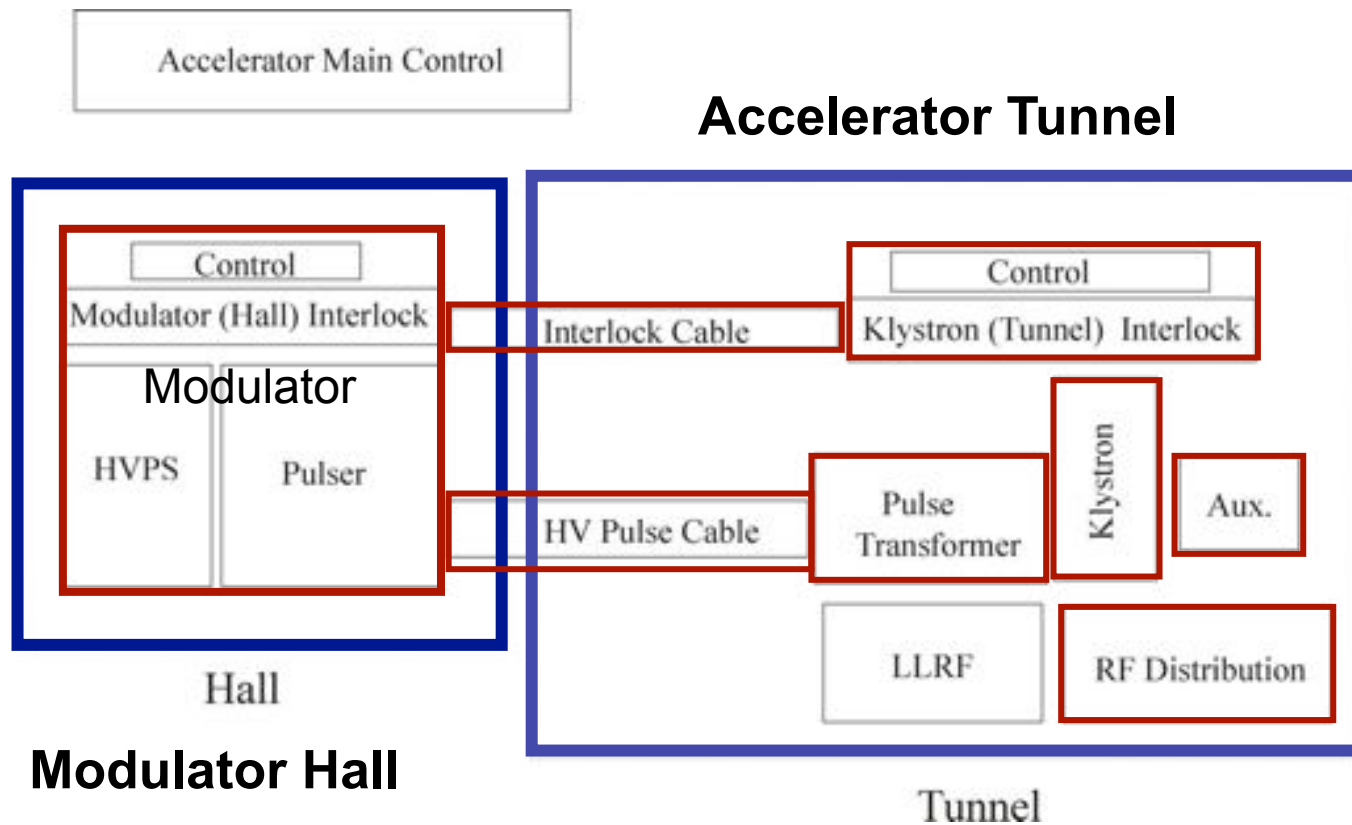
Schenefeld Site





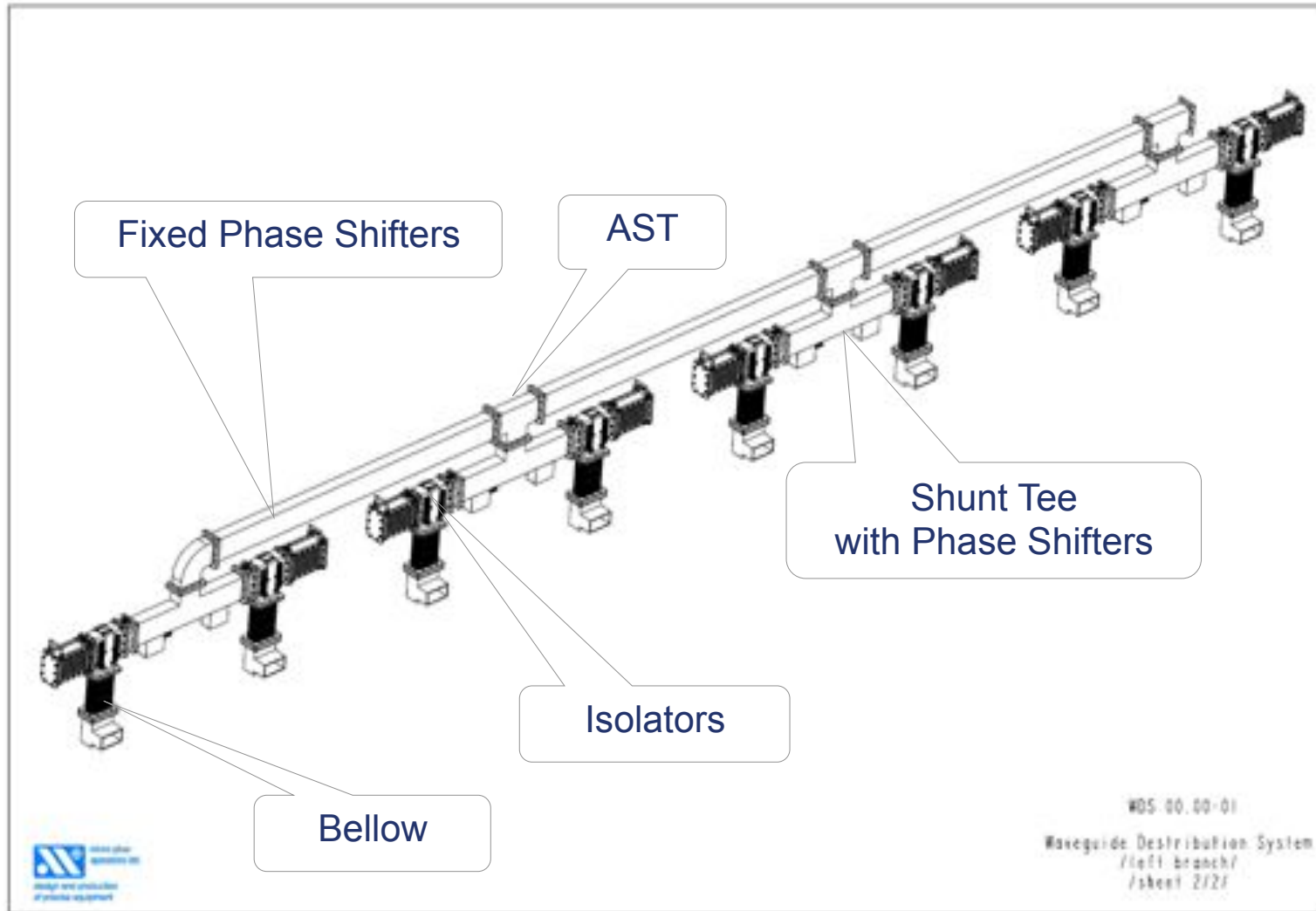
XFEL RF System Requirements

