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Construction and installation of the LHCb Velo RF-boxes

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The LHCb VELO detector is undergoing an upgrade, in which all its silicon sensors and electronics are being replaced, in order to cope with a triggerless readout scheme which also runs at 5 times higher luminosity compared to the previous LHC run. To achieve a better vertex reconstruction performance, the detector will be placed as close as 5 mm to the LHC beams protected against RF-pick up by a thin foil. The amount of material in the foil contributes to multiple scattering which deteriorates physics analysis parameters. Therefore the foil thickness is of extreme importance for the experiment and has been designed to be as thin as possible, being machined to a thickness of 250 microns from a solid forged aluminium block and further chemically etched to an average of 180 micron thickness at its closest region to the beam. In this presentation details on the construction, etching, coating and final installation of the foils will be shown, including the milling process.

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