Objet Geometries

Textured Applications

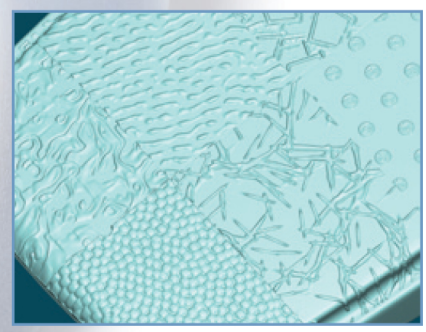
Overview

Skill Level Time Cost

"3-D texture has primarily been used for visualization, appearance and rendering purposes," says Mr. Antonius Köster, Director of Modellbau and Innovative Cad Cam Solutions. "Yet, 3-D printing of Objet's parts provides the exact next step required to have these actual models in hand, printed in high-quality with remarkably fine details. The ever-growing use of textured parts and components in today's industry has increased dependence on high-quality models. Textural requirements intensify the challenge of designing more detailed 3-D models and push the limit for the use of effective RP solutions. But, such models can be produced easily using PolyJet™ Technology due to the ultra-thin layer thickness and high printing resolution."

Picture 1. CAD Design for textured pattern

In today's competitive market, manufacturers in almost every industry are under pressure to meet increasingly complex demands for high quality and unforgiving deadlines – all with maximal cost effectiveness. The way to meet these challenges is through the use of advanced, high-end equipment. As manufacturers see the opportunities that advanced equipment can open for them, many are changing the way they produce textured design models. By using new-age manufacturing methods to produce unusual textured exteriors, they are able to create highly innovative products.



Picture 2. Close up of textured outlines

Manufacturers are caught between opposing business pressures. On the one hand, they and their customers are seeking to develop detailed and distinctively textured products and get to market faster. On the other hand, they find it challenging to achieve these targets while still using traditional rapid prototyping solutions.

With most rapid prototyping technologies, highly detailed textured models are either impossible or too time-consuming to make. However, PolyJet Technology makes it both possible and practical. With the smooth surfaces and high printing resolution of PolyJet models, the technology provides the perfect solution.

Picture 3. A textured model in VeroBlack

Introduction

Direct Texturing (DT) is the manufacturing process that produces forms, prototypes and series-production parts with defined texturing or "scarred" surfaces (e.g. car dashboards and other leather-look parts). Molds used for embossing can be manufactured with a textured surface using DT, thereby reducing the number of production steps and eliminating the need for cylinders and silicone molds.

Process

The mold, or the object itself, is designed on a CAD system. The data for the textural and decorative elements (e.g. pictograms, logos, etc.) is stored in graphic format files. The DT, CAD, and decorative features' data are combined and then processed together. Textural properties such as depth and shape can be changed. Controls and results are displayed on the screen.

At the end of the process, a 3-D file is generated, and the object, with the specified textures included, can be manufactured.

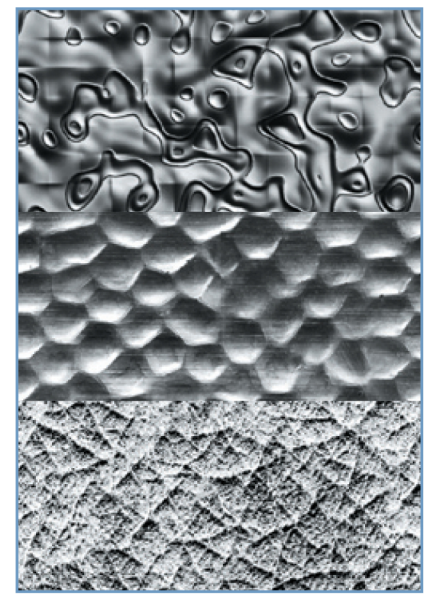
A full solution for textured applications must also overcome the difficulties of creating textures on materials that cannot be textured by using etching processes.

The concept of printing textured models while using RP technology comes with a unique set of strengths and advantages that cater to this niche application. Over time, the advantages of this system will become increasingly obvious due to the potential timesavings that it offers in the development phase. 3-D printing of textured applications provides the opportunity to reduce the number of steps to produce a finished product, thus improving turnaround time.

An additional advantage of this technology is the digital description of the texture, which makes it reproducible and opens the door for its use with a wide variety of materials. After evaluating the design of the texture by using high resolution rapid prototyping systems, the data can be used for milling, spar erosion or laser engraving.

Picture 4. Examples of printed models

Picture 5. The exterior texture on the final product



Picture 6. Examples of embossed and leather textures

Reader Note

Using 3-D texture data technologies enables designers to design a texture before manufacturing and review the surface using high resolution PolyJet Technology, and then proceed with printing exactly the same texture in molds.

3-D texture applications are used to decorate parts, exhibit a unique appearance or demonstrate a higher value.

In addition, while designing light weight structures, 3-D textures can strengthen thin materials and can be used for improving aero- and fluid dynamics.

Objet Geometries Ltd.
Headquarters
2 Holtzman st.,
Science Park,
P.O Box 2496,
Rehovot 76124, Israel
T: +972-8-931-4314
F: +972-8-931-4315

Objet Geometries Inc.
North America
5 Fortune Drive
Billerica,
MA, 01821
USA
T: +1-877-489-9449
F: +1-866-676-1533

3D Printers Canada
North America

171 Marycroft Ave.
Vaughan
Ont, L4L 5Y3
Canada
T: +1-416-848-7699
F: + 1-905-739-1779

Info@objet.com – www.objet.com – www.proto3000.com – www.3dprinterscanada.com