

## **An Automated Reconfigurable Supporting Structure for Aeronautical Applications**

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Reconfigurable tooling/supporting structures are needed for aircraft manufacturers and Maintenance Repair and Overhaul (MRO) facilities to increase their production rates to meet the growing demand and to switch rapidly and effectively between operations within optimal aircraft variant-mixes while minimizing resource wastage. Dedicated tooling is expensive, difficult to use with different aircraft sizes, require long manufacturing lead time and setup time, skilled workforce and occupy floor space during use. Overcoming these drawbacks, reconfigurable supporting structure should be reusable so that it enhances the operational flexibility, ensures rapid response to production/maintenances-schedule changes and reduces development costs and setup time. Furthermore, having lesser footprint is a value adding attribute for the structure. In this research, a reconfigurable supporting structure is developed for MRO operations. A platform mounted on a scissor, with sections of platforms which extend further provide safe and easy access to the aircraft. It has the flexibility to cater different applications in aircraft manufacturing, assembly and MRO facilities. The whole support structure can provide autonomous/semi-autonomous mobility by being mounted on an automated guide vehicle (AGV). Proposed design can cater to multiple airframe sizes by being able to easily modify height and orientation providing increased reconfigurability. Furthermore, increasing the number of modules in operation ensures the flexibility for different applications ranging from inspection, installation/removal of equipment etc. depending on the type of maintenance.

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