

ELENA Availability Statistics 2024

General comments

- The plots have to be updated with the last week of operation:
- What are the main events & challenges impacting availability this year?
 - Significant number of power cut affecting the hall complex with long recovery time (i.e. e-cooler filament)
 - Recurrent problem on the FGC93 ISEG power converter going offline (com lost) affecting one ELENA extraction line not really appearing in availability data
- What is the outlook for next year?
 - No significant change after the YETS as the problem with ELENA FGC93 is a long standing issue and we are dependant to the sub-contractor ISEG

Availability Schedule

Availability is counted over time periods as follows:

- L4, PSB, PS, SPS: starts once beam is required by a downstream machine
- L3, LEIR starts once beam is delivered to LHC
- LHC starts with beam commissioning
- ISOLDE, AD/ELENA, EAST, NORTH starts with respective physics period

Dedicated MDs and Technical Stops are excluded from availability monitoring.

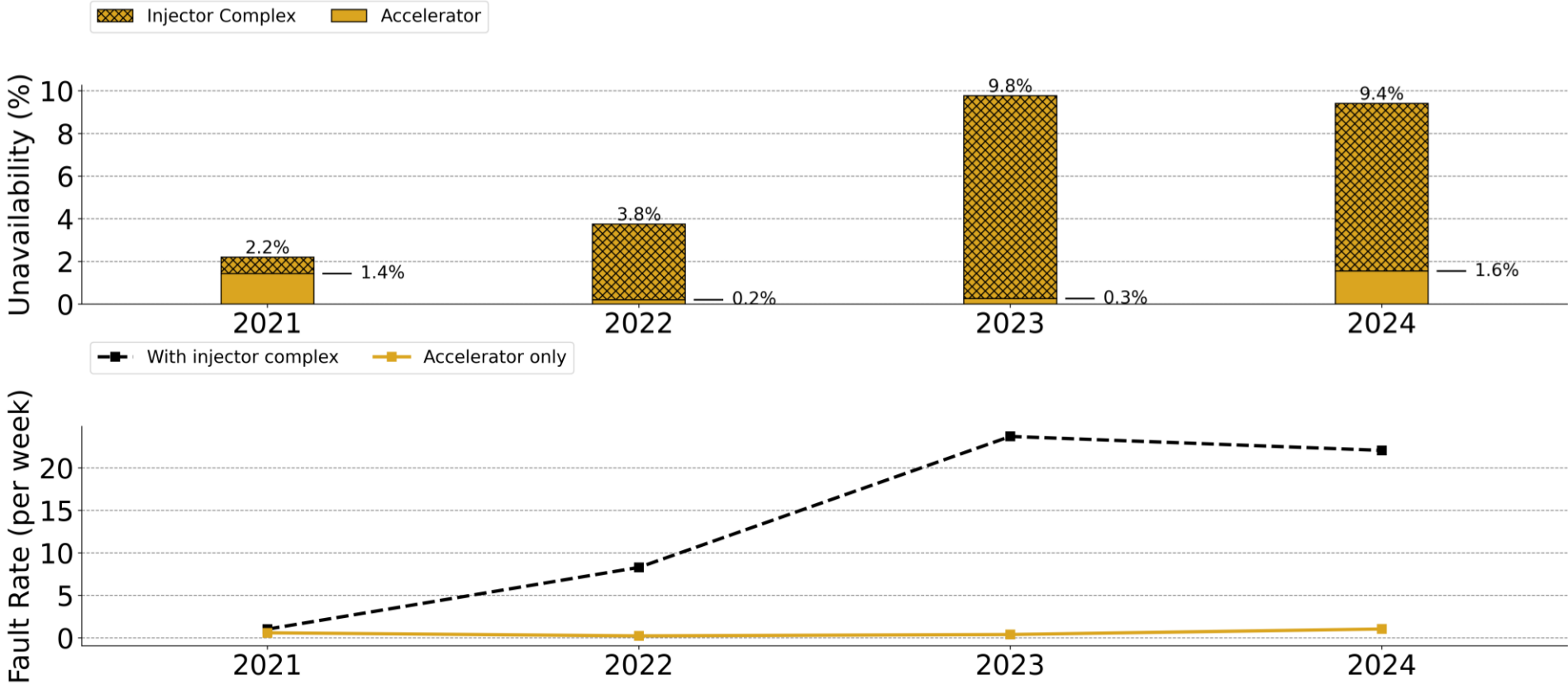
ELENA physics time periods are on the next page. [Should these times be wrong, please correct them and let us know](#)

