

# 3D Printing

## The next industrial revolution?



### UBS Open End PERLES on Solactive 3D Printing Total Return Indices

#### I. 3D printing – the next industrial revolution?

“3D printing has the potential to revolutionize the way we do almost everything.” And it’s not just anyone saying this; it’s someone with weight: Barack Obama. President Obama is pushing for 3D printing technology in the hope of creating new high-tech jobs in the US and said as much in his State of the Union speech in February 2013. The process of 3D printing uses digitalized models to create actual objects in the real world, layer by layer. 3D printing should soon make it possible for anyone to print virtually any object in the right size and the exact dimensions needed. This has the potential to completely change our current merchandise management system, which would then only require transporting the print data rather than actual products.

Three dimensional printing was originally used in manufacturing for the production of prototypes and temporary models. Yet this technology has rapidly advanced in recent years. The following are some pertinent examples of what 3D printing can do today: custom-fit shoes, ticking clocks, functional batteries and roadworthy cars; all designed on a computer and printed in 3D. It is even possible to reproduce a wide range of complex shapes using scanners. There is also hope of being able to reproduce human organs in future – prostheses and implants are already being printed in 3D.

#### II. Advantages of 3D printing technology

Much is expected of the relatively new field of 3D printing. The advantages of this technology over standard processes are obvious: Alongside individual, custom-fit design opportunities, objects can be produced at short notice and as needed using 3D printing. It thus cannot be excluded that 3D printing could revolutionize the established model of industry. Existing high-end devices are already capable of scanning objects and reproducing low volume production runs. If 3D printing truly lives up to its potential, it could open up major opportunities for growth in as-yet minor sectors, which could even produce pioneers of the burgeoning economic segment. What’s more, it would make devices in the private sector increasingly affordable. So the technology could have significant implications for home use as well as the mass market.

#### SSPA product type

Tracker certificates (1300)

#### Currency: Valor / SIX Symbol

CHF: 22988011 / PRTCH

EUR: 21025522 / PRT3D

USD: 22988010 / PRTUS

[www.ubs.com/3DPrint](http://www.ubs.com/3DPrint)

#### Solactive 3D Printing TR Index



As of: April 23, 2015, Source: Bloomberg  
Past performance is not indicative of future performance.

#### Investor profile

Solutions for investors with experience in stock market topics and structured products and with a medium to increased risk tolerance who would like to participate in the performance of the equities included in the index at little capital and administrative expense.

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### III. Current 3D printing processes

The current 3D printing processes differ primarily based on the materials used. The workpieces produced are generally constructed with the aid of physical or chemical hardening or smelting processes. For example, pulverized metals can be "baked" together layer by layer using selective laser smelting and electron beam smelting. Similarly, objects can also be constructed from polymers and ceramics, not just metal, using a 3D printer. Using stereolithography, structures can be formed from liquid synthetic resins by means of a layered application and hardening process. Fused Deposition Modeling (FDM) works in a similar manner, liquefying plastics and sometimes synthetic resins using heat and applying these on top of each other, layer by layer, at the desired position.

### IV. The product solutions

The UBS Open End PERLES on the Solactive 3D Printing Total Return Indices track the performance of the underlying index, which reinvests any net dividends from index members after deducting the management fee of 1.00 percent without limited maturity.

	CHF-Tranche	EUR-Tranche	USD-Tranche
<b>Issuer</b>	UBS AG, London Branch	UBS AG, London Branch	UBS AG, London Branch
<b>SSPA product type</b>	Tracker certificates (1300)	Tracker certificates (1300)	Tracker certificates (1300)
<b>Conversion ratio</b>	1:1	1:1	1:1
<b>Management fee</b>	1.00% p.a.	1.00% p.a.	1.00% p.a.
<b>Expiry</b>	Open End	Open End	Open End
<b>Underlying (Currency)</b>	Solactive 3D Printing Total Return Index (CHF)	Solactive 3D Printing Total Return Index (EUR)	Solactive 3D Printing Total Return Index (USD)
<b>Issue price</b>	CHF 182.00	EUR 100.00	USD 193.57
<b>Listing date</b>	16 December 2013	28 March 2013	16 December 2013
<b>ISIN / SIX Symbol</b>	CH0229880114 / PRTCH	CH0210255227 / PRT3D	CH0229880106 / PRTUS

### V. Transparent index process

Based on the specifications of the index provider Solactive AG, the Solactive 3D Printing Total Return Indices target the pioneers in the 3D printing industry. Only companies that meet several quality standards are included on the shortlist. Every index member needs to demonstrate that a significant share of its business is focused on the 3D printing sector, or that the company is currently developing its own 3D printing division with the potential to bring in a major share of overall revenue.

The concept of the indices also takes account of the dynamic environment of this highly innovative business segment, as at present no-one knows what direction the developments of 3D printing will take and which companies will ultimately dominate. The respective index concept therefore provides for a "fast entry" rule alongside the twice-yearly index adjustments, which take place in March and September: This ensures that stock companies can be incorporated in the index at any time, e.g. immediately after an initial public offering, provided they meet the quality standards.

This also means that the equities of each company have to be listed with an exchange that grants trading access to foreign investors without restrictions. Furthermore, to be included in the index, market capitalization must amount to at least 50 million US dollars and the average daily trading volume for the past three months must amount to at least 250,000 US dollars for reasons of liquidity. When the index is adjusted, all index members are weighted equally, whereas companies with a market capitalization below 250 million US-Dollar are capped at 2.5%.

## VI. Members of the Solactive 3D Printing Total Return Indices

Company	Country	Market capitalization (in USD)	Weighting
Organovo Holdings Inc	United States	0.42 bn	13.23%
3D Systems Corp	United States	3.42 bn	13.10%
Proto Labs Inc	United States	1.95 bn	12.44%
Autodesk Inc	United States	14.12 bn	11.58%
Materialise NV	Belgium	0.32 bn	11.40%
Arcam AB	Sweden	0.31 bn	11.39%
SLM Solutions Group AG	Germany	0.35 bn	11.00%
Stratasys Ltd	United States	2.73 bn	10.65%
voxeljet AG	Germany	0.16 bn	2.66%
ExOne Co/The	United States	0.22 bn	2.54%

As of: April 23, 2015, Source: Solactive (the current index composition and weighting is published daily on [www.solactive.com](http://www.solactive.com))

## VII. Opportunities

- Equity-linked participation in the growth potentials of the 3D printing industry.
- Transparent and targeted index structure that can also add new index members at any time ("Fast Entry" rule) in order to react quickly to the development dynamics in the 3D printing sector.
- The selection of index members from the 3D printing sector, to which special growth potential can be assigned is carried out by the index provider Solactive AG.
- Diversification within the 3D printing sector through several equities with a regular index review twice a year.
- Tradable every trading day under normal trading conditions.
- No fixed term restriction.

## VIII. Risks

- No capital protection: investors run the risk of losing their investment if the price of the underlying index worsens.
- The 3D printing sector is a relatively young economic sector and it is not yet certain whether it will fulfil its expectations and which companies will actually succeed.
- Investors bear the issuer risk and could lose their investment if the issuer files for bankruptcy.
- The issuer intends to ensure liquidity in normal market phases on trading days. However, investors should realize that they may not be able to buy / sell the product at any point in time.
- As the stocks included in the index may be listed in different currencies and the product does not have any currency hedges, the investor may also be exposed to an exchange rate risk, which may adversely affect the value of the product.
- The issuer has the right to terminate the product if certain conditions are met. See the termsheet for details.

## IX. Contact

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