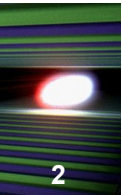# Strategy and Status of Reference Cavities for European XFEL
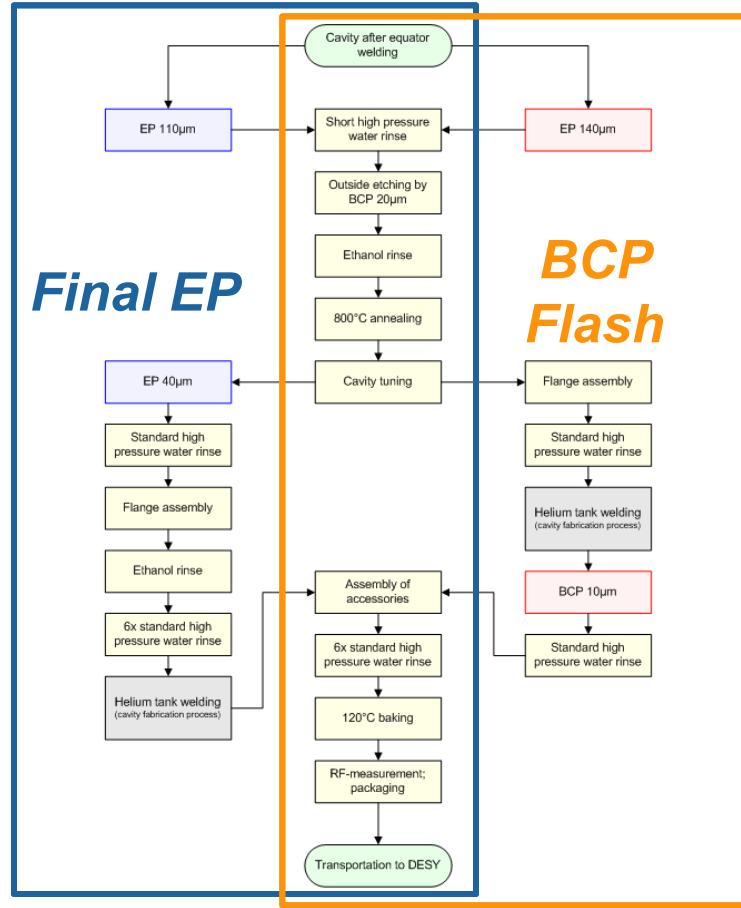
Detlef Reschke / DESY
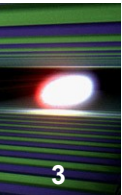
- **Two schemes** for the final surface treatment:
  - E. Zanon: **BCP Flash**
  - Research Instr.: **Final EP**

Final EP

BCP Flash

- At each company:
  4 Cav's for set-up of infrastructure
  4 Cav's for qualification of infrastructure

- **Close supervision of infrastructure, processes, procedures and handling** by DESY + INFN Milano required

- **No performance guarantee results in:**
  - the risk of unexpected low gradient or field emission is with DESY
  - responsibility for re-treatment at DESY

Strategy of Reference Cavities (RCV)

- **Four reference cavities fabricated at each company**

- **First surface treatment and vertical acceptance test w/o He-tank at DESY**
  (following the company preparation scheme: Final BCP for EZ; Final EP for RI)

- **Stepwise qualification of surface treatment infrastructure at companies**
  (after successful set-up of infrastructure with further dedicated cavities)

	RCV#0	RCV#1	RCV#2	RCV#3	RCV#4	RCV#5
Transportation to + from company	OK	↓	↓	↓	↓	↓
+ slow venting / slow pumping (incl. leak check + RGA)		OK	↓	↓	↓	↓
+ disassembly of beam tube flange (short side), full HPR-cycle, drying, assembly of beam tube flange			OK	↓	↓	↓
+ disassembly of all flanges, assembly of flanges, leak check				OK	↓	↓
+ Final 40µm EP (RI)/Final 10µm BCP (EZ), first HPR, ethanol rinse, FMS,					ok (EZ)/X	↓
+ 120°C bake						ok (EZ)/X

RI:

RCV#0:	CAV00002, t1 => t2:	ok
RCV#1:	CAV00001, t2 => t3:	not ok
RCV#1.1:	CAV00004, t1 => t2:	not ok
RCV#1.2:	CAV00001, t3 => t4:	ok
RCV#2:	CAV00001, t6 => t7:	ok
RCV#3:	CAV00002, t2 => t3:	not ok
RCV#3.1:	CAV00002, t4 => t5:	ok
RCV#4:	CAV00004, t3 => t4:	test running

EZ:

RCV#0:	CAV00500, t1 => t2:	ok
RCV#1:	CAV00506, t2 => t3:	ok
RCV#2:	CAV00503, t2 => t3:	not ok
RCV#2.1:	CAV00500, t2 => t3:	ok
RCV#3:	CAV00502, t2 => t3:	ok
RCV#4 + 4.1:	CAV00506, t4 => t5:	not ok
RCV#4.2:	CAV00500, t3 => t4, t5:	ok
RCV#5:	CAV00506, t6 => t7:	ok