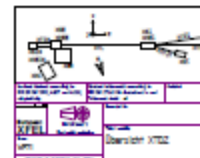
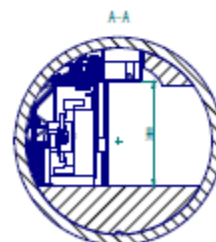
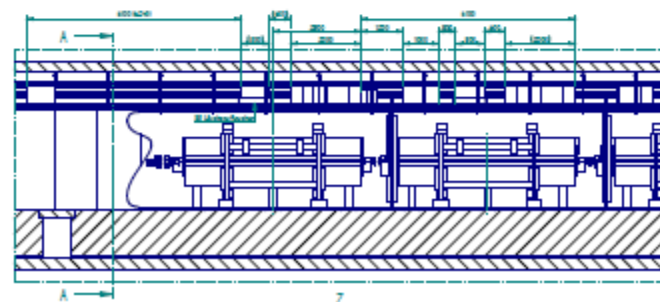
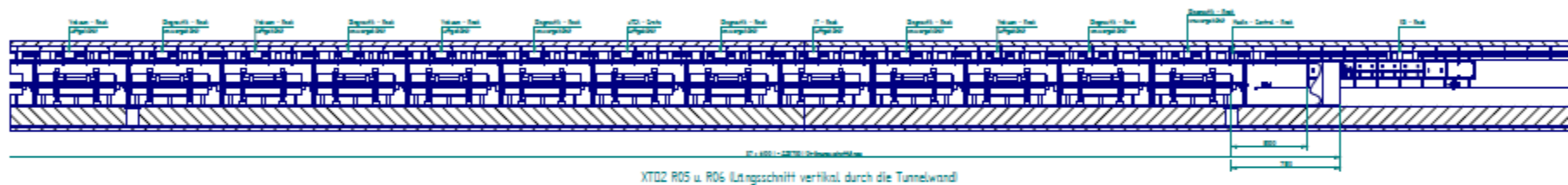
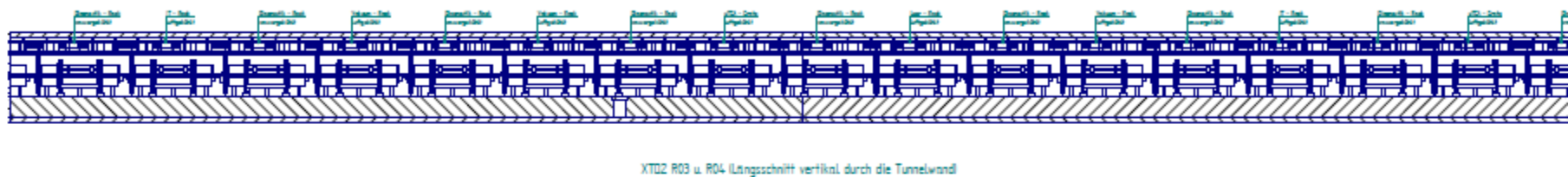
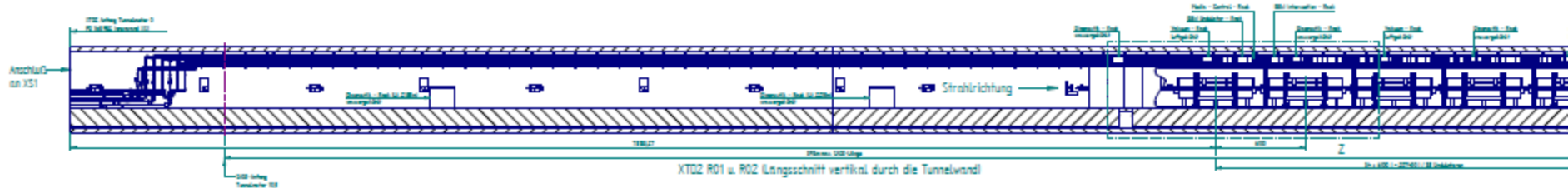