Layout of one RF Station





Wave Guide Distribution





XFEL Type Wave Guide Distribution for ACC7

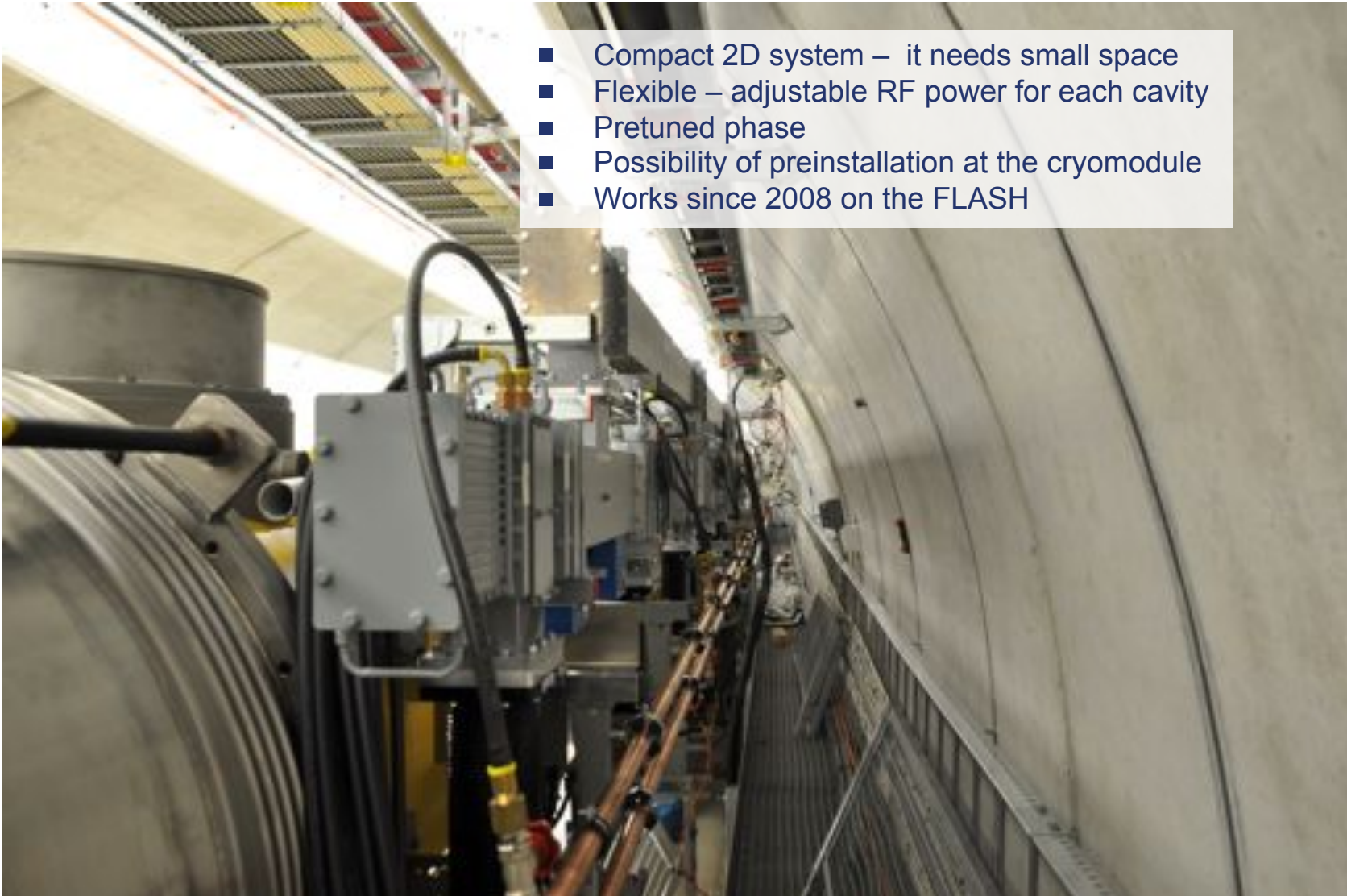




