

## **FEASIBILITY OF BUILDING AN OVERHANG STRUCTURE USING DIRECT METAL DEPOSITION**

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### **ABSTRACT**

This paper summarizes a theoretical and an experimental approach to employ the Direct Metal Deposition (DMD) process to adjudge the feasibility of depositing overhang features. The DMD process is a process capable of directly manufacturing a fully dense metal part without the use of any intermediate steps. This process, comprised of a laser deposition setup coupled with a 5-axis CNC milling system, provides a capability to produce a finished part with superior surface qualities.. This paper discusses the issues and related tools in the feasibility of depositing an overhang structure using the hybrid deposition-machining process, including laser deposition process, system design and integration & process planning. A successful experimental work is also been carried out using one of the tools to justify the feasibility of the overhang structure. The preliminary model is constructed which resulted in a combination of 178.9 mm/min feed-rate and an angle of 34.9 degrees of laser incidence angle were determined to be the optimum process parameters in „extension mode“ (4 axis) for maximizing the overhang distance.