SASE1 Undulator System Planning

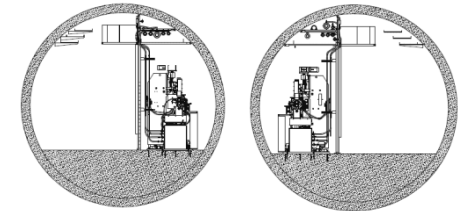
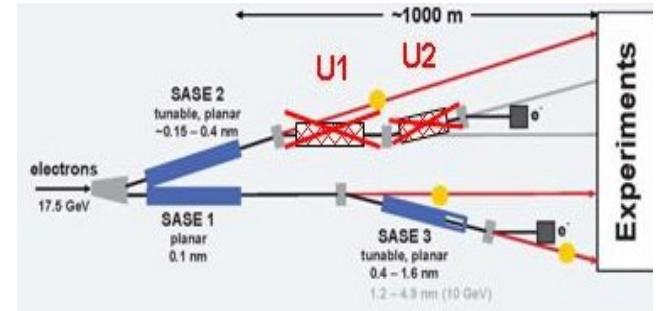
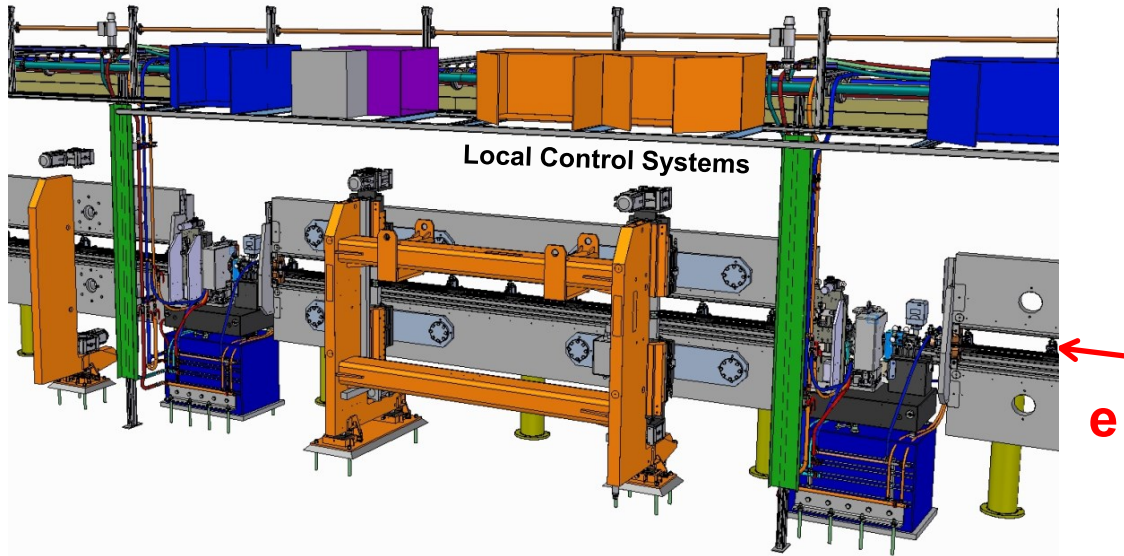
J. Pflüger, WP71

Construction of the SASE1 Undulator Systems $L \approx 220\text{m}$ Start: (almost) empty Tunnel, März 2014

- Undulator System, vacuum system, electron optics
- Controls
- Air Conditioning system: Enclosure, Präzisionsklimagerät' (PKG)



