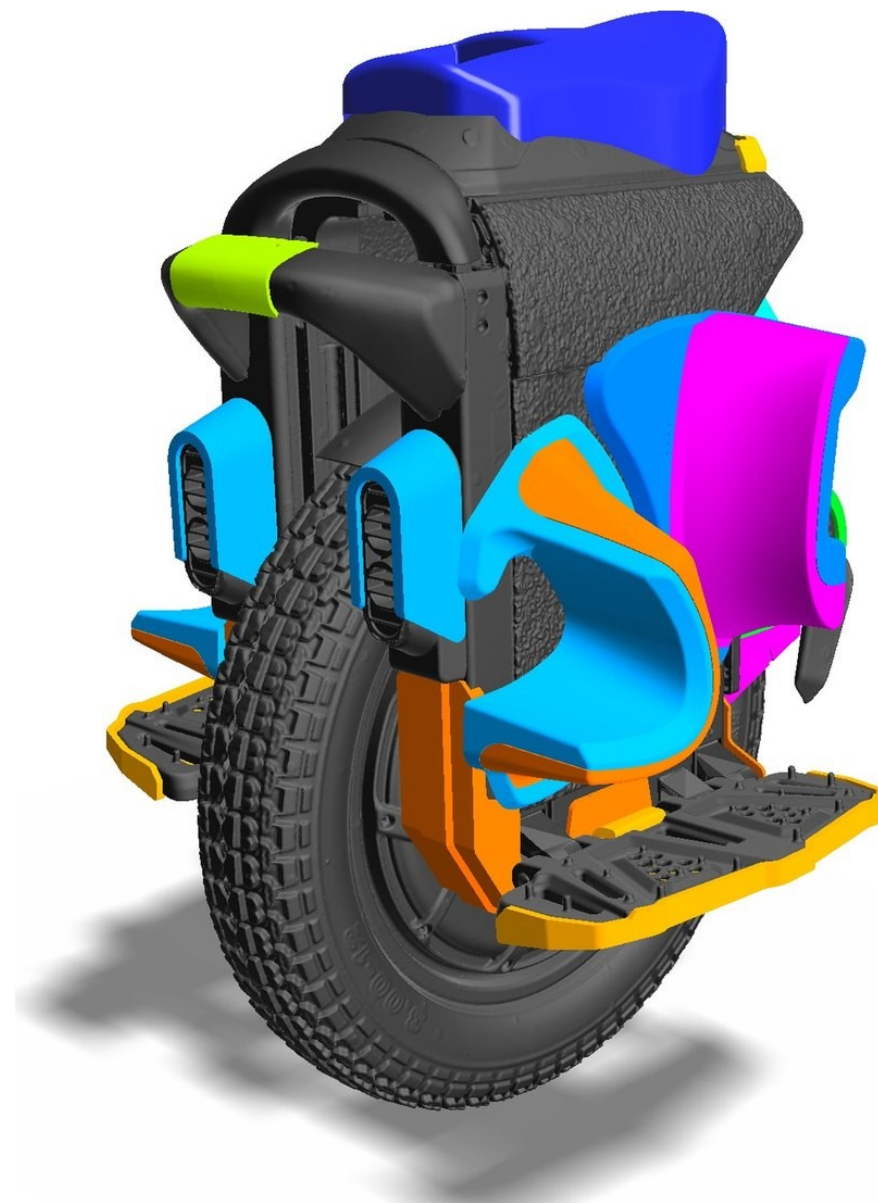


UNICYCLE

ACCESSORY SYSTEM



Protective and comfort accessories for an electric unicycle, designed on a complete 3D scan of the vehicle **and made to be 3D printed.**

Built using Autodesk Inventor

33 MILLION

Triangles
In the merged scan

10

Accessories
From seat to pedals

13 COMPONENTS

Reverse engineered
Battery pack, shock linkage and more

4

Power pads
Multi-color, 3D printed leg supports

5 PARTS

Laser cut and machined
For the aluminum stand

IN THIS DOCUMENT

01	Premise	03	05	Seat	09	09	Printing	14
02	The system	04	06	Bash guards	10	10	Finished set	15
03	Scan	05	07	Power pads	11			
04	Battery	08	08	Stand	13			

No manufacturer CAD was available, **so we scanned the vehicle and designed on it.**

01 SCAN

A Kingsong S16 Pro was 3D scanned, with reference markers on every surface.

02 MERGE

The separate scans were aligned and merged into one complete mesh of the vehicle.

