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An overview of the ATLAS NSW Micromegas construction project at Aristotle University

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The upcoming luminosity upgrade of the LHC will impose new requirements for the detector installations. To perform under these conditions the Micromegas (MM) technology was selected to be adopted in the New Small Wheel (NSW) upgrade, dedicated to precision tracking. A large surface of the forward regions of the Muon Spectrometer will be equipped with 8 layers of MM modules forming a total active area of 1200 m². The NSW is planned to be installed in the forward region of $1.3 < |\eta| < 2.7$ of ATLAS. The NSW will have to operate in a high background radiation region, while reconstructing muon tracks as well as furnishing information for the Level-1 trigger. The project requires fully efficient MM chambers with spatial resolution down to 100 μm , a rate capability up to about 15 kHz/cm² and operation in a moderate (highly inhomogeneous) magnetic field up to $B=0.3$ T. The required tracking is linked to the intrinsic spatial resolution in combination with the demanding mechanical accuracy.

An overview of the design, construction and QA/QC procedures followed at the Aristotle University of Thessaloniki for the Micromegas LM2 Drift panels production will be presented.

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