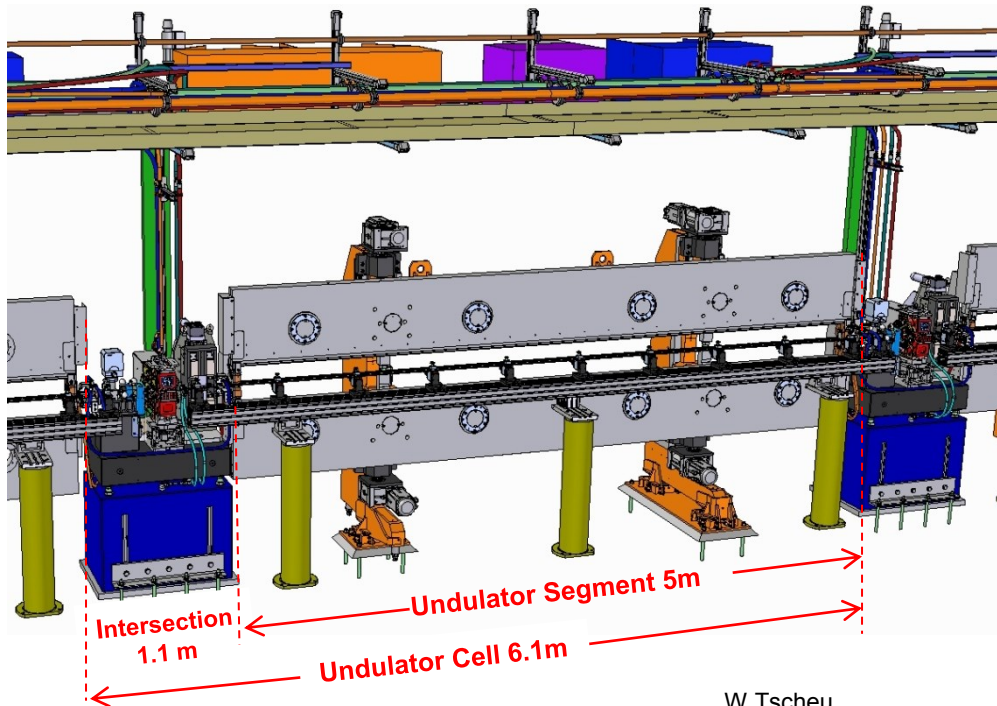
Tunnel Installation of SASE2 Undulator System – Final WP71 Deliverables



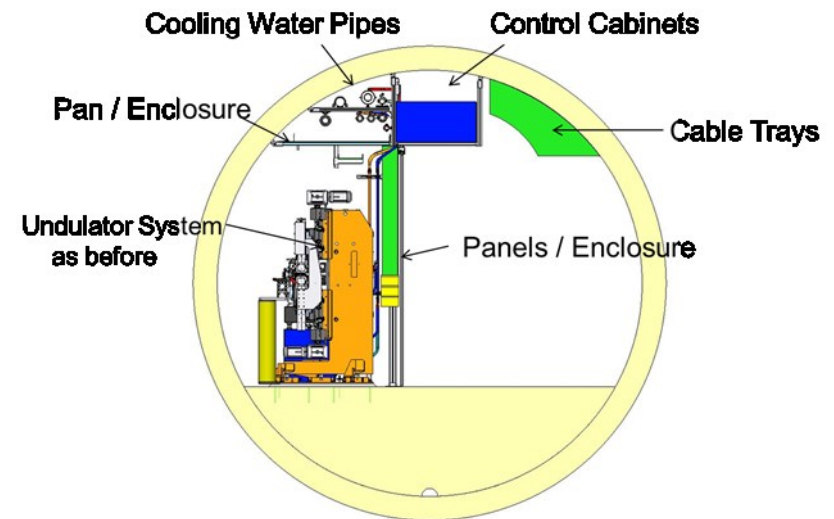
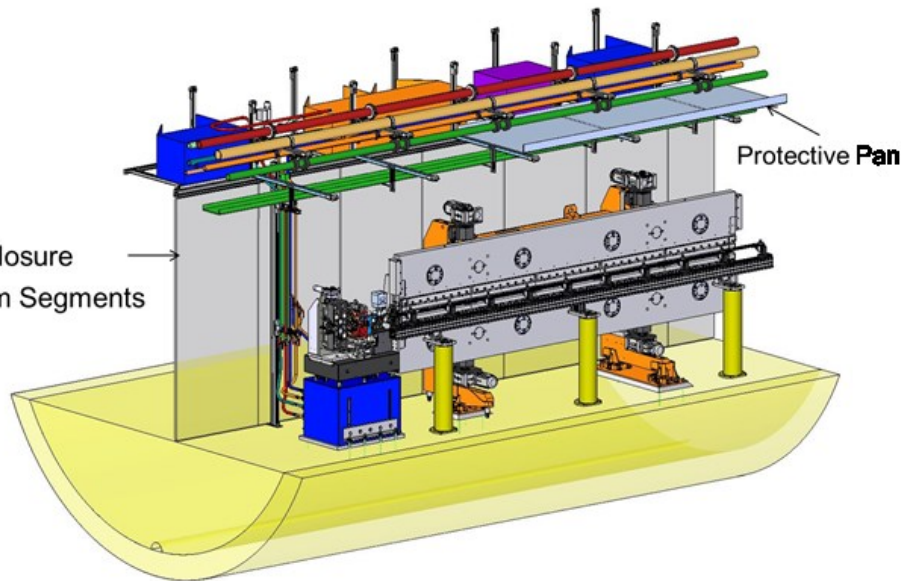
SASE2

