

Design of the Aluminum Vacuum Chambers for the TPS

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The aluminum bending chambers for the Taiwan Photon Source (TPS) is designed to meet the requirement of ultra high vacuum condition for the electron beam of 3 ~ 3.3 GeV and 400 mA. The crotch absorbers are located far from the source to reduce the synchrotron radiation power density thus the design of the cooling is simple. A program of finite element analysis is applied to simulate the thermal loading near the crotch absorber where the heat load is the highest. Normal incident of the irradiation on the absorbers is possible that the production-yields of photon stimulated desorption as well as the photoelectrons are minimized. The vacuum pumps are mounted closed to the source of outgas major coming from the absorbers and form a localized pumping in the antechamber. The broadband impedance from the beam duct is reduced since the quantity of pumping holes or slots is dramatically reduced. Feasibilities of the design for the TPS Al vacuum chambers will be described.