

Upgrading of the SPS Injection Kicker System for LHC Requirements, E. CARLIER, L. DUCIMETIERE, G.H. SCHROEDER, E. VOSSENBERG, CERN - The SPS injection kicker system is composed of 12 travelling wave magnets connected in pairs to six pulse generators. The first eight upstream magnets have a kick risetime (0-100%) of 175 ns (type 'S') while the remaining magnets have a risetime of 240 ns (type 'L'). The flat top ripple of the kick is $\pm 1\%$. Important modifications of the kicker system are required when the SPS functions as LHC injector. The main upgrading requirements are a reduction in flat top ripple of the kick to less than $\pm 0.5\%$ to conserve the small beam emittance. Furthermore for the type 'L' magnets a reduced risetime of 220 ns is necessary to inject protons. For ion injection the bunch spacing is 125 ns and only type 'S' magnets will be used, requiring a reduction of the kick risetime to 115 ns. The paper discusses the risetime and ripple reduction. For type 'S' magnets both objectives will be achieved by an increase of the characteristic impedance of the system, by a shortening of the magnet length and by filter compensation of the switch stray inductances. For type 'L' magnets the filter compensation method is expected to be sufficient. To conserve the total kick strength the number of magnets and pulse generators must be increased by one third.