03 REBUILD

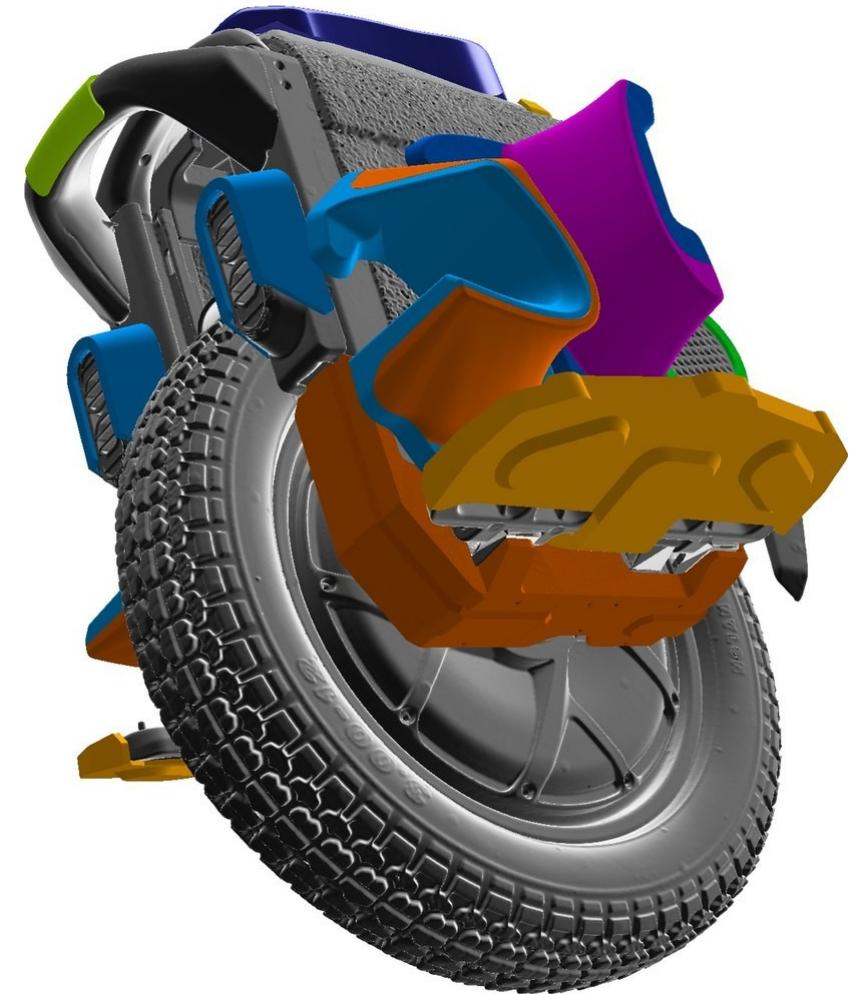
Core components of the unicycle were modeled over the scan data and reverse engineered.

04 DESIGN

The seat, guards, pads and stand were designed directly on the mesh, wrapping around the vehicle's own parts.

