

Industrial Trends of 3D Printing Technology

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Abstract

The basic principle of the product manufacturing technology using the 3D printing technique materializes the material including the high molecular substance or plastic and metallic dust, and etc. the product into the laminate additive manufacturing according to the design diagram gradually. It is applied to the various industrial field including the field of food division, field of home appliances, field of medicine, field of mechanical department and construction, etc.. The global development case of 3D printing technique is the next. This study described global technology and market trends. Afterward, 3D printing technique manages the important role when it exceeds the product manufacturing view just and is grafted with the various technology including the biotechnology, nanotechnology, and etc. and it improves the quality of the human life.

Keywords: 3D printing, manufacturing, product, new distribution service, future consumption market

1. Introduction

The basic principle of the product manufacturing technology using the 3D printing technique materializes the material including the high molecular substance or plastic and metallic dust, and etc. the product into the laminate additive manufacturing according to the design diagram gradually [1]. It is applied to the various industrial field including the field of food division, field of home appliances, field of medicine, field of mechanical department and construction, etc.[2]. The global development case of 3D printing technique is the next.

2. Global Technology Development Trend

Commercialization steps provide an easy way to summarize the global residential development practices is as follows.

- Applied Research Laboratory (U.S.) applies 3D printing technique the next generation cosmic ray part and hardware including rocket engine, etc. are developed.
- SHAPEWAYS (U.S.) applies 3D printing technique When the battery was manufactured with the prototype[3].
- In 'CES 2013', The CUBIE PI opens 3D printer cube-X and the second generation cube. Because it can download directly, the original copy design in the computer because the size is small and there is the

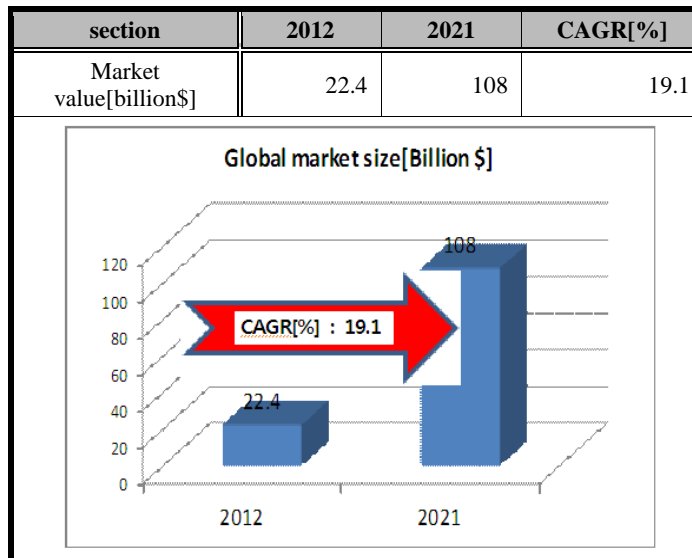
- WiFi function, this is the business field gets attention product [4].
- NBC is reported Canada's one male to make 3D printer into 22 aperture rifles for 3 days and succeed in the launch [5].
- In United Kingdom, the method manufacturing the aircraft parts with the titanium by applying 3D printing technique is developed.
- The CUNICODE (Spain) design company provides the innovative service making the cartoon for education of children or figure with figure by using 3D printer. And it makes the various product including the camera, bicycle and airplane, etc.[6].

3. Global Market Trends

3-1. Market Value

The global market tendency of 3D printers was recorded 2.204 billion dollars in 2012. And it reaches to 10.8 billion dollar scales in 2021. Industrial 3D printers is introduced over 25% of the world manufacturer by the year 2018 it will be purchasable for enterprise 3D printer in 2,000 dollar or less it is 2,016[7][8]. The global 3D printer market transition is shown in Table 1.

