

3D Printing Empowers Students to Design Innovative Vehicles

Established in 2008, DSK International Campus (DSKIC) in Pune, India is a prestigious design campus and a joint venture between DSK Group of India and Institut Supérieur de Design Rubika of France (Rubika) under the supervision of the Chamber of Commerce and Industry of Grand Hainaut. DSKIC and Rubika provide professional training in animation, video game and industrial design driven by comprehensive coursework and an industry-centric approach to training through strong relationships with renowned companies such as Tata Motors, Decathlon, 3DPLM, Volvo and more.

DSKIC is committed to inspiring creativity and cultivating well-rounded designers with the help of advanced technologies in 3D printing, 3D animation rendering software, industrial CAD studio tools and thermoforming machines. With access to 3D printing, students create concept models and functional prototypes for applied research and design projects. 3D printing is also used for presenting designs in international exhibitions, design competitions and seminars.

"Local businesses are looking for smarter, more economic product designs and manufacturing since the government announced the Make in India and Skill India initiatives. It is important we equip students with knowledge and hands-on experience in the latest technologies that correspond with the industry standard," said Rattan Gangadhar, head of the digital design department.

Abstract Ideas Brought to Life

Hands-on 3D printing helps students better understand complicated design theories. What used to be abstract ideas can now be demonstrated with 3D printed components customized for tailored training. 3D printing also unleashes



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students' creativity in their research projects and in international competitions, including the SIAM Automotive Challenge in India, the 1-Design Award and Red Dot Award in Germany.

For the Red Dot Design competition, students had to build a two-in-one vehicle. A team of DSKIC students created the Gecko: a tent on wheels that doubles as a portage to provide shelter and carry goods for rock climbers on difficult climbs. The team was inspired by a gecko's feet that use tiny hairs and intermolecular forces to stick to surfaces. Students used this same technology on the Gecko, a complex design with irregular geometry.

Rather than use traditional methods like CNC machining, the team used CAD and 3D printing to prototype multiple designs. All of the parts, including the headlights and taillights, were printed with Stratasys production-grade ABSp/

us™ thermoplastic, so students could perform functional tests while the vehicle was moving. The team 3D printed a functional, concept model with little lead time. After rounds of test prints and iterations, the vehicle design was finalized, detailed with laser-cut accessories and painted with a canvaslike texture.

"The 3D Printer enabled us to build strong and durable parts in an efficient manner, saving us time and resources to focus on improving the design of the Gecko," said Gangadhar, project leader of the Gecko.

Investing in Innovative Designing

The 3D printer at DSKIC is also useful for teachers and students building models with unique shapes and innovative designs, such as an X-car with rotating wheels. "It would have been very difficult to produce the X-car because of the delicate frame and wheels. But 3D printing made it easy for us as we split the model in two halves and printed them with high accuracy so that they can be snapped together," said Gangadhar.

DSKIC's visionary move to implement 3D printing into its coursework has opened the eyes of its students to innovative designs in transportation, manufacturing and digital design as prototyping becomes more cost-effective and efficient. Today, students from various departments regularly use the 3D printer to fine tune their designs and compete in some of the most prestigious design challenges in the world.

"3D printing has motivated students to be as creative as they can be and given them a great tool to visualize their designs without much hassle. Seeing them keep experimenting is perhaps the most rewarding for instructors," said Gangadhar. [mtw](#)