05 PRINT

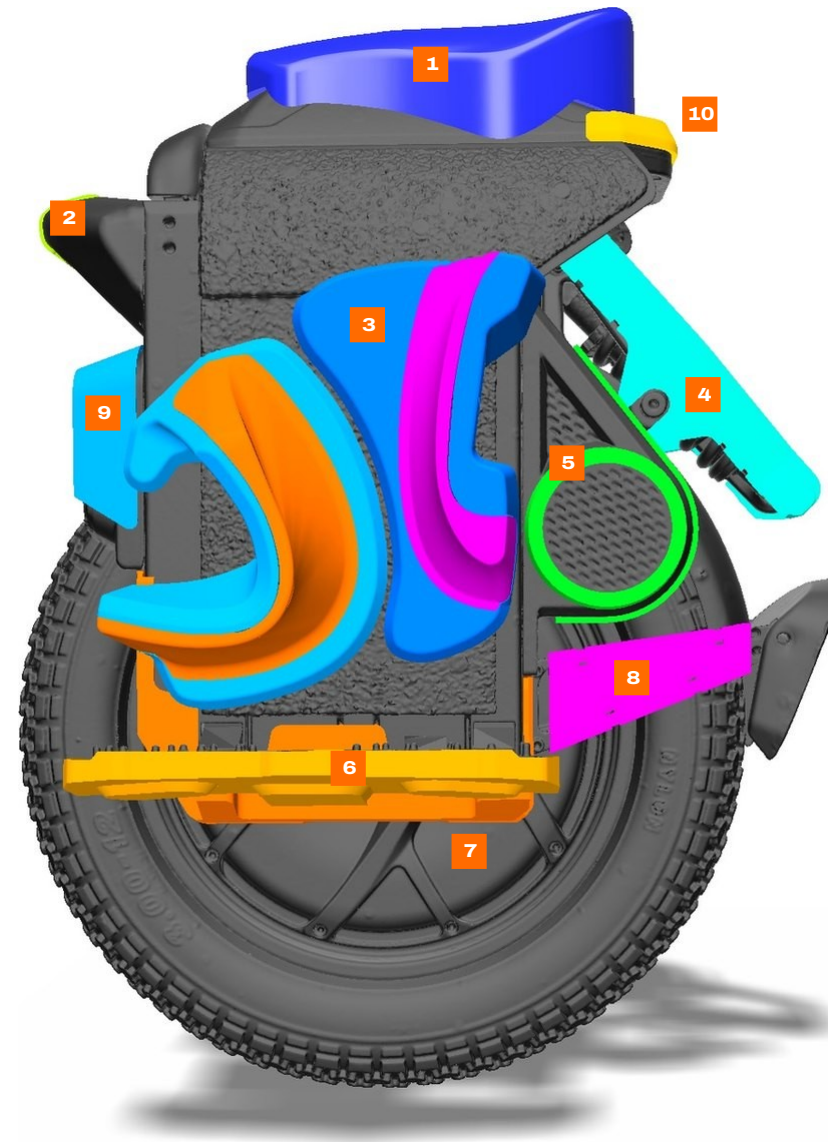
Everything but the stand was made to be 3D printed, then test-fitted on the vehicle.



TEN ACCESSORIES

The set covers the unicycle from the seat down to the pedals. All the parts were designed together on the same scan, so they fit precisely around each other on the shell.

- 1 Seat
- 2 Handle guard
- 3 Power pad set
- 4 Shock linkage guards
- 5 Speaker guards
- 6 Pedal guards
- 7 Lower bash guards
- 8 Mudguard link guard
- 9 Headlight guard
- 10 Controller cover guard



A FULL SCAN OF THE VEHICLE

The unicycle was scanned zone by zone, with reference markers stuck across every surface. The separate scans were cleaned up, aligned and merged into a single mesh, which became the reference for every accessory.

