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Pioneering Study on 3D Printers

The equipment that creates a solid based on three-dimensional CAD data is referred to as 3D printers, as opposed to common printers which print on paper. Today, 3D printers have become widely used, from business use to home use, but the roots are the stereolithography invented by H. Kodama in 1980. Stereolithography is a method in which a resin is cured at a point by irradiating the resin with ultraviolet rays. In 1981, the world's first paper on 3D printer was published in the IEICE journal.

It took more than 10 years to actually put it to practical use. Recent developments of 3D printers have been remarkable, and have brought about innovations in craftsmanship in various fields, e.g., medical care, design in addition to manufacturing—home electrical appliances and automobiles. Recently, as molding methods have become diversified, not only plastics but also metals have been used as materials, and areas of application have been expanding.

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Highly Dependable Reed Switches

The reed switch is a device where a pair of magnetic bodies is encapsulated into a glass with a diameter of several milliamperes and a length of one centimeter to several centimeters. When a magnetic field is applied from outside, the reed is magnetized and a N pole and S pole are generated at contact points and the said contact points contact each other, and then as the magnetic field is turned of, the points go off. This switch was mainly used for switching equipment; however, thanks to the development of low-power consumption electronic circuit, it has come into wide use for telecommunications interactions between mechanical parts and electronic circuits.

For switch contacts, materials need specific properties—more dependable, low contact resistance, and causing no sticking. As a material to meet these requirements, the practical implementation of rhodium points had been developed, however, rhodium points had a problem—contact resistance increased while operating.

Therefore, T. Yokokawa, C. Kawakita, et al., examined the mechanisms of causing increases in contact resistance and eventually developed a surface treatment method to stabilize the surface of the point. Because of this, rhodium points read switches could be used for communication equipment, control devices, a variety of terminal devices, and electronic business equipment, thereby contributing to the development of relaying devices.