

CMS ECAL Laser System Maintenance Procedure

By Caltech Group, August 29, 2001

- Ti:Sapphire Laser: Weekly check the water level in Neslab chiller. Add distilled water to **High Level** if the water level is below the **Low Level**.

- YLF Laser:
 - Daily check the chilled water, change filter if it is too dirty.
 - Weekly check the internal cooling water level, add distilled water to the water line if its level is too low.
 - Periodically (90 days) check the deionizing cartridge and the particle filter in the internal cooling unit.
 1. Pull up and remove the right side panel of the power supply unit;
 2. Turn the four fasteners 1/4 turn counter-clockwise and pull the cooling unit out so that the cover of the reservoir is exposed.
 3. Remove the circular reservoir cover, siphon the water from the reservoir as much as possible. Mop up any remaining water with a towel or sponge.
 4. Change the deionizing cartridge and clean, or change if damaged, the particle filter.

5. Fill the distilled water to the line, put the reservoir cover back and turn on the lamp, check if there is any leaks. Additional water may be needed after several minutes running due to air in the system.
 6. Push the cooling unit back and fasten it. Put the right panel back.
- Change DC Krypton lamp when significant decrease of YLF laser output is observed. Note, lamp replacement interval varies: 1000 hrs @ 26 A and 500 hrs @ 31 A. The elapsed time meter in the remote control unit monitors the hour-age of the lamp.
1. Turn off the power by using the key on the remote control unit and remove the key.
 2. Unscrew and remove the electrical connector from the cathode end of the lamp.
 3. Remove the locking ring by using the spanner wrench.
 4. Screw the hex stud into the cathode socket, pull slowly the cathode socket out while bleed air into the primary cooling water system.
 5. If the lamp came out with the socket, continue with step 7.
 6. Push the extractor tool onto the lamp cathode, slide the sleeve forward to lock the tool on the cathode, and then pull the lamp out.

7. Remove the rear end cap, feed the lamp out through the rear hole, once the end of the lamp clears the laser pot, angle it and bring it forward.
8. Clean the new lamp with methyl alcohol and lens tissue.
9. Push the lamp into the laser pot, leaving the cathode sticking out.
10. Attach the cathode socket with the seal ring and pressure ring to the lamp.
11. Use the cathode socket to align the lamp with the anode and then push it onto the anode. You may have to wiggle the lamp to get it positioned properly.
12. Install the lock ring and tighten it.
13. Install the cathode electrical connector.
14. Start the cooler and check for leaks.