33

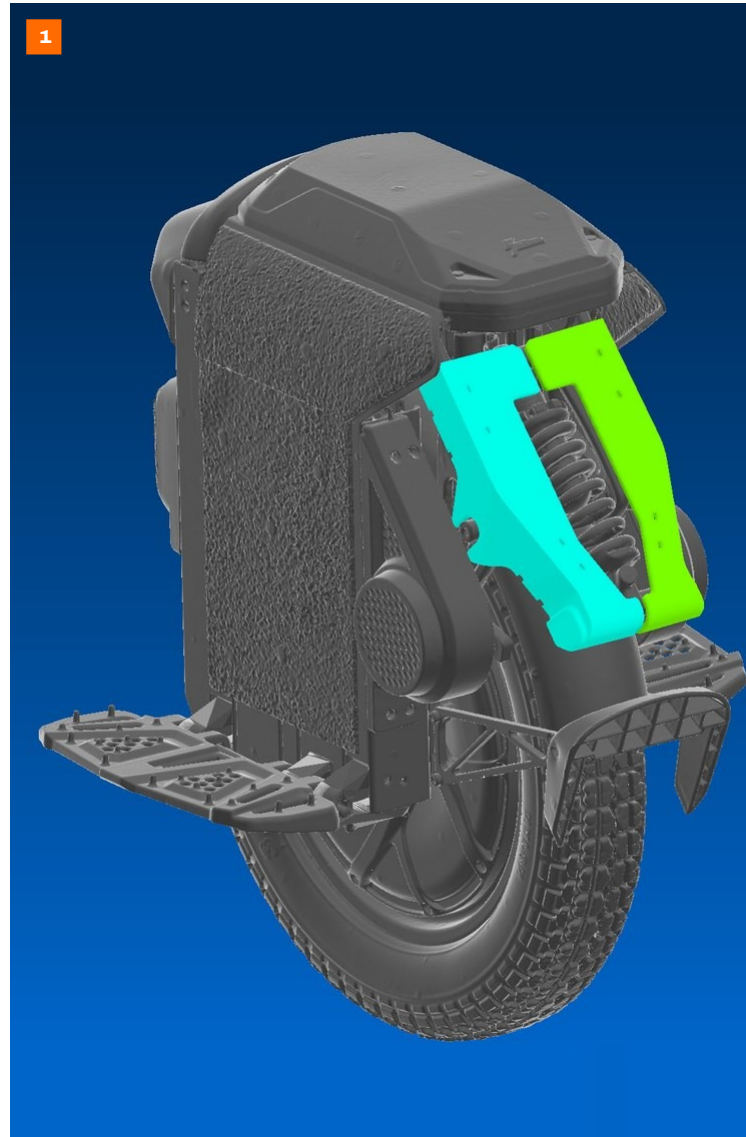
MILLION

Triangles in the merged mesh

1 Merged scan, with the shock linkage guards modeled

2 Scanning the topside

3 Scanning the underside



FROM MESH TO SOLID

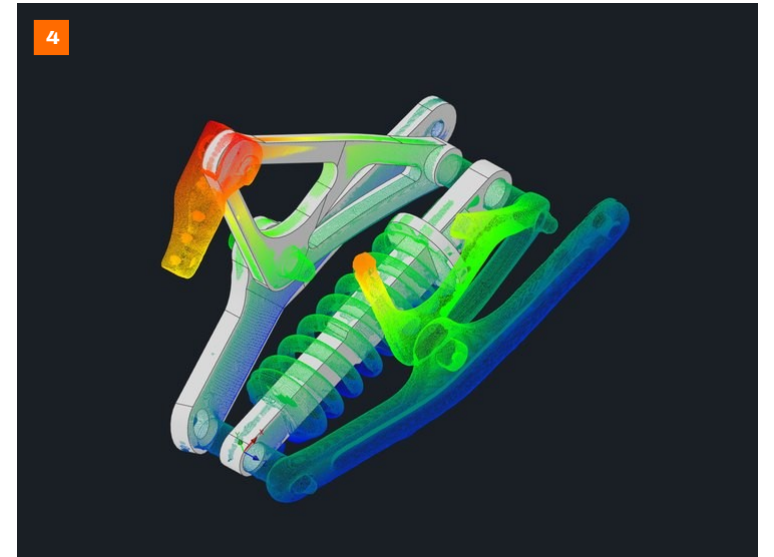
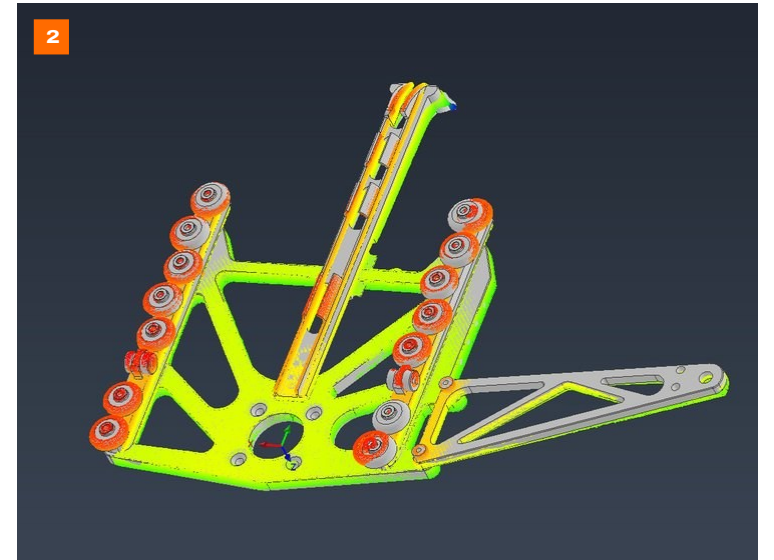
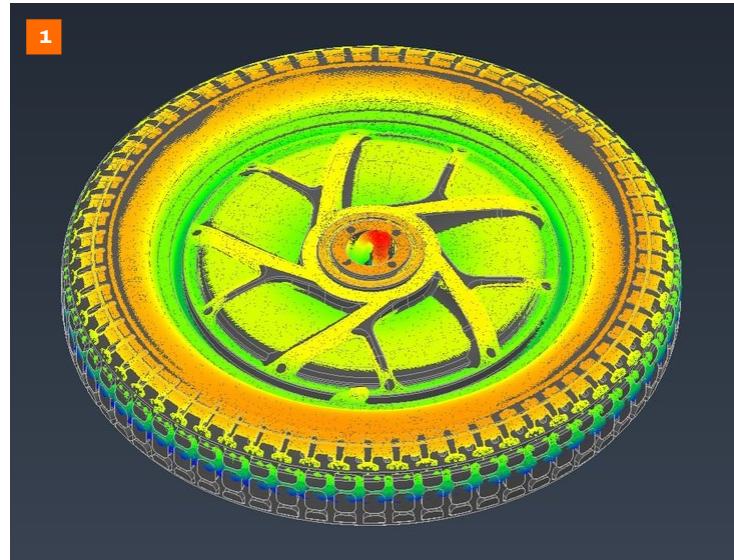
Core components of the vehicle were rebuilt as solid models over the scan. Color deviation maps compare each model with the point cloud, so every surface an accessory sits on was modeled for a close fit, with 3D printing tolerances in mind.

