3D printing becomes increasingly popular

The new technology booms in China as companies make rapid advances

By **MA SI** and **CHENG YU**

Medical, automotive, machinery, consumer electronics, aviation, toys, home decor, even art ... it appears there is not an industry, sector or field of human endeavor in China that has not been touched by the revolutionary three-dimensional, or 3D, printing technology yet.

It has helped create things like clothing, houses, sculpture, tumor models, machine parts, even drones.

Take for instance the patient who underwent a brain surgery in Beijing recently.

The operation was unconventional, almost science fiction-like, to say the least. Yet, it was real. And successful.

At the end of it all, his brain was covered with ReDura, a 3D-printed membrane, by experts at Peking University Third Hospital.

ReDura is a product of Medprin Regenerative Medical Technologies Co, a Guangzhou-based 3D-bioprinting company.

Yuan Yuyu, chairman of Medprin, said: "Brain surgery incisions used to be covered with membrane made up of animal-sourced materials, which exposes patients to risks of disease transmission.

"It also takes a long time for these animal tissues to be fully integrated into patients' own tissues, which prolongs suffering," he said.

ReDura has received the approval of the China Food and Drug Administration and gained acceptance in the European Union.

It is just the tip of the 3D printing iceberg.

Chinese companies have made rapid advances in 3D printing technology, whose formal name is additive layer manufacturing.

Progress spans both fundamental research and manufacturing techniques. Different from traditional manufacturing, which is based on the removal of material by cutting and drilling, 3D printing creates objects by consistently laying down materials, such as wax, metal and polyurethane, based on virtual blueprints from computer-aided designs.

One impressive example in the aviation sector is the C919, China's first large passenger jetliner, which has 3D-printed components that help reduce its weight and shorten the delivery schedule. The big plane made its maiden flight earlier this year.

Wang Peng, secretary-general of the Additive Manufacturing Alliance of China or AMAC, said after years of development, 3D printing is entering a new phase in China, from an innovative concept to something quite helpful in upgrading manufacturing plants, hospitals and even classrooms.

"3D printing is booming. We have cultivated a relatively good industrial system, with manufacturing techniques close to, or on a par with, leading foreign countries. The sector is leaping from laboratory research into industrial applications," Wang said.

Last year, the output value of China's 3D-printing industry hit nearly 8 billion yuan ($1.2 billion), up 87.5 percent year-on-year, highlighting the strong momentum, AMAC data show.

Beijing, Shaanxi, Guangdong, Hubei and Shanghai have formed a 3D industry chain in terms of geography, covering product design, material, key components, equipment and industries applications. Northwest China's Shaanxi province has applied for over 1,000 3D printing-related patents.

"The technology represents the future direction of intelligent manufacturing as it combines the advantages of large-scale production with personalized manufacturing. It is highly efficient and cost-effective," said Zuo Shiquan, a manufacturing expert at the Beijing-based China Center for Information Industry Development, a research institute affiliated to the Ministry of Industry and Information Technology, or MIIT.

China's 3D-printing industry is expected to reach $7.68 billion in output value, or one-third of the global market by 2020, according to a forecast by the China Industry Information Institute.

The MIIT is drafting a 2017-20 plan to accelerate the development of 3D printing. It established the National Innovation Center by forging extensive partnerships between universities and companies. The idea is to help address technological bottlenecks that impede commercial applications of 3D printing.

Not surprisingly, companies such as Shining 3D Tech Co, a Hangzhou-based 3D-printing specialist, are optimistic about the sector.

Shining has already provided 3D printing and scanning services to over 10,000 customers worldwide. Its clients include global corporate icons such as Intel, Robert Bosch and Adidas.

Huang Xianqing, senior vice-president of Shining 3D, said 3D printing can meet consumers' growing demand for environmentally friendly and personalized products.

The company has successfully applied its 3D printing techniques to manufacture exhaust pipes for Ford cars. Different from traditional exhaust pipes whose simple design leads to bad air flow and huge power loss, the company's 3D-printed pipes, weigh 67 percent less. They can also help vehicles change airflow speed of the car engine, which saves energy.

