

Summary of session 2: Power sources Chairman: Wolfgang Anders

The subject of the session was a look in the future: What design will be the transmitters in the next years? Are they based on klystrons or the newer IOT or will there be solid state amplifiers.

The session was opened by two talks on solid state amplifiers for the SOLEI project.

Ti Ruan reported on a design of a 40 kW 352 MHz amplifier concept for the SOLEI booster. It is based on 330 W modules, each with an own circulator. The supply voltage is about 30 V, the efficiency is about 55-60% and the modules are water cooled. 8 modules of 330 W are combined in one combiner to a 2.5 kW module. 8 modules of 2.5 kW are combined to 20 kW and two 20 kW amplifiers are combined to 40 kW. Including preamplifiers the 40 kW transmitter needs 146 modules ($2 \times (1+8+8 \times 8)$). The price of a transistor is about 150 € and the circulator costs 50 €. Including the price of about 80% of manpower, a total price of 170 T€ for the 40 kW transmitter is expected. The status of the project is: a 1 kW module is running stable for about 10 years. A 2.5 kW module is also stable running and the 40 kW transmitter is in construction. For the 200 kW transmitter of the SOLEI storage ring a solid state amplifier is one of the possible solutions, but there is no decision until today.

Fernand Ribeiro reported on the the power supply and interlock concept of the 40 kW SOLEI amplifier.

Each module has an own power supply of 28 V 600 W (Lambda, 170 €). They are protected by fuse (LED control). There are 346 measurements in the amplifier: For each module the dc-currents (2) of the supply voltage is monitored (total 292). On the 2.5 kW level and higher the forward and reflected rf-power (total 36) and temperatures (total 18) are measured. Each 2.5 kW module has a control box with a small Siemens PLC running with a 10 ms cycle and connected via Profi-Bus to the control system.

Wolfgang Thon presented a list of the parameters of the rf transmitter of the european light sources followed by a discussion on future design of transmitters.

Nearly all **preinjectors** (Linac, Microtron) are equipped with pulsed power s-band klystrons and most of the tubes are by THALES.

On **synchrotron** and **storage ring transmitters** the present running systems are mostly running with klystrons of different suppliers, but for future projects or replacement of transmitters IOT's are preferred. SOLEI will run the synchrotron with a solid state amplifier, the storage ring transmitter design is not fixed yet.