1 Hub motor and tire

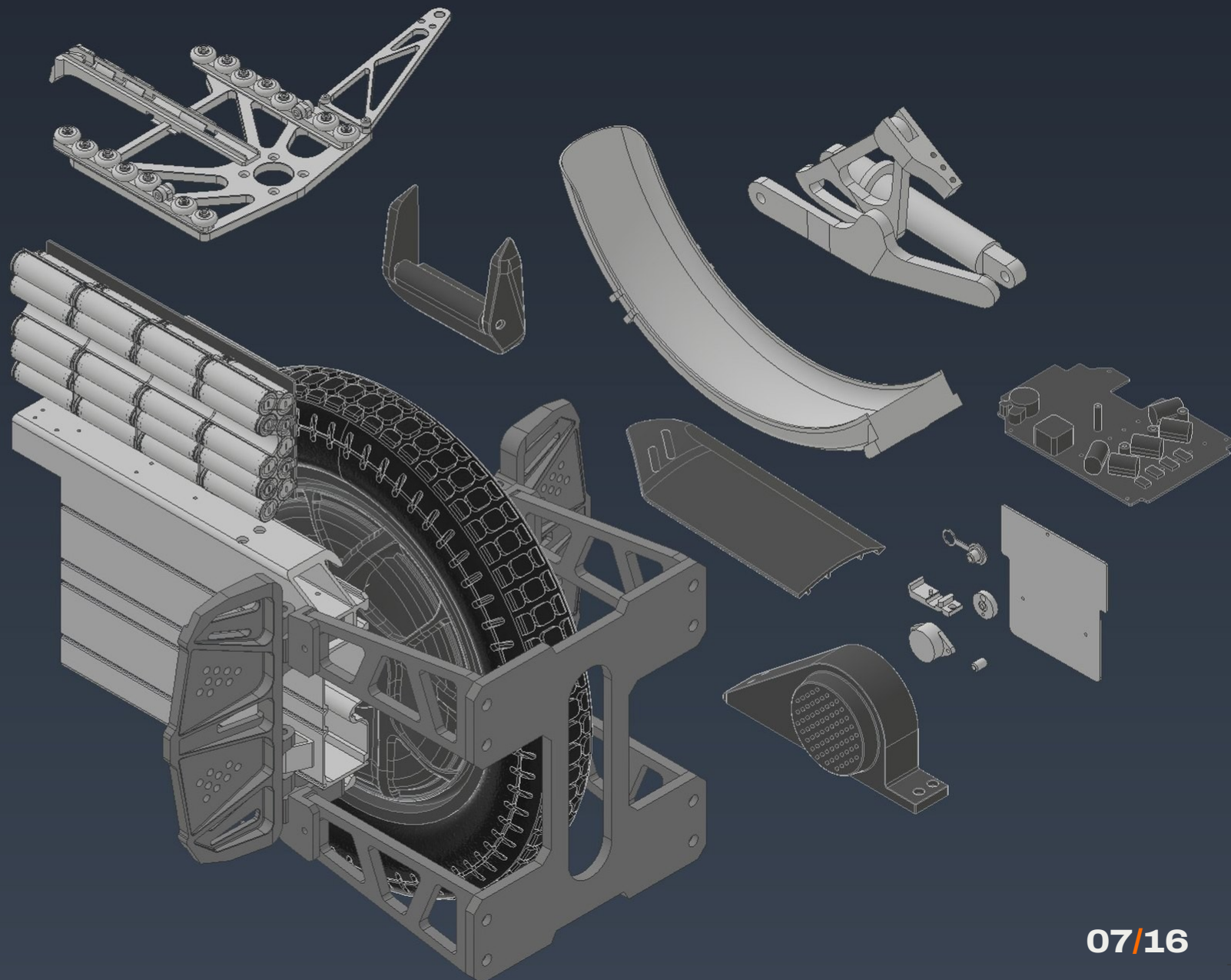
2 Sliding frame

3 Foot pedal

4 Suspension linkage

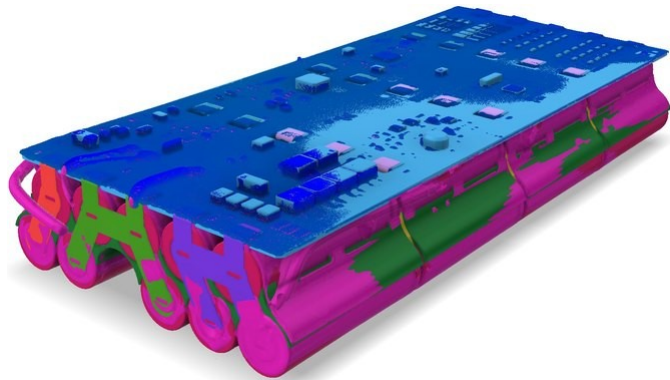


THE VEHICLE, MODELED FROM ITS SCAN



MODELED CELL BY CELL

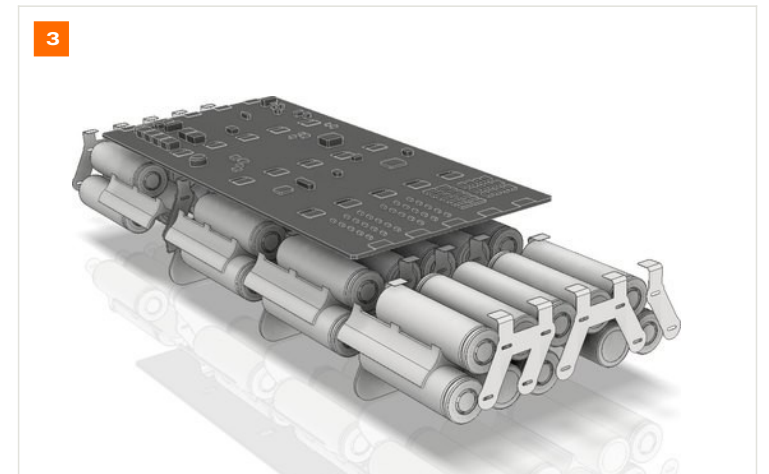