ELENA Physics Periods

- ('23-08-2021 09:00:00', '15-09-2021 14:00:00')
- ('16-09-2021 11:00:00', '15-11-2021 06:00:00')
- ('29-04-2022 09:00:00', '17-05-2022 04:00:00')
- ('17-05-2022 17:00:00', '13-09-2022 08:00:00')
- ('14-09-2022 12:00:00', '28-11-2022 06:00:00')
- ('30-06-2023 09:00:00', '30-10-2023 07:30:00')
- ('31-10-2023 18:00:00', '13-11-2023 06:00:00')
- ('22-04-2024 09:00:00', '22-04-2024 23:00:00')
- ('23-04-2024 07:00:00', '23-04-2024 23:00:00')
- ('24-04-2024 07:00:00', '24-04-2024 23:00:00')
- ('25-04-2024 07:00:00', '12-06-2024 07:30:00')
- ('14-06-2024 23:00:00', '02-12-2024 06:00:00')

The dates are correct, but the plots have to be updated as the last week of physics is missing and we had a couple of significant event in AD and ELENA:
Stop of the machine on Monday 2th December 6:00

2024 in Context

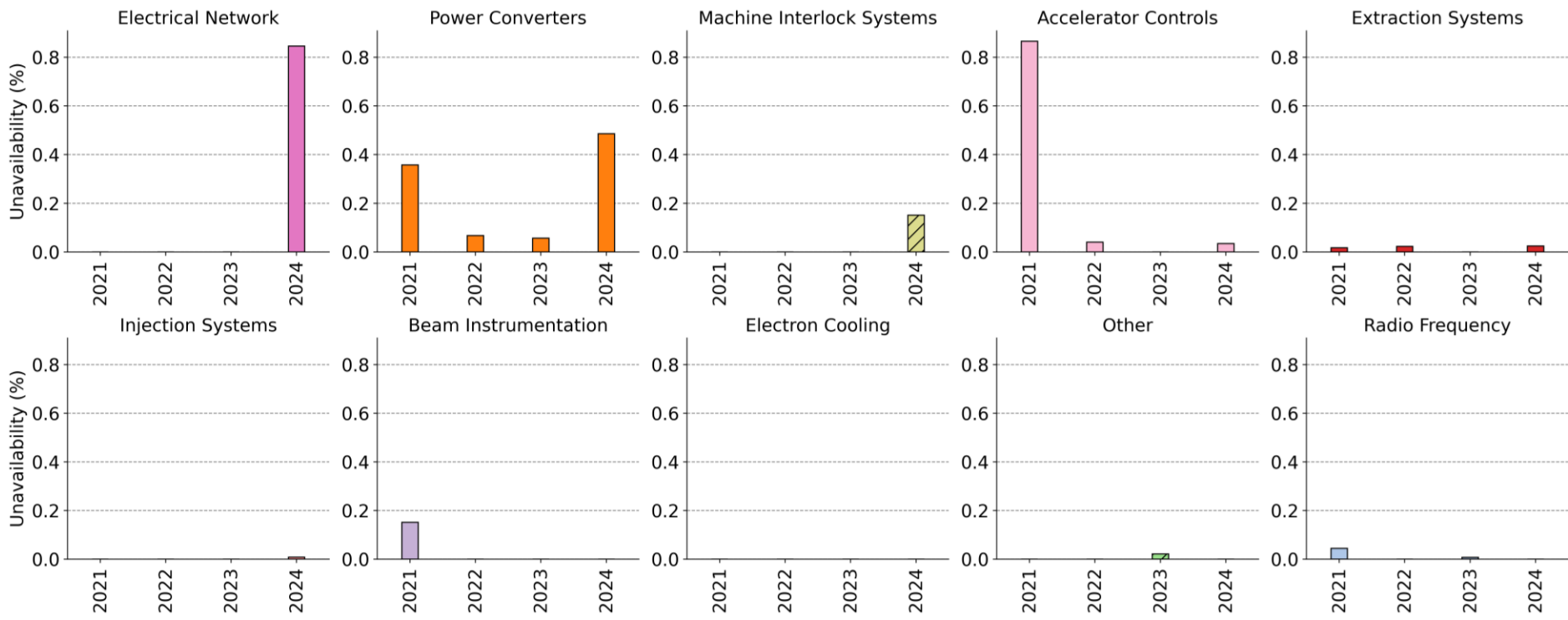


What could be responsible for the observed trends:

- increased number of electrical power cut with huge impact on ELENA HW

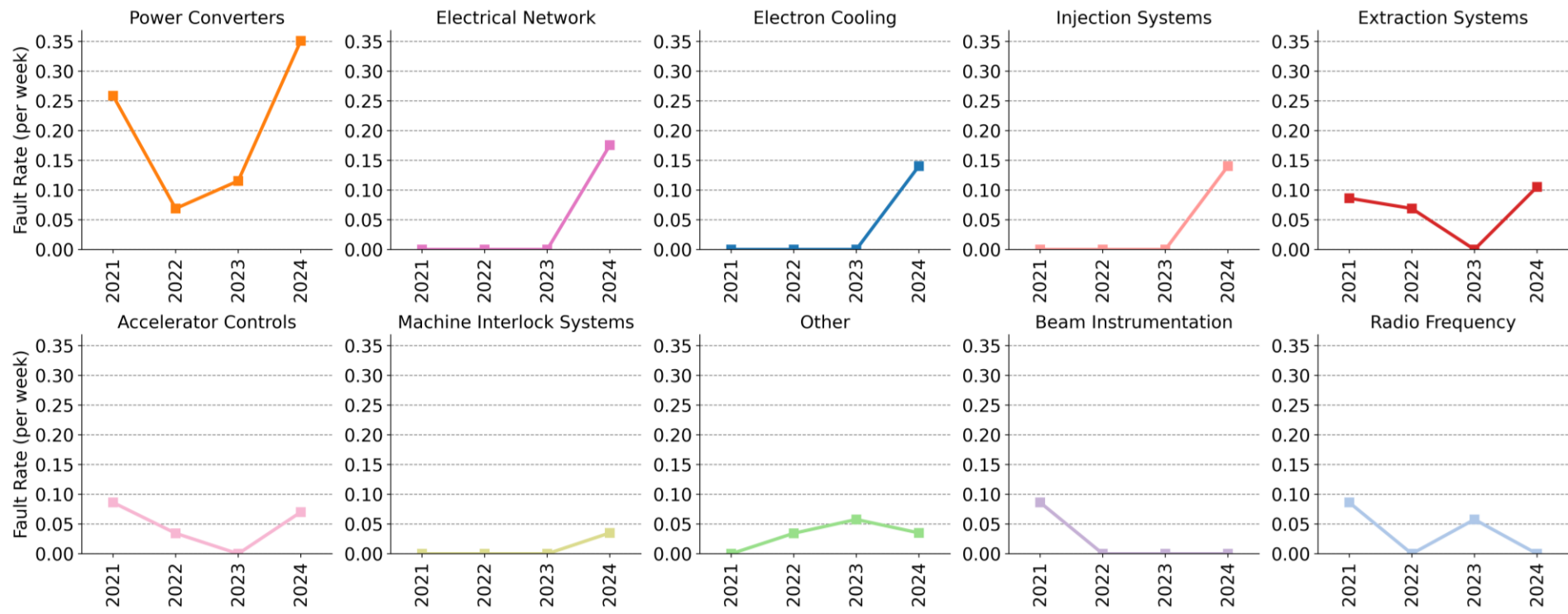
System Downtime

- Significant increase of the the number of power cuts
- Problems with the power converter mainly in the transfer lines, affecting only some destinations and this functionality is not implemented in ELENA AFT



