## Performance of Constant Load Feed Machining for Robotic Drilling

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**Abstract :** In aircraft assembly, a large number of preparatory holes are required for screw and rivet joints. Currently, many holes are drilled manually because it is difficult to machine the holes using conventional computerized numerical control(CNC) machines. The application of industrial robots to drill the hole has been considered as an alternative to the CNC machines. However, the rigidity of robot arms is so low that vibration is likely to occur during drilling. In this study, it is proposed constant-load feed machining as a method to perform high-precision drilling while minimizing the thrust force, which is considered to be the cause of vibration. In this method, the drill feed is realized by a constant load applied onto the tool so that the thrust force is theoretically kept below the applied load. The performance of the proposed method was experimentally examined through the deep hole drilling of plastic and simultaneous drilling of metal/plastic stack plates. It was confirmed that the deep hole drilling and simultaneous drilling could be performed without generating vibration by controlling the tool feed rate in the appropriate range.

Keywords : constant load feed machining, robotic drilling, deep hole, simultaneous drilling

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