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New injection controls environment for the Taiwan Light Source

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Taiwan Light Source (TLS) delivery user service since 1993. Some legacy system have been updated recently to avoid obsolesce and to provide better performance to improve operation efficiency. Proprietary designed timing modules were replaced by event based timing system recently. The magnets of the booster synchrotron configured as three White circuits and drive by resonance excitation. Original control of the White circuit include analog amplitude loop and digital phase loop for regulation were replace by full digital regulation loops. Success upgrade of both system lead easy and smooth injection control possible with functionality and flexibility enhancement. The injection control includes foreground and background processes to coordinate the operation of e-gun, linear accelerator, booster synchrotron, and storage ring by the help of timing system. Scheme of fix time interval between injection was selected to meet user requirements. Injection control GUI provide an intuitive operation interface includes parameters setting and present all necessary information display like various timing value, stored beam current/lifetime, injection efficiency, filling pattern, kickers waveform. Energy saving mode of the White circuits are supported by the injection control to save electricity. Lifetime calculation of the storage ring is also synchronized with the injection process. Detail of the implementation and operation experience will be presented.

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Footnotes

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Yes

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