System Failure Rate

- I think these data does not reflect the parent-child dependency?
- No change expected for next year except maybe the recovery of extraction system after the power cut due to rproblem of controls configuration

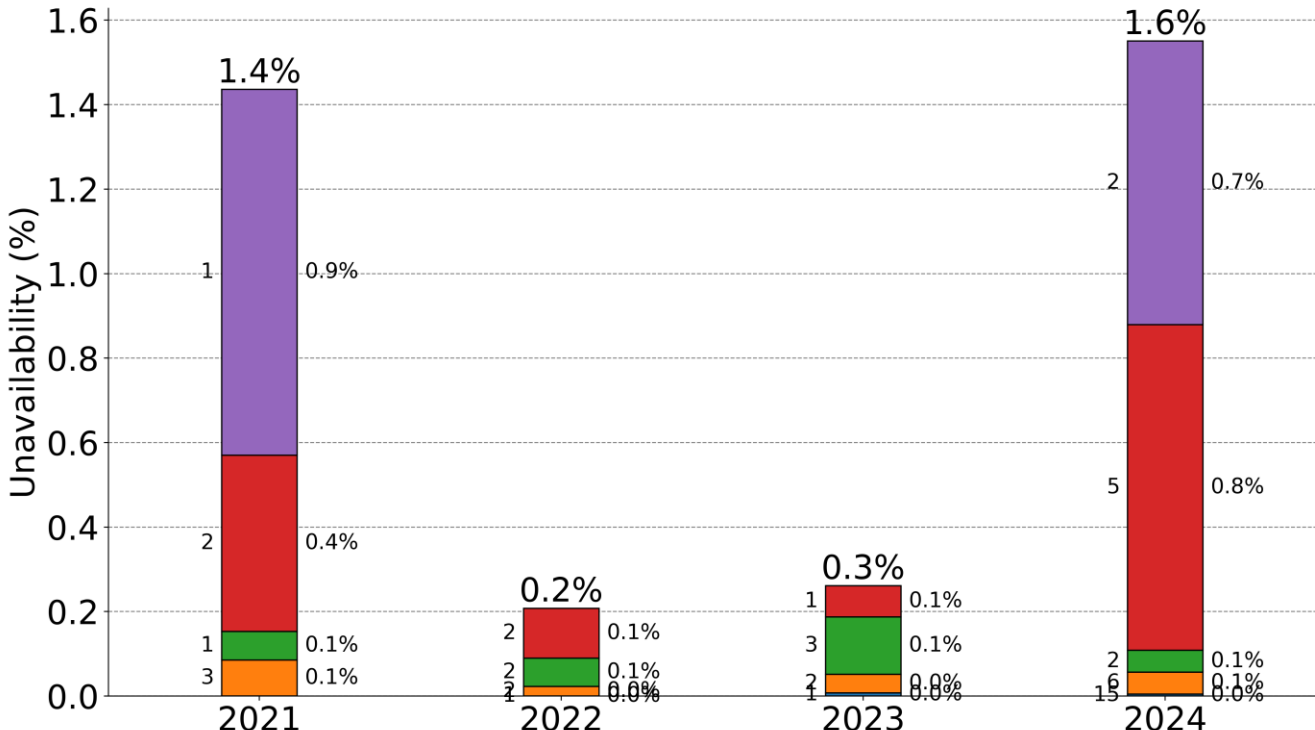


Unavailability by Duration

- Very long fault duration (> 10h) due to lack of piquet for ELENA: no intervention from specialist outside working hours
- E-cooler filament need 8 hours to ramp-up and we had 4 events this year
- Increased number of power converter fault due to improve of diagnostics (and registration) of the faults

(w/o injector)

ELENA



Summary & Conclusion

- ELENA downtime significantly increased this year due to an ncrease of power cut with long recovery time (e-coole filament to ramp-up)
- Main issue with FGC93 type power converter:
 - Need to have the destination dependancy in AFT for ELENA
 - Long standing issue but improved diagnostics make it more visible in AFT: OP can anticipate the problem and track it