

Abstract

Rapid Manufactured (RM) textiles are based on the concept by Jiri Evenhuis 1999. This concept has opened a new frontier of possibilities for the production of textiles in the future. Instead of producing textiles by the meter, then cutting and sewing them together into final products, this concept has the ability to make needle and thread one day obsolete. After several years of research in software, materials and surface quality, the first commercial products were launched for the public by FOC in 2005.

Since there are no machines in the world made specifically to manufacture interlocking textile patterns by layers, we employed Rapid Manufacturing techniques, such as Laser Sintering (LS) for their manufacture. Our textile products don't require any assembly and we are able to produce our products inside their own packaging. This link will show the process of Laser Sintering and how one of our products is being produced for a textiles exhibition at The Museum At FIT, New York, October 2005:

www.freedomofcreation.com/video.html



Figure 1: 5 frames of the previously mentioned film about Laser Sintering

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Figure 2: All FOC textiles are produced by literally stacking tiny layers of Polyamide powder in order to form solid objects. Here you can see one link of the Mobius pattern and how the layers are stacked on each other by a Laser Sintering process.

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Figure 3: This image shows the steps needed to produce a ready product: 3D CAD file + Laser Sintering machine = ready product

Applications

This invention is so revolutionary, that we haven't even scratched the surface for all the future possibilities. In principal, the textiles can be applied to pretty much anything from handbags to curtains to upholstery to full size dresses. Also, any material which you can stack could technically be used to make our textiles. So far we have tested the following materials: Epoxy, Plaster, Starch, Bronze, Polyamide, Alumide and Steel. Laser Sintered Polyamide has proven to work the best for our current applications.

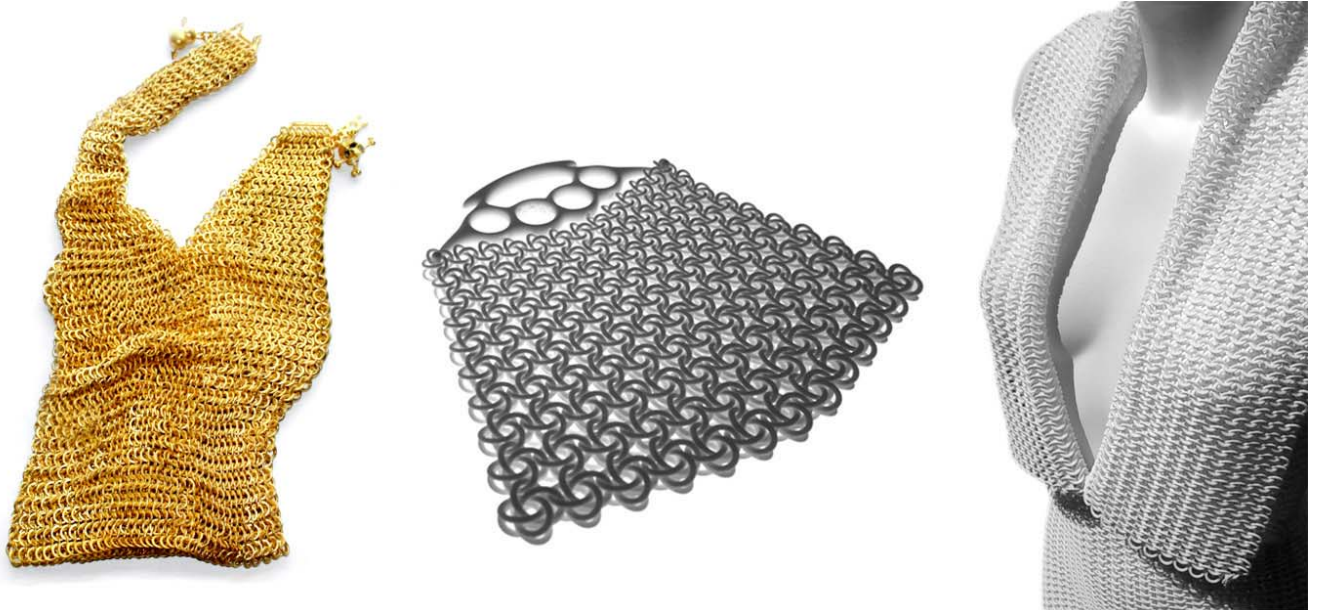


Figure 3. Gold plated V_Bag (4 in 1 pattern), Punch_bag (Mobius pattern) and Dress (4 in 1 pattern)

Customization

Since all the textiles are basically just 3D computer files, you are able to create an endless stream of linking patterns which can vary in size, color and in the future, material. You can also design your own patterns. For example, a logo of your company or anything you can dream of. Above you can see the Punch_bag with each row of rings differing in size.



Figure 4. Silver plated V_Bag (4 in 1 pattern)

Samples

The patterns below are commercially available. Any color is possible, but the samples are provided in black or white.