SASE1/3

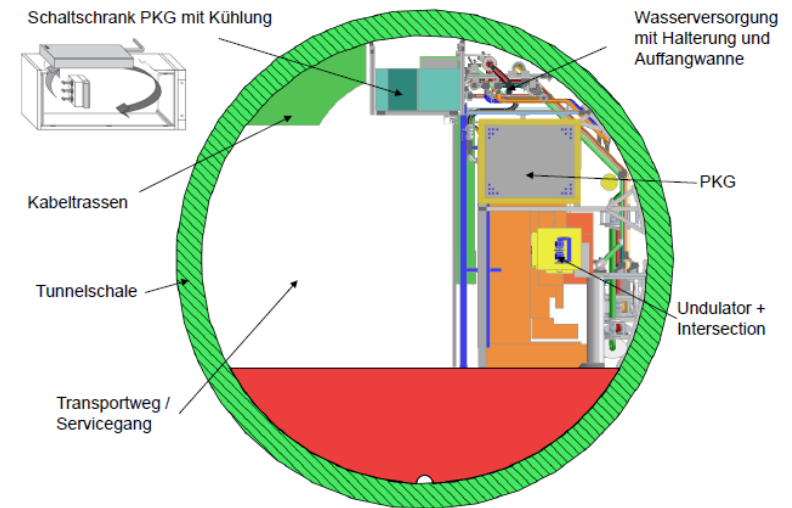
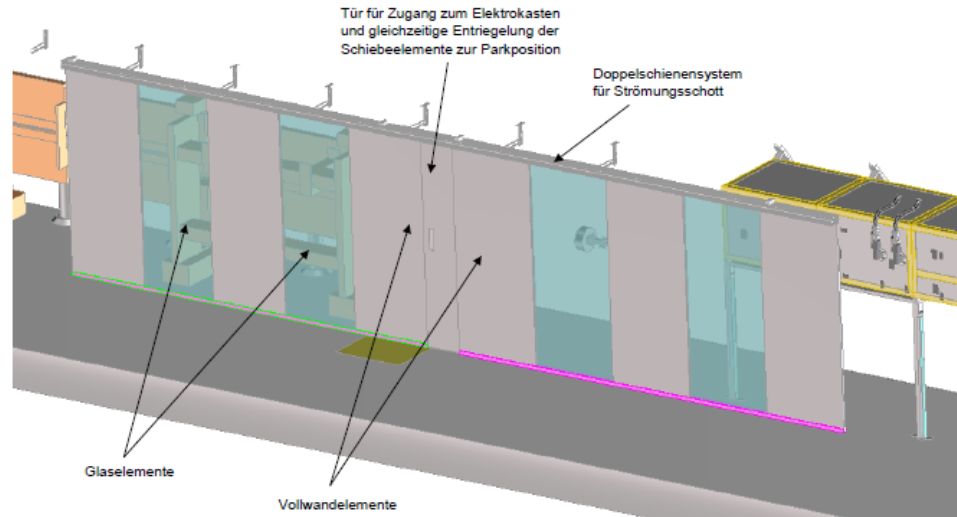
Downstream View