Transport of ACC7 with Wave Guides



FFrr



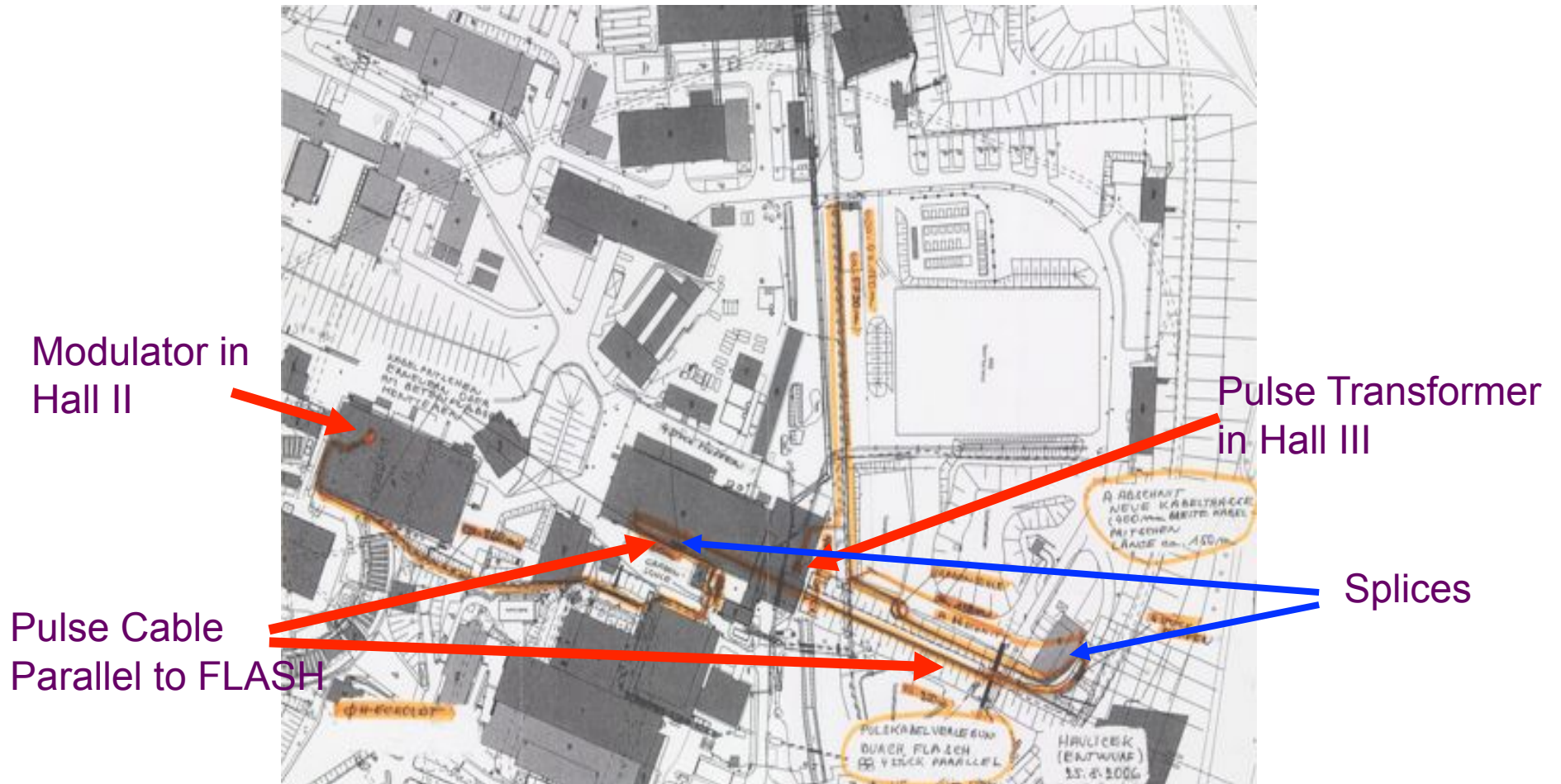
- Compact 2D system – it needs small space
- Flexible – adjustable RF power for each cavity
- Pretuned phase
- Possibility of preinstallation at the cryomodule
- Works since 2008 on the FLASH



