

S'pore's first 3D car put together like Lego

The first car in Singapore made with 3D-printed parts was unveiled by Nanyang Technological University to take part in eco-race.

NTU Venture (NV) 8, one of two solar-powered cars built by students from Nanyang Technological University (NTU), will be competing in the shell eco-marathon Asia in Manila from Feb 26 to 28.

NV8 is the first car in Singapore made with 3D-printed parts. The cabin body consists of 150 parts that were 3D-printed and glued together with epoxy adhesive.

This single-seater solar-powered car was designed and built by NTU students from various engineering schools over a period of one year.

The other NTU car in the race is a torpedo-shaped vehicle that can mimic the tilting ability of motorcycles when turning a corner.

Both cars, built by 16 students, will compete against vehicles made by student teams from other countries in the annual eco-marathon race, which showcases car designs and fuel efficiency.

NTU declined to reveal the cost of building the two cars.

Parts printed in different locations

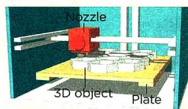
To complete printing within the time frame, the car parts were 3D-printed in different locations by NTU, other companies and institutions in Singapore.



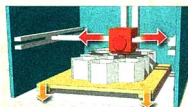
How 3D printing works



A blueprint of the 3D object is designed and downloaded into a 3D printer.



3D printing is an additive manufacturing process. The printer will add one layer at a time until the object is fully formed.



3D printers can use various types of plastic for printing. The printer will read the blueprint file, pull the plastic into a nozzle, melt it and deposit it in place. It will instantly cool.



A part being printed inside one of the 3D printers.

Silicon solar panels

Solar panels on the roof can generate 20 per cent of the electric power required by the car's 500-watt motor.

Honeycomb structure

150 3D-printed parts are glued together using epoxy adhesive to form the car cabin. Behind the 1mm-thick shell is a honeycomb structure that gives the body strength.



Door

NV8 has a sports car-like door that can slide out and move up. Part of it was 3D-printed.

Ventilation holes

Air is passed through these holes to keep temperatures in the car cool. The air then exits from the back.

Lithium ion batteries

The 120kg car can travel up to 60kmh and cover 11km using batteries and solar power.

Carbon fibre chassis

The car chassis has to be made of a stronger material for safety. Carbon fibre was chosen for its strength and lightweight qualities.