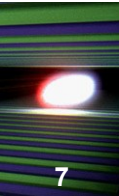


	SASE1/2	SASE3
λ_0 [mm]	40	68
Operational Gap Range [mm]	10-20	10-25
K-Range	3.9–1.65	9.0-4
Radiation Wavelength Range [nm]		
@ 17.5 GeV	0.147-0.040	1.22-0.27
@ 14.0 GeV	0.230-0.063	1.90-0.42
@ 8.5 GeV	0.625-0.171	5.17-1.15
# of Segments	35	21
System Length [m]	213.5	128.1



Enclosure (Strömungsschott), PKG: Upstream View



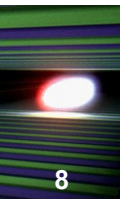


Boundary Condition

- SASE1 Undulator System has many mutually entangled (verschränkte) work items
- They come from several DESY groups, IKCs, companies
- Working steps are mostly known.
But:
- Generally not well known are:
 - Sequentiell order /arrangement
 - Dependancies, entanglements with other steps
 - Date (when?)
 - Duration

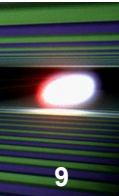
Intention

- Create transarency
- Give overview over working steps
- Give overview over sequential orde
- First overview over: Date, Durations: Who, What, When, How long?



- Efficient and uninterrupted construction of the SASE1 Undulator Systems
- Support understanding / avoid misunderstanding