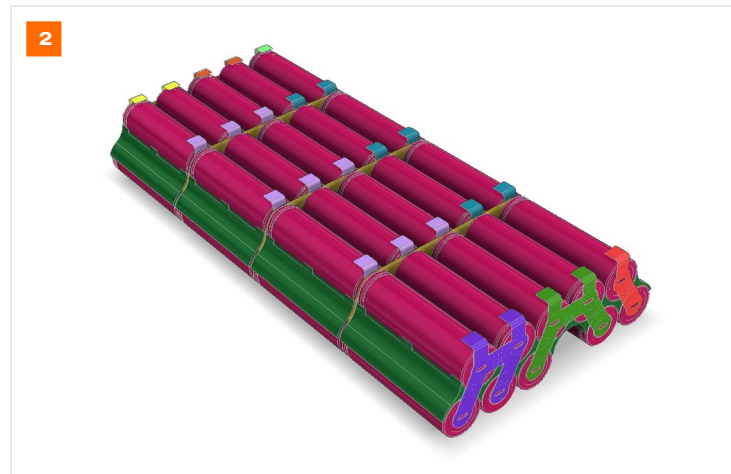
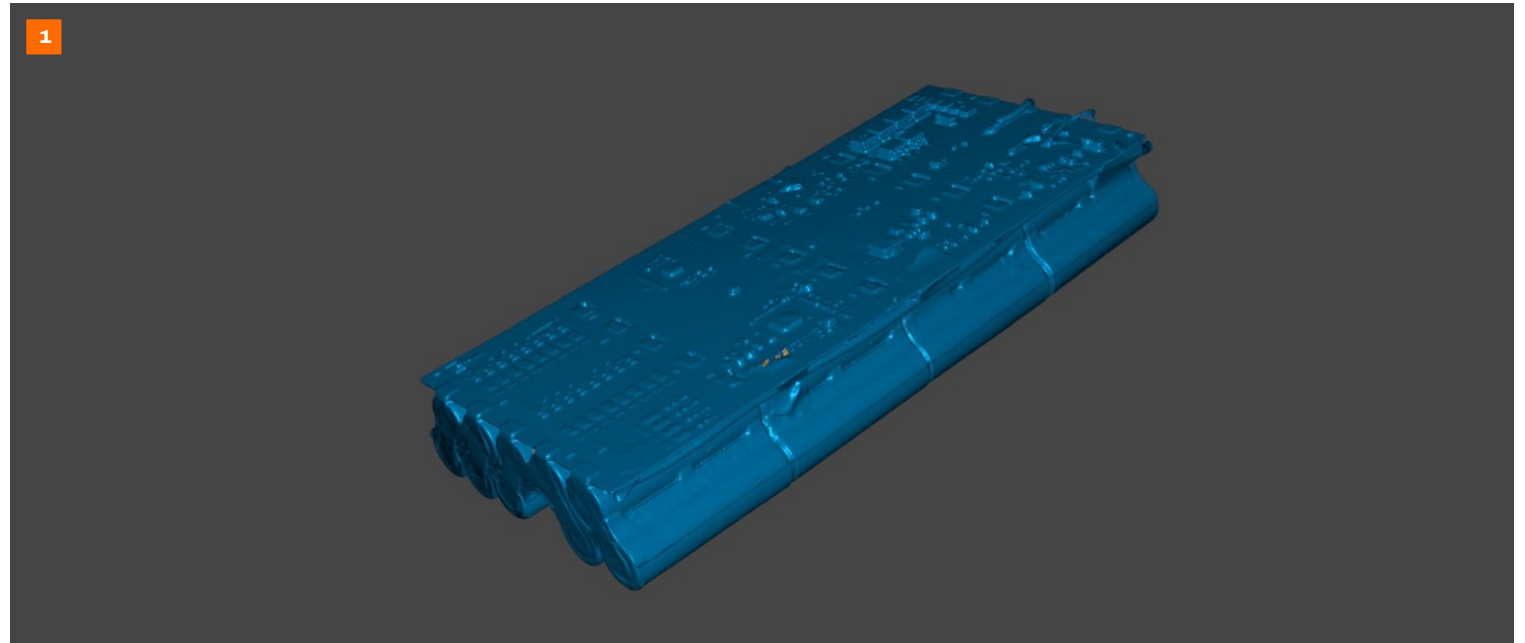
The battery pack was scanned separately and rebuilt in full, with its cells, board and connections. The result is a drop-in replacement design for building a new pack yourself.



