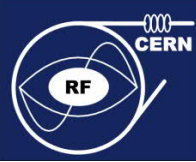




Upgraded Transverse Feedback For The CERN PS Booster

A. Blas, G. Kotzian
CERN, Geneva, Switzerland

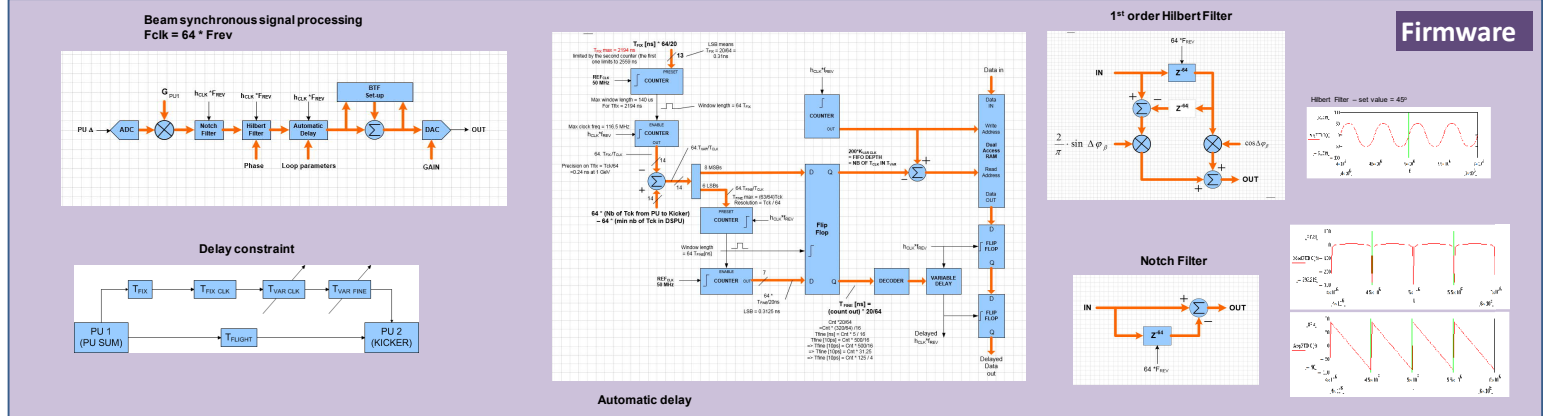
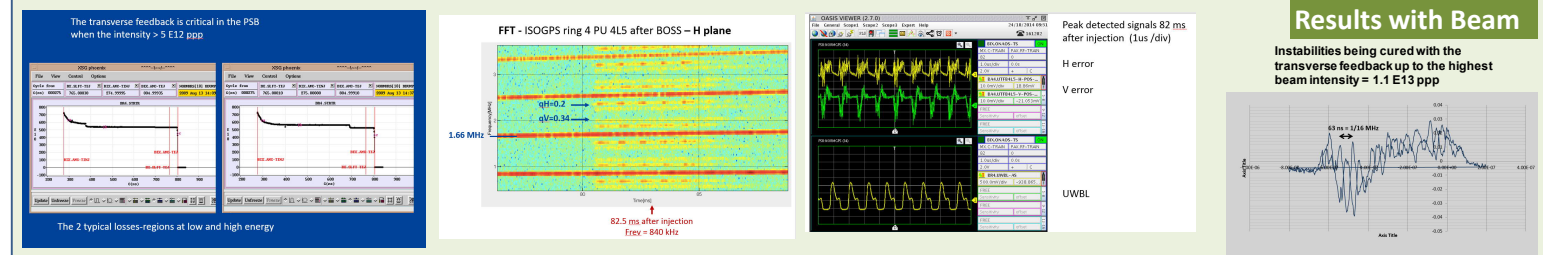
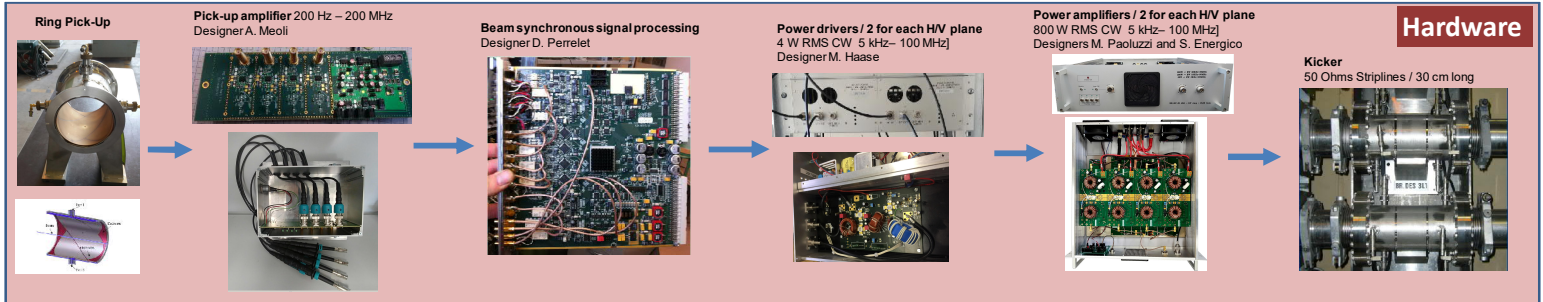
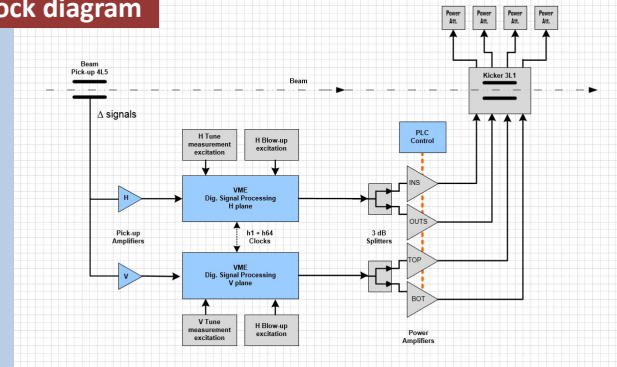
WEP2PO



Abstract

A new transverse feedback system is being used for the 4 rings of the CERN Proton Synchrotron Booster (PSB). In addition to transverse instabilities mitigation - within the range of 100 kHz to 100 MHz - the system allows for controlled beam emittance blow-up, machine tune measurement and other optic studies. The system was upgraded in order to multiply by 8 its power (800 W instead of 100 W on each of the 4 kicker electrodes) and in order for its electronic core to employ a digital processing. The transverse feedback adapts automatically to a factor 3 change in the beam revolution period and to any change of the machine tune. It includes an excitation source that combines up to 9 selectable harmonics of the revolution frequency with a selectable amplitude for each. The excitation may be dipolar or quadrupolar. Future possible upgrades will be presented including a setup to tackle half-integer tune values and a digital processing using a fixed clock frequency instead of the revolution frequency clock.

Block diagram



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CONCLUSION

- Successfully tested in the horizontal plane of the CERN PSB ring 3.
- Power, betatron phase adjustment and automatic delay compensation have proved to meet specifications



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