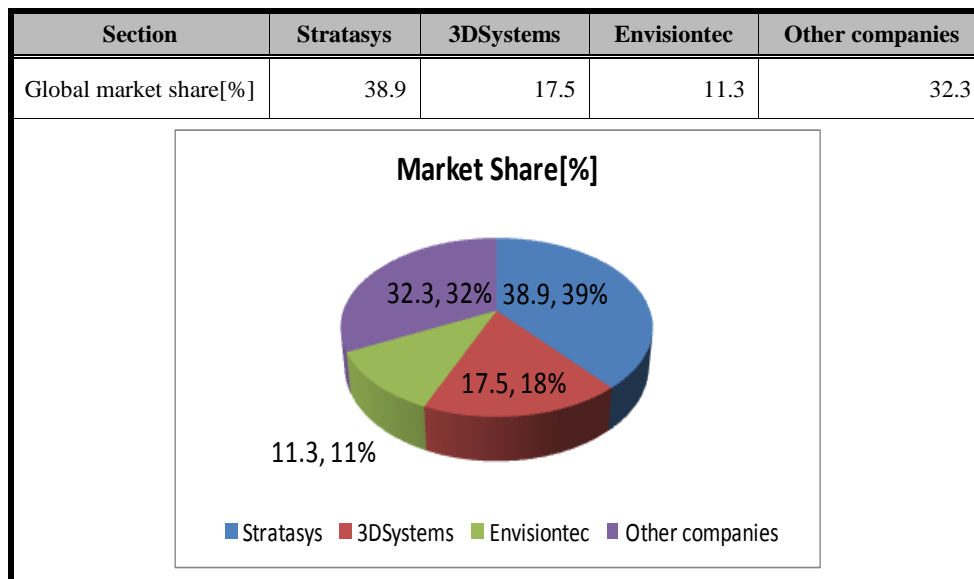
Table 1. Global Market Trends of 3D Printers



3-2. Percent of Total Market Revenues

Enterprises including Objet, Envisiontech and Beijing Tiertime, etc. is excluded among the higher rank 10 large enterprise leading the market share transition industrial 3D printing global market and the American enterprise shows altogether the highest occupancy of 64.4%[9][10].

As to the industrial 3D printer global market occupancy, stratasy of 1 the upper part, 3DSystems has after 17.5% and Envisiontec with 38.9% with 11.3% and the total occupancy of the other businesses records 32.3%. Global Market Share of 3D Printers is shown in Table 2.

Table 2. Global Market Share of 3D Printers

4. Conclusion

The diffusion of the 3D printing technique leads to the reform of the products design which is difficult to make as the design in which the structure is complicated or which the inside is vacant with the existing method of production. Additionally, the competitiveness of the global manufacturing industry is reorganized. And the big goods like the airplane will be able to be printed with 3D printer in the long term.

3D printing technique can be connected to the super fine manufacturing technique which is grafted with the MEMS technique and produces the product of the micrometer (μm) unit. It will be abundant but the existing manufacture (production) technical field is exceeded and the technological barrier which 3D printing technique has to exceed in the domestic market until it is commercialized shows the new possibility [11].

Afterward, 3D printing technique manages the important role when it exceeds the product manufacturing view just and is grafted with the various technology including the biotechnology, nanotechnology, and etc. and it improves the quality of the human life. 3D printing technique diffuses the new distribution service business through the reform of the manufacturing industry and will have been diversifying the future consumption market.

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References

- [1] <http://phys.org/news/2013-05-revolution-dimensions-explore-d.html>
- [2] "3D Printers, the Next Generation of Manufacturing Innovation-Driven Prospect", A Weekly Technology Trends, NIPA, 2013. 3. 20.
- [3] "3D Printer Made Rifles Percussion Success, Then ...", MONEY TODAY, 2013. 7. 28.
- [4] "Domestically, 3D Printer Market Expansion", IT Convergence System, Vol.36, NIPA, 2013. 3.
- [5] "3D Printer Made Rifles Percussion is Successful, and then...", MONEY TODAY, 2013. 7. 28.
- [6] "3D Printing and the Future", WIPO MAGAZINE, No.2, 2013. 4.

- [7] "3D Printing(printer, material) Market & Technology, Domestic and Foreign Participation in Companies Business Strategy", IRS global, 2013. 7.
- [8] "The 3D Printer Market Scale in 2012", Wohlers Associates, 2012.
- [9] Chang Woong-sung, "Revolutionized the Manufacture of 3D Printing in Metal Industry's Response Strategies", PD ISSUE REPORT, Vol.13-6, KEIT, 2013. 6.
- [10] "Artificial blood vessels created on a 3D printer", BBC, 2011. 9.
- [11] Hong Il-Sun, ""The Changing Concept of 3D Printing, Manufacturing", LG Business Insight_Weekly Focus, LG sangnam library, 2013. 4. 17.