Status of the ASTRID2 facility

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ASTRID2

- ASTRID2 is the new synchrotron light source in Aarhus, Denmark, since 2013
- ASTRID2 main parameters
 - Electron energy:
 - Emittance:
 - Beam Current:
 - Circumference:
 - 6–fold symmetry
 - Iattice: DBA with 12 combined function dipole magnets
 - Integrated quadrupole gradient
 - 4 straight sections for insertion devices
 - Using ASTRID as booster (full energy injection)
 - Allows top-up operation

580 MeV

- 12 nm
- 200 mA (presently 180 mA)
- 45.7 m

The ASTRID 2 facility



User hours and reliability

Downtime if current goes below 90% of topup set current



ASTRID2 User hours



Availabilty MTBF [h] — Year to 23/11 — Year to 23/11

Failure durations 2018





ESLS 26 (27/11 2018), ASTRID2 status 4

Failures

- 2018 has not been quite as good as earlier years
 - ASTRID2 getting old??
- Jan.: ASTRID septum supply
 - Diode stack cooling fittings corroded away
 - 3 days lost due to repair time
- July: Microtron dipole supply
 - Fuse in control power supply
 - 2 days lost because of weekend
- Nov.: ASTRID2 quadrupole supply
 - Something is burning a resistor in output filter
 - Still under repair temporarily using spare supply
 - 2 days lost because of weekend



RF Problems

- ASTRID: Raditek 1 kW solid-state amp:
 - Twice burned the transistors (unknown reason)
 - Commercial FM broadcast amplifier from Raditek Inc.
- ASTRID2: Tomco 8 kW solid-state amp:
 - Burned two 1 kW sub amplifier modules
 - 1: Burned one amplifier
 - 2: Burned one circulator







"Large" circulator

- Ordered a 8 kW circulator
 - To be installed between RF amplifier and cavity
 - Only allow 2 kW reflected power in steady state
 - To be installed in December
- Add more monitoring and interlock of reflected power
- Should allow us to run higher cavity amplitudes giving higher beam lifetime
 - Previously had various errors running with high power out of the amplifier (temperature interlocks, ...)

Thank you for your attention



Tomco 8 kW SSA

- Consist of eight 1 kW amplifier modules
 - Combined 2 and 2 and then to 4 kW
 - The two 4 kW boxes are then combined to the full 8 kW
 - Simple in-phase radial type
- Specified to withstand full reflection at any angle
 - Individual 1 kW circulators on each of the 1 kW amplifier modules





ASTRID2 Layout



