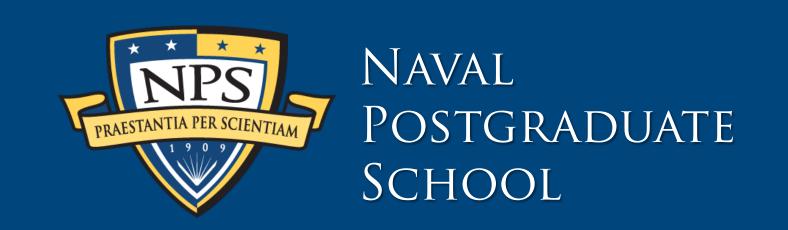
Additive Manufacturing Solutions in the United States Marine Corps



Abstract

This project addresses the following questions:

- Is additive manufacturing a cost reducing option for the Marine Corps, compared to acquiring OEM items from the established supply chain?
- Among the additive manufacturing alternatives, is it more cost efficient for the Marine Corps to use Extrusion or CLIP?



1st Maintenance Battalion, EXMAN Trailer



Printed Helmet Mount

Methods

This project conducts a Cost Benefit Analysis, which systematically examines the relative strengths and weaknesses of the established method of Extrusion, and the emerging technology of continuous liquid interface production (CLIP). This provides a decision making tool, which can be updated to reflect emerging data or command priorities.

Results

The findings from the Cost Benefit
Analysis show and advantage for
Additive Manufacturing at the
production level with a substantial edge
given to CLIP in three of four scenarios.

Method	Extrusion	CLIP
Baseline	\$9,697,267.59	\$15,470,288.11
Sensitivity of Value of Time	\$4,037,667.94	\$6,414,928.67
Sensitivity of DDL	\$3,294,203.40	\$5,225,385.41
Equalization of Initial Investment	\$19,394,535.17	\$15,470,288.11

Results Table

Recommendations

- The Marine Corps builds a data repository of (blockchained) printable files as quickly as accuracy allows.
- The Marine Corps continues to use the Fortus 250mc until the database reaches capacity, then moves to Carbon 3D or a similar technology and expands the capability across the Marine Corps.

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