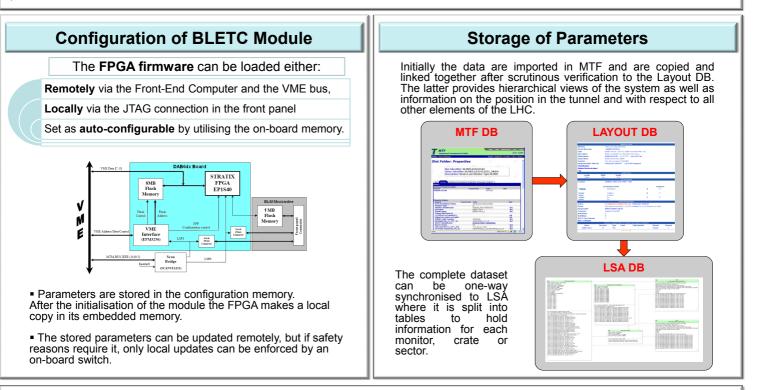


Configuration and Validation of the LHC Beam Loss Monitoring System.

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Abstract: The LHC Beam Loss Monitoring (BLM) system is one of the most complex instrumentation systems deployed in the LHC. As well as Abstract: The LHC Beam Loss Monitoring (BLM) system is one of the most complex instrumentation systems deployed in the LHC. As well as protecting the machine, the system is also used as a means of diagnosing machine faults, and providing feedback of losses to the control room and several systems such as the Collimation, the Beam Dump and the Post-Mortem. The system has to transmit and process signals from over 4'000 monitors, and has approaching 3 million configurable parameters. This paper describes the types of configuration data needed, the means used to store and deploy all the parameters in such a distributed system and how operators are able to alter the operating parameters of the system, particularly with regard to the loss threshold values. The various security mechanisms put in place, both at the hardware and software level, to avoid accidental or malicious modification of these BLM

parameters are also shown for each case

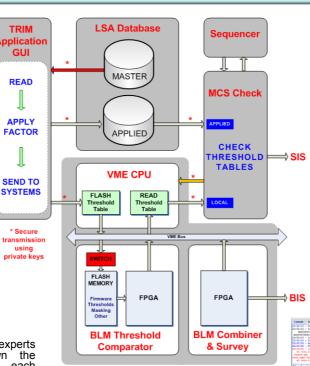




The TRIM application GUI triggered by the operators reads the **MASTER** table, applies unique per monitor threshold coefficients, which are always < 1, and saves the new table as the ADDU To table APPLIED table



In that way, operators and domain experts can readjust by scaling individual threshold value monitor, if this is found down the values each of necessary without impairing the characteristics of the system. protection



System Parameters Validation

The Management of Critical Settings (MCS) Online Check requests from the FEC to read all the currently used parameters (by incrementing the energy levels and recording the used threshold values).

It subsequently transmits them to the MCS Online Check for comparison. Both the FEC and the Software Interlock System (SIS) receive the PASS/FAIL result.



Drive of settings can be performed only when the accelerator status permits, i.e. offline.