



DAIHATSU



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Daihatsu develops new technologies for sand molds using 3D printers
– New technologies contribute to shorter timeframes and lower costs for prototype parts production, while 100 percent of the sand can be recycled –

Daihatsu Motor Co., Ltd. (hereinafter, “Daihatsu”) has developed new technologies required for producing sand molds using 3D printers. Sand molds are used in the production of cast parts for engines and transmissions. These new technologies enable the creation of sand molds for iron parts—which was previously difficult—using a 3D printer. This has resulted in shorter timeframes and lower costs for prototype production of molded parts. In addition, 100 percent of the sand used in the process can be recycled.

Previously, production of cast parts required the creation of sand molds using wooden and metal molds. Molten steel, aluminum and other metals would be poured into these molds. However, the creation of wooden and metal molds required advanced techniques, while the length of time required and the recyclability of the sand used in this type of sand molded casting were also issues.

In recent years, progress has been made in the technologies used to create sand molds directly using 3D printers. However, the high temperatures of the molten material used for iron parts resulted in cracks in the sand molds, and the process remained difficult.

Daihatsu has developed new technologies wherein it applies a two-layer coating, which includes an acid catalyst, to the surface of the sand used for the sand mold (patents are currently pending). The company has succeeded in creating molds using artificial sand and the furan self-hardening process, which is characterized by high-speed curing at room temperatures.

Daihatsu’s new technologies solve the issue of the high temperatures of the molten material used for iron parts, and also shorten the time taken for prototype production. This has resulted in more uniform quality. In addition, the company’s technologies use existing 3D printers and artificial sand that is sold in large volumes. The versatility of the molding process has thereby increased, and 100 percent of the artificial sand can be recycled through recoating. This contributes to reduced running costs and a lower environmental impact.

Going forward, Daihatsu will continue to create high-quality vehicles at affordable prices. The company will continue to acquire new technologies, and thereby aim to increase its manufacturing competitiveness.