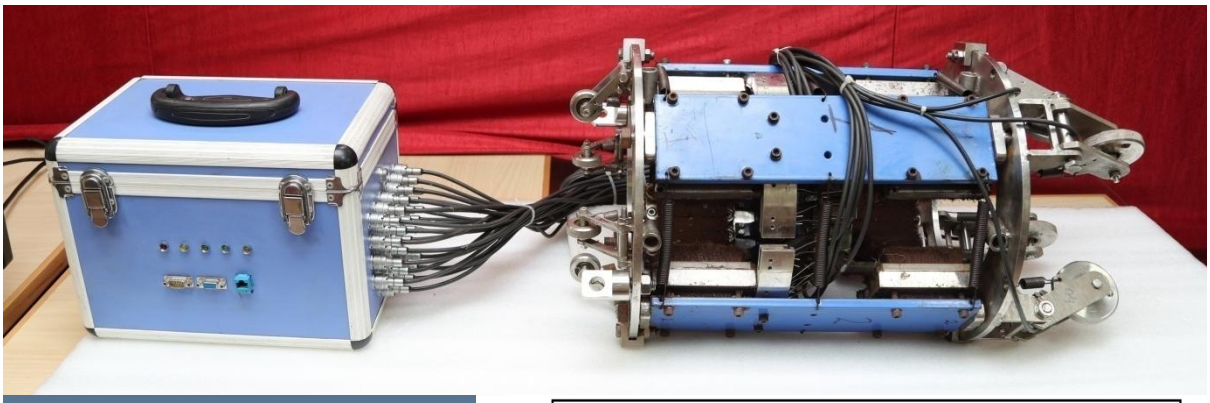
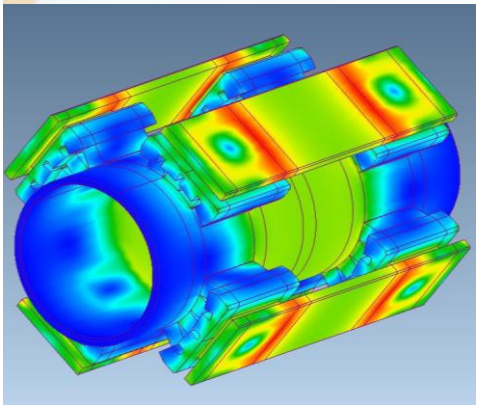
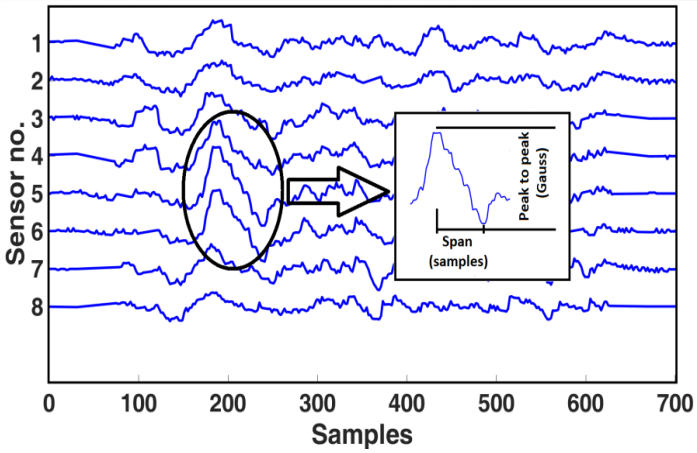
Development of External PIG

6" External Pipeline Inspection Gauge

Using the expertise and domain knowledge in the area of in-line inspection, a novel tool has been developed for full periphery and full length inspection of 6” NB pipeline from outside. The tool is pulled by a battery powered winching mechanism at constant speed. Exhaustive FE analysis was done to arrive at a four module inspection tool to achieve near uniform magnetisation in the pipe spool. Magnetic Flux Leakage(MFL) data was collected by an in-house developed 96-ch data acquisition system (DAS) and displayed in real-time data viewing software, as well as recorded in the laptop. Three odometer data recorded along with MFL sensor data, give distance/location estimation of these pipe features and detected defects. Successful field inspections were done at various DAE pipelines.







Control Instrumentation Division, BARC

10" Sectorial External Pipeline Inspection Gauge

MFL based sectorial pipeline inspection tool along with FPGA based acquisition electronics and MFL analysis software have been developed through a series of design iterations and simulations and FE analysis of the magnetic circuit. The sectorial design of tool facilitates inspection of pipes which are close to walls or are not accessible full periphery. The tool is moved multiple times along axial direction (sector of pipe) and is rotated circumferentially after every run-length, to cover full periphery. The inspection data from each sector is stitched (stacked and aligning) to obtain the complete C-Scan of the pipe wall. An array of faults were created (both internal and external) on linear pull through rig at CnID, and multiple trial runs of the tool were carried out to calibrate the empirical model for defect characterization and to generate a data bank for the same. Successful field inspections were done at various DAE pipelines.