

With HP Multi Jet Fusion technology, **DustRam®** ramps up production in a new, growing market



DustRam® stays ahead of the competition by lowering costs, accelerating production, and building strong parts with HP Multi Jet Fusion technology



Introduction

DustRam LLC is a manufacturing company that designs and builds rugged dust-free tile removal equipment for the contracting and flooring industry. DustRam's mission is to help contractors and flooring professionals safely and quickly remove paint, adhesive, tile, thinset, stone, brick, and other dusty materials from different types of subfloors. In the process, DustRam has created a completely new

consumer-driven market with immense opportunities for growth.

In the 10 years since its inception, DustRam has issued seven patents with many more pending. The DustRam® System is currently the world's only patented dust-free tile removal system of its kind.

- **Industry**

Industrial

- **Sector**

Machinery and equipment

- **Objective**

To design and build more rugged and more effective equipment than what is available on the market while decreasing costs, production time, and staying ahead of the competition.

- **Approach**

DustRam sought the fast speeds and low operating costs of HP Multi Jet Fusion technology to produce its complex parts and forge a new path in the manufacturing industry.

- **Technology | Solution**

HP Multi Jet Fusion technology, HP Jet Fusion 3D Printing Solutions

- **Material**

HP 3D High Reusability¹ PA 12

1. Based on using recommended packing densities and compared to selective laser sintering (SLS) technology, offers excellent reusability without sacrificing mechanical performance. Tested according to ASTM D638, ASTM D256, ASTM D790, and ASTM D648 and using a 3D scanner for dimensional accuracy. Testing monitored using statistical process controls.

Challenge

The parts incorporated into DustRam's products (e.g., SkiRam®, ExoRam®, CuffRam®, HepaRam®, RimRam®, PulseRam®, ChipRam®, KneeRam®, DustRam®, ScoopRam®, AdaptaRam®, HoseRam®, and RakeRam®) are from an equipment system that is designed to work together at specific times to capture dust and control debris during the removal of tile and other flooring.

Before 3D printing, DustRam produced a metal version of their chipping hammer attachment, which came at a high price. DustRam then used a 3D printer that featured FDM (Fused Deposition Modeling) technology to build such parts. While useful for prototyping, this technology was extremely slow, and the end product was not aesthetically pleasing or very strong. DustRam needed a way to manufacture as costs to produce complex parts with CNC Machining were too high.

Solution

3D printing is a huge part of DustRam® System equipment, and as of November 2018, DustRam was 3D printing nearly 60 different parts and about 25 different fixtures that allow them to build innovative equipment. DustRam realized that if they were to have molds built for all the pieces they had been 3D printing, the costs would have been more than \$3 million/2.6€ million, without the possibility to alter the design. 3D printing, however, provides a quick and cost-effective way to change the design, look, and feel of any part within hours.

DustRam discovered HP's Multi Jet Fusion (MJF) technology and realized they could increase productivity by four times (to 1/10 of the time) and at about 50% to 75% of the cost.

InterLink Engineering provided critical input to demonstrate how DustRam could utilize the HP Jet Fusion 3D 4200 Printer with HP MJF technology for production implementation. InterLink was able to lead DustRam in the conversion to HP MJF, and the results speak for themselves: DustRam's parts are now stronger, more durable, and are produced much faster and less expensively than with the previous method of manufacturing.

“The quality of the parts approached the fit and finish of parts made from expensive molds,” says Jack King, President of DustRam LLC. **“I manufacture extremely high-quality equipment in low numbers, so purchasing expensive molds that I could never change did not make a lot of sense.”**

Result

“I was pretty skeptical at first until I saw the machine in action and realized I could print about four times as many items in about 1/10 of the time and at about 1/2 to 3/4 of the cost,” King says. **“The quality of the parts approached the fit and finish of parts made from expensive molds. This is a game changer in so many obvious ways.”**

With HP MJF, DustRam was able to cut time, weight, and costs for some of their 3D printed products. Printing a single complete PulseRam® Vacuum head using FDM technology used to take approximately 120 hours, but with HP MJF technology, DustRam can now print two complete vacuum heads in about 17 hours.

The previous metallic version weighed 4,63 kilograms (10.2 pounds), but the new version made with HP 3D HR PA 12 material weighs 1,45 kilograms (3.2 pounds), resulting in a weight reduction of 68%, which makes it easier for the operator to use the machine.

DustRam was able to lower the cost of the PulseRam® Vacuum head by more than \$2,000/1.750€ once they introduced HP MJF technology.

“Regarding the material purchase, I am already ahead of the game when it comes to cost savings,” says King. **“For example: With the other printer I used to use, it would cost approximately \$78,345 (68.710€) to purchase their nylon compared to \$7,150 (6.270€) from HP. The nylon from HP is more than 10 times less expensive.”**

DustRam plans to grow organically as consumer demand for dust-free tile removal equipment also continues to grow.

“My industry of dust-free tile removal is poised for tremendous growth,” King says. **“Having an HP MJF printer will allow me to surpass and stay ahead of the competition as it comes.”**

Learn more about HP Multi Jet Fusion technology at:

hp.com/go/3DPrint

Connect with an HP 3D Printing expert or sign up for the latest news about HP Jet Fusion 3D Printing:

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