1 Pack scan

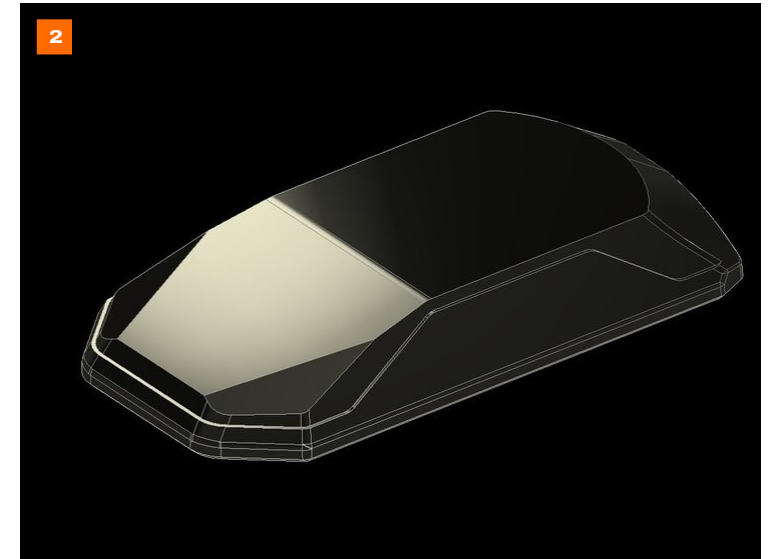
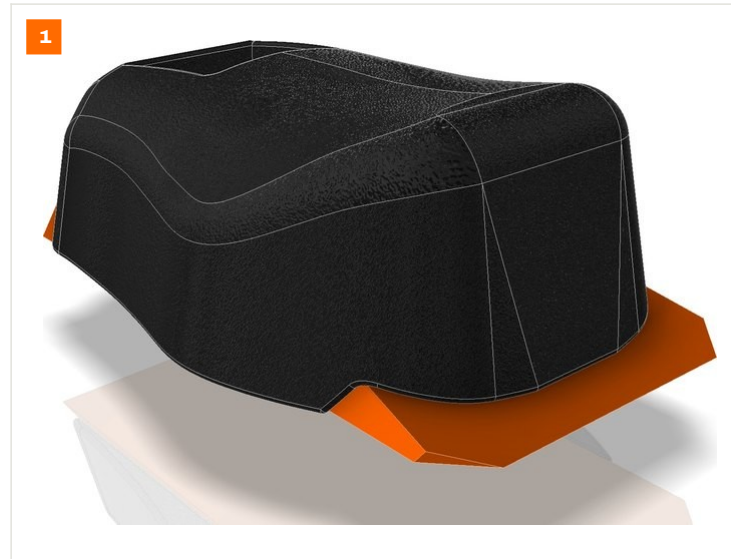
2 Pack model, part by part