Limitations - Warning

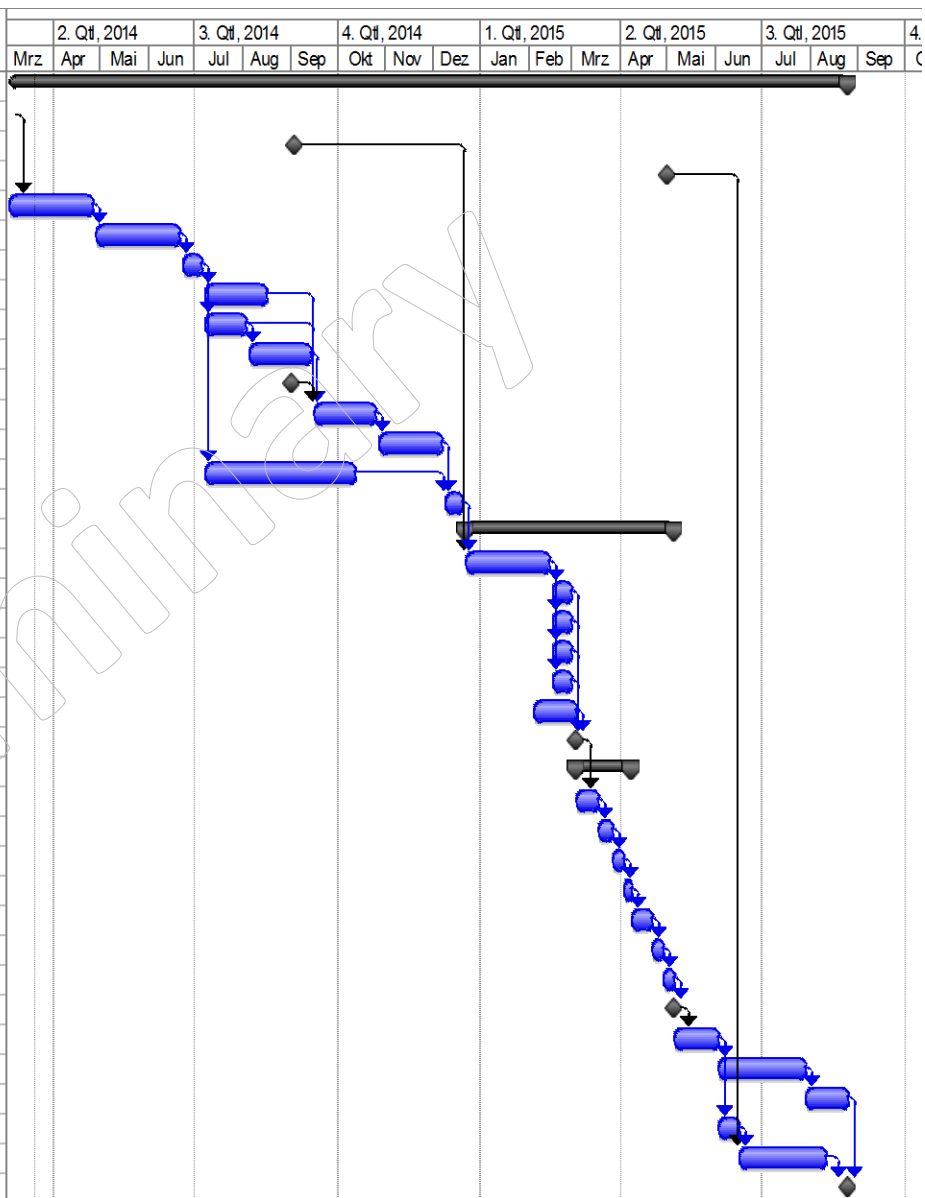


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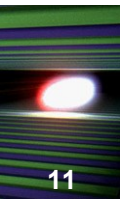
- This is a first assessment!
- Not all working steps are today (8.4.14) overseeable.
Example: Climatization enclosure, ongoing CfT not yet fully designed – open points
- First estimates, based on conversations with most – but not with all. Some are guided guesses.
- Changes, corrections are possible, suggestions are wanted
- Target objective:
 - A valid sufficiently granulated time schedule,
 - which can be closely followed and
 - which is frequently updated.

Project Plan SASE1 Undulatorsystem, Stand 19.3.14

Nr.	i	Comments WP-71	Task Name	Anfang	Dauer	Vorgänger																												
							2. Qrt, 2014				3. Qrt, 2014				4. Qrt, 2014				1. Qrt, 2015				2. Qrt, 2015				3. Qrt, 2015				4.			
							Mrz	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez	Jan	Feb	Mrz	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez	Jan	Feb	Mrz			
200			SASE1	Mo 03.03.14	386 Tage																													
201			SASE1 Infrastructure ready E)	Mo 03.03.14	0 Tage																													
202			Conditioned Air <60% available	Mi 03.09.14	0 Tage																													
203			AC in XHEXP working	Fr 01.05.15	0 Tage																													
204		ZM5	Mark drill holes, set bolts	Mo 03.03.14	2 Monate	201																												
205		WP34, MEA	Mount & align Pillars, Floor pl	Mo 28.04.14	2 Monate	204;191																												
206		BAU, TC	Floor Coating	Mo 23.06.14	2 Wochen	205																												
207		MKK2	Install vertical cable trays, pipi	Mo 07.07.14	6 Wochen	206																												
208		MKK1,6	Pull Cables, Power, Quads; et	Mo 07.07.14	1 Monat	206																												
209		MKK1	Electro Installation	Mo 04.08.14	6 Wochen	208																												
210		M&W, WP71	Delivery of Guide Rail & Gask	Mo 01.09.14	0 Tage																													
211		M&W, WP71	Install guide Rails&Gasket Se	Mo 15.09.14	6 Wochen	208;207;209																												
212		WP34, WP71	Install Control Racks with Cab	Mo 27.10.14	6 Wochen	170;211																												
213		WP32, MEA?	Installation Alignment Pipe	Mo 07.07.14	3,5 Monate	206																												
214		MEA, TC	Tunnel Cleaning	Mo 08.12.14	2 Wochen	213;212																												
215			Clean Installation	Mo 22.12.14	96 Tage																													
216		WP34,32, 71	Mount&Align Intersector	Mo 22.12.14	2 Monate	214;191;202																												
217		WP17	BPMs	Mo 16.02.15	2 Wochen	216																												
218		WP71, MEA5	QMs	Mo 16.02.15	2 Wochen	216																												
219		WP71, MEA5	Mount & separate Quads	Mo 16.02.15	2 Wochen	216																												
220		WP71, MEA5	Mount Phase Shifter	Mo 16.02.15	2 Wochen	216																												
221		M&W, WP71	Install clean part of PKG	Di 03.02.15	4 Wochen	199																												
222			Ready for Vacuum Syste	Mo 02.03.15	0 Tage	19;220;221																												
223			Vacuum System / W P 1	Di 03.03.15	25 Tage																													
224		WP19	Install Vacuum Com	Di 03.03.15	2 Wochen	222																												
225		WP19, WP32	Alignment Holders	Di 17.03.15	1,5 Wochen	224																												
226		WP19, WP32	Alignment Adjustors	Do 26.03.15	1 Woche	225																												
227		WP19, WP32	Alignment Vacuum	Do 02.04.15	0,5 Wochen	226																												
228		MEA5	Close Quads	Di 07.04.15	2 Wochen	227																												
229		WP32, WP71	Quad center survey	Di 21.04.15	1 Woche	228																												
230		WP32	Survey of Intersections	Di 28.04.15	1 Woche	229																												
231			SASE1 readyfor Undulator Se	Mo 04.05.15	0 Tage	230																												
232		WP34, WP71	Roll in Undulator segments	Di 05.05.15	1 Monat	293;231																												
233		WP71	Cabling, Commissioning, Cor	Di 02.06.15	2 Monate	120;232																												
234		WP32	Alignment	Di 28.07.15	1 Monat	233																												
235		M&W, WP71	Attach enclosure Panels	Di 02.06.15	2 Wochen	232																												
236		M&W, WP71	Commissioning SASE1 PKG	Di 16.06.15	2 Monate	203;235																												
237			SASE1 readyfor beam	Mo 24.08.15	0 Tage	236;234																												