Earlier this year, Shining partnered with US tech company Hewlett-Packard to offer better 3D printing services. The two sides will deploy HP 3D-printing hardware and software in 50 locations across China, including Beijing, Shanghai, Guangzhou, Chengdu and Nanjing.

It is not just high-tech segments that are embracing 3D printing. In Beijing's suburban Huairou district, Chinese engineers in an economic and development park are scrambling to make 3D printers that can churn out household items.

The engineers are employed by about 300 companies in the zone, among which is Beijing Tiertime Technology Co, China's first 3D printer exporter.

Tiertime Tech sells tens of thousands of 3D printers to more than 40 countries every year. Its 150-plus staff print products that range from toys and cartoon figures to mobile phone shells and home decor.

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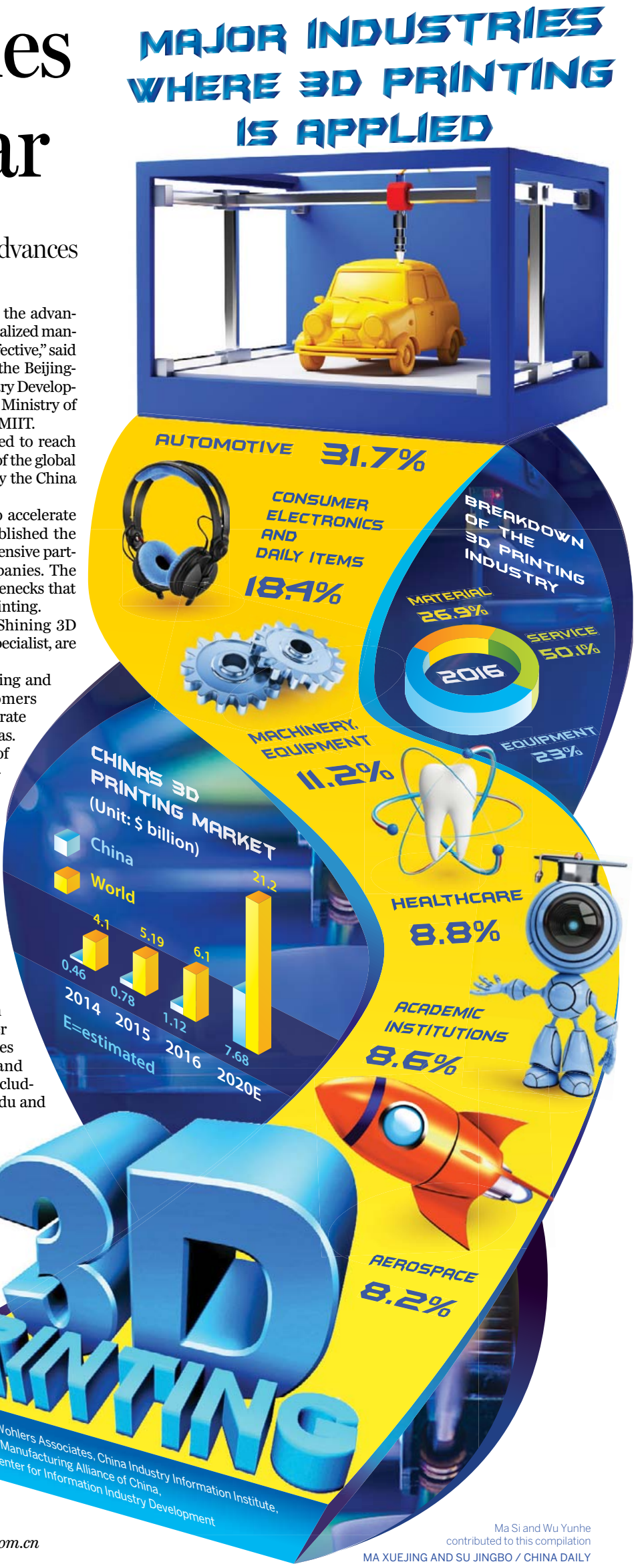

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