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The Design Energy Saving Device for RF System at Taiwan Photon Source.

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Taiwan Photon Source (TPS) is an accelerator particle ring. This facility provides with a high luminance and stabilize source in which electron beam is produced from linac via a booster ring to storage ring for user studies. After electron beam is stored in the ring, its power would lose due to the energy dissipation. A RF Cavity (Nb₃S₂ Cells) in Booster Ring is used to compensate the lose power of the beam. A klystron is used to generate the needs for the RF system. It can provide the power up to 100kW (continuous wave). The driving requirements for a klystron are heater current, magnet current and accelerator current (6.5A), the cavity can build a gap voltage up to 900MV. This paper will discuss the saving power mechanism, if the system can be switched off during the injection time and shut-down for the rest of time period. This can dramatically reduce the power requirement for energy saving purpose.

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