DESY MKK working steps



Gewerk	Start	Dauer	Abteilung	Wer
Infrastructure Installation			MKK2	Ullrich, Block
Vertical Cable Trays on Intersections			MKK2	Block, Ullrich
Power Cabling			MKK1	Faesing
Power Installation, Electrants			MKK1	Faesing
Line Power for Undulator Segments			MKK1	Faesing
Quadrupole Cabling			MKK6	Eckoldt
Quadrupole Connection			MKK6	Eckoldt
Cooling water on Intersections			MKK2	Ullrich

WP34, MEA Gewerke

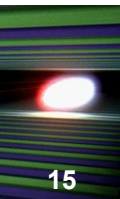
Gewerk	Start	Dauer	Abteilung	Wer
Drill Holes, bolts etc.	1.3.14	2M ??	ZM5	Klein
Mount and align Pillars	1.5.14	2M?	WP34, MEA5	WP34, Baark?
Install Control Racks with WP71	18.8.14	6W	WP34, MEA	WP34, Pflüger
Installation Alignment Pipe in SASE1	Bis 10.2014	??	WP32, MEA4	Prenting
Roll in Undulator segments	05/15	1M?	WP34, WP71	Meyners

Gewerk	Start	Dauer	Abteilung	Wer
Provide support collumns for Vacuum system	05/2014	?	WP19	Wohlenberg
Install Vacuum system	03/2014	5W	WP19	Wohlenberg

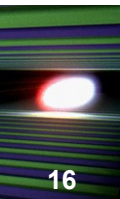
WP32 – Alignment Needs

Gewerk	Termin	Dauer	Abteilung Wer
Mount & align pillars	Ab 05/2014	2M	
Install alignment pipe	Bis 12/14	?	Meyners?
Mount&align Intersection base plates	Ab Jan 15	2M	
Installation of Vacuum System	März/April 15	5W	Wohlenberg,Prenting
Survey Quads, Intwersections	April 15	2W	Prenting
Alignment of Undulator segments	Juli 15	1M	

Special MEA5 Gewerke



Gewerk	Start	Dauer	Abteilung	Wer
Provide support collumns for Vacuum system	05/2014	?	WP19	Wohlenberg
Install Vacuum system	03/2014	5W	WP19	Wohlenberg



- First project plan for SASE1 construction including (hopefully) all working steps
- Includes yet a number of assumptions (due to lack of better information)
- All responsible WP leader, group leaders, work responsables will be addressed.
- Input needed
- Target objective (Ziel): Transparency; fluent uninterrupted construction of the SASE1 Undulator System