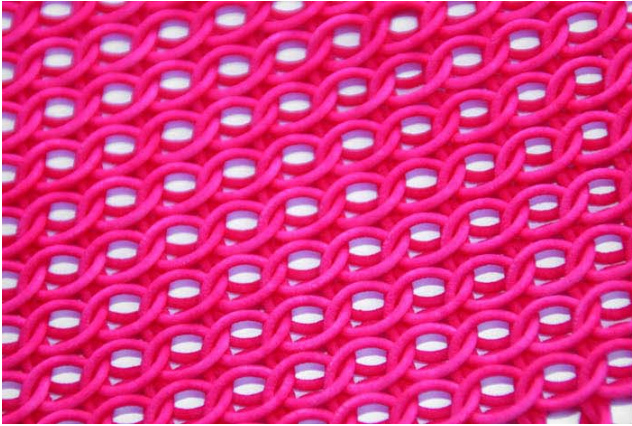
Technique: Laser Sintering

Material: Polyamide

Finish: Industrial tumbling (smooth on skin)

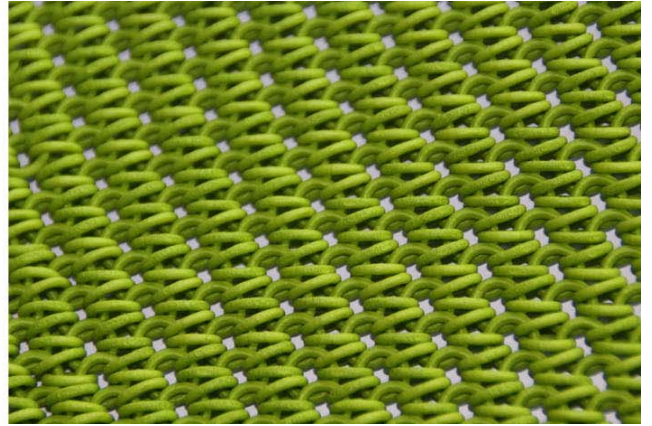
Size: 15 x 15cm

Color: Black or white



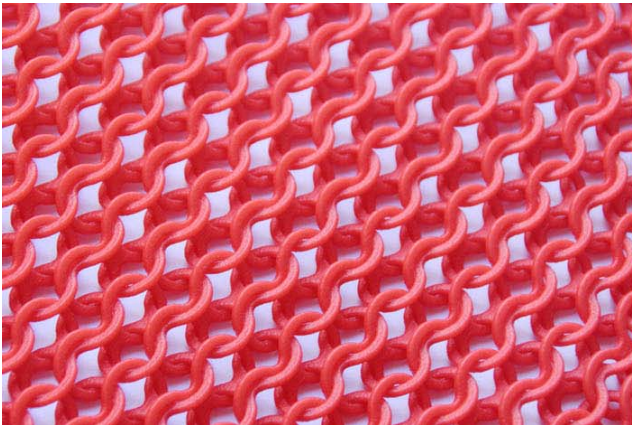
Pattern A

3 in 1: A pattern which expands a lot



Pattern B

5 in 1: A pattern that has the most movement



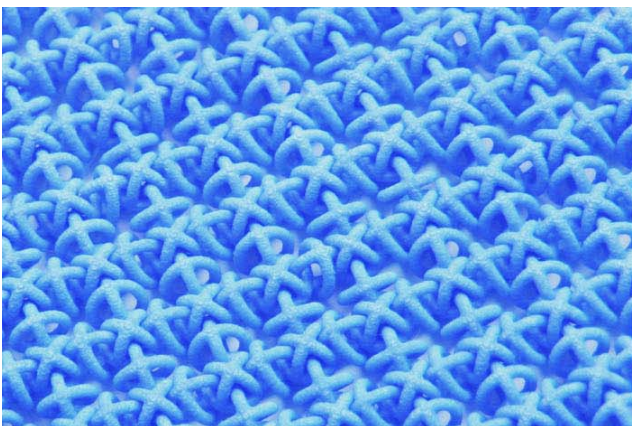
Pattern C

8: Like 4 in 1, but a stiff version of it



Pattern D

4 in 1: A mid-evil armor pattern



Pattern E

X: A pattern made from ring blocks



Pattern F

Mobius: Not made of rings but flexible mobius strips

Material showrooms

The following Material libraries possess samples of our textiles.

Freedom Of Creation

Hobbemakade 85 hs
1071 XP Amsterdam
The Netherlands
Tel./Fax: + 31 (0) 20 675 84 15
E-mail:info@freedomofcreation.com

Materio SAS

15 Square de Vergennes
75015 Paris
France
Tel: +33 (0) 15 623 2000
Fax: +33 (0) 15 623 2014
E-mail:info@materio.com

Materia

Statenweg 63c
3039 HD Rotterdam
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Tel: +31 (0) 10 213 2333
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Email:info@materio.com

Material ConneXion

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25th Street, 2nd Floor
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50825 Cologne,
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FAQ**How strong is the Laser Sintered Polyamide material, which is mainly used for the textiles?**

You can compare the strength of the Laser Sintered Polyamide to normal plastic products that you can find from the retail market. Please refer to the link below to learn more detailed technical information about the material, such as tensile strength etc.. www.freedomofcreation.com/press/Material_data_PP2200/

How do you clean the products?

You can clean the products with standard soap. If you have a dishwasher at your disposal, this is the handiest way to clean them

What is the biggest size the links can be?

The biggest Laser Sintering machines around have the production volumes of 500 x 500 x 700 mm and 700 x 380 x 580 mm. Whatever 3D file you can fit into this volume, you can also produce.

What is the smallest size the links can be?

You can have approximately 1 mm thickness for the thread of the links in order to make them durable enough.

How big of a textile part you can make in one piece?

By folding some of the pattern files into a machine, you could possibly make a piece as big as 70 cm x 4 m.

What color can you apply to them?

Any

Do you color the textiles before or after the sintering process?

You can do both. You can color the powder before Laser Sintering or you can color them after the process. If you color them after sintering, the color will only stay on the surface of the textiles.

Can these textiles be made in other materials than Polyamide?

Yes. We have tested a long list of different materials and Rapid Manufacturing processes, but Laser Sintered Polyamide has proved to be the best for our applications.

How do the textiles feel?

When they come out of the Laser Sintering machines, the surface is quite rough. We have developed a finishing process, so that they are very smooth to the skin and the experience is very different to anything you have felt before

Is it possible to customize the patterns?

Yes. They are adjustable to all kinds of custom requirements