Wave Guide Distribution



Installation for Pulse Cable Test

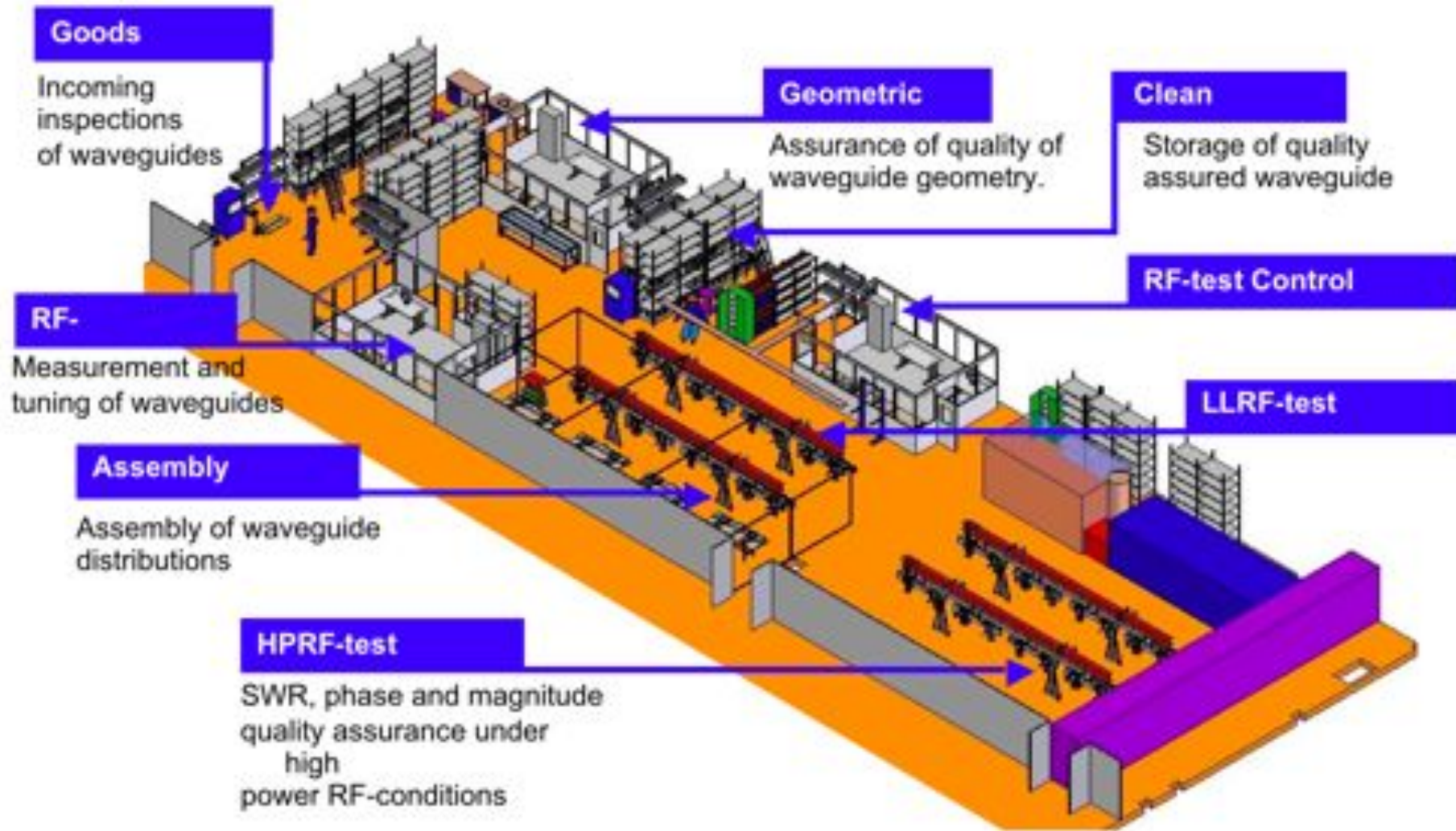




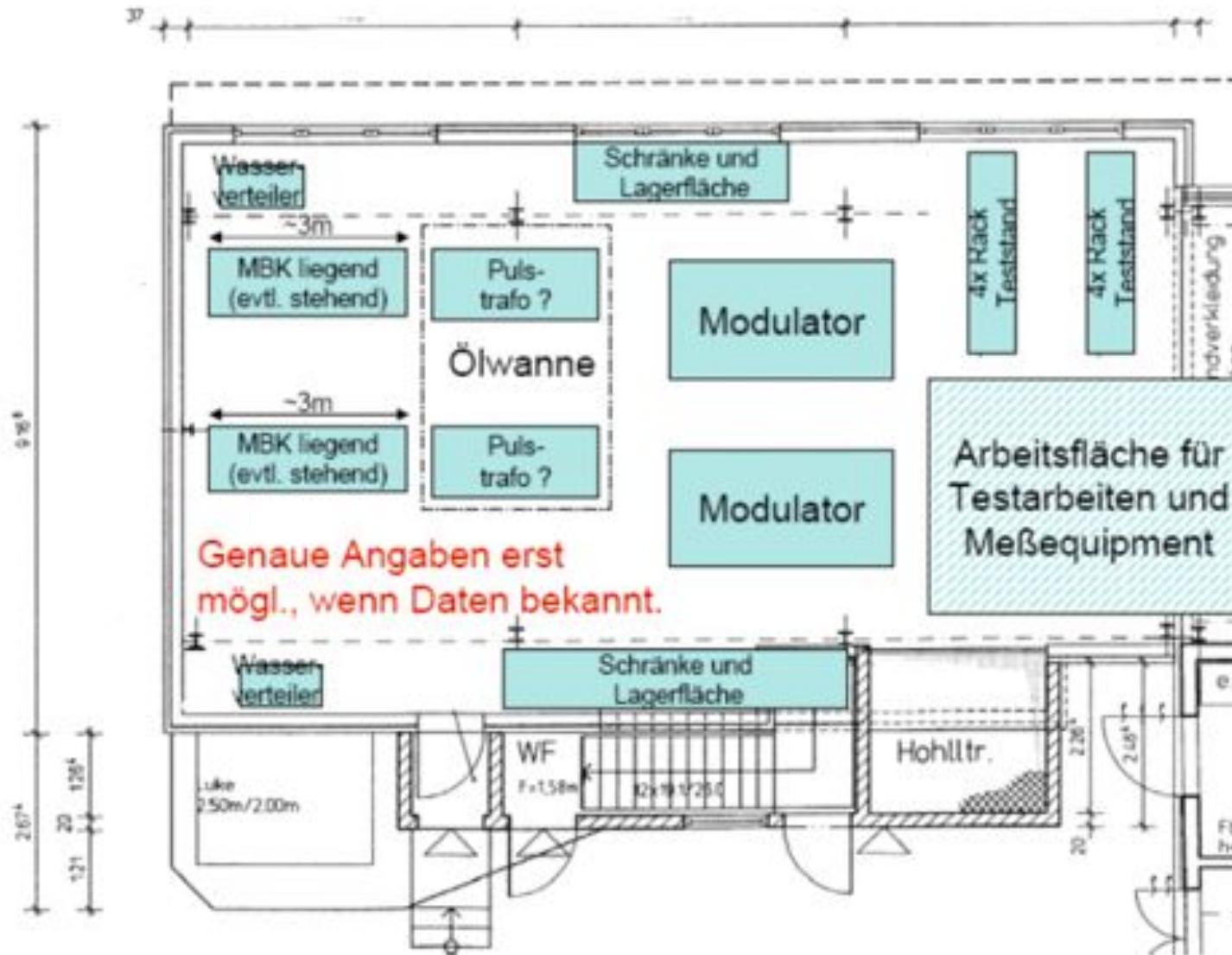
Specification, Procurement and Production



Wave Guide Assembly and Test Facility



Modulator Test Facility





Production



Summary

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