3 Finished pack model



PRINTED SEAT, HELD BY VELCRO

The seat is printed in flexible TPU and shaped to the top of the shell from the scan. It attaches with Velcro, so it goes on and comes off without tools. Several firmness levels and infill patterns were printed and ridden to find the most comfortable set-up.



1 Seat on its base

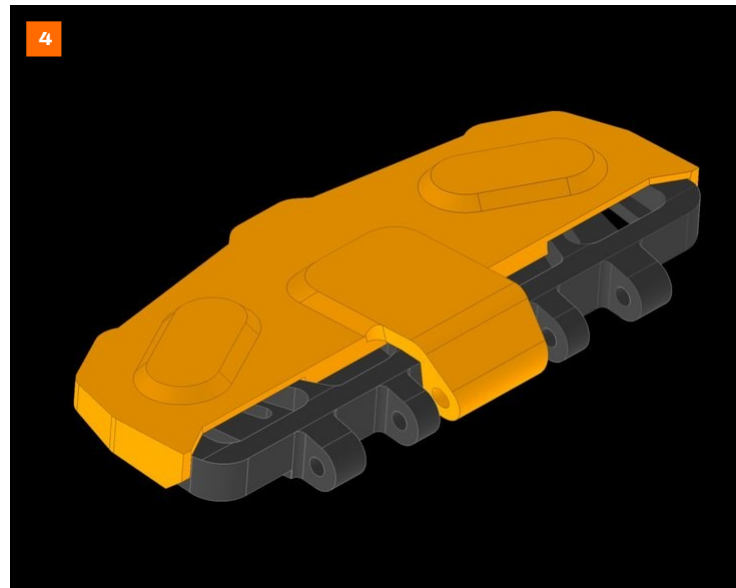
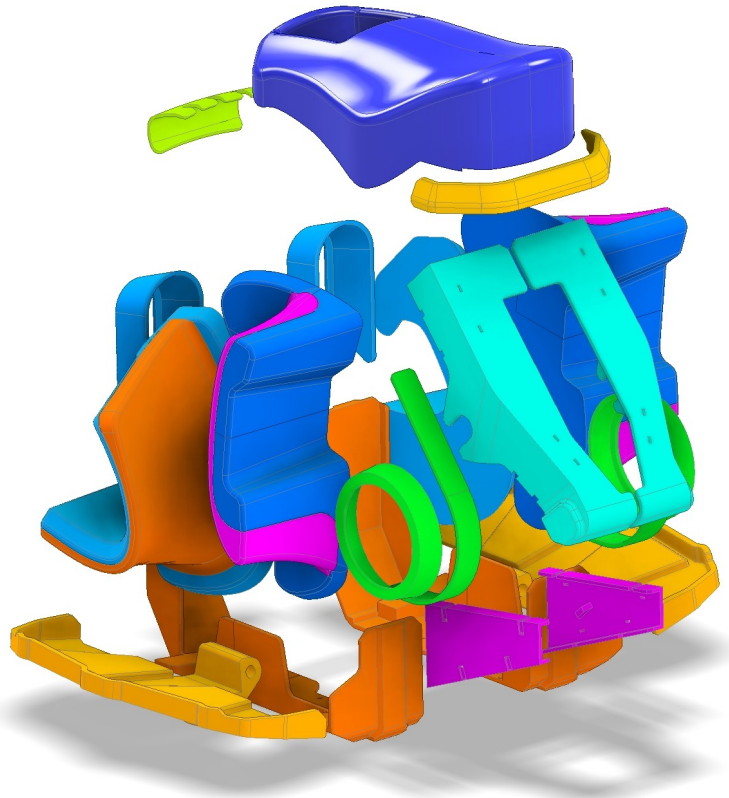
2 Seat shell form

3 Printed seat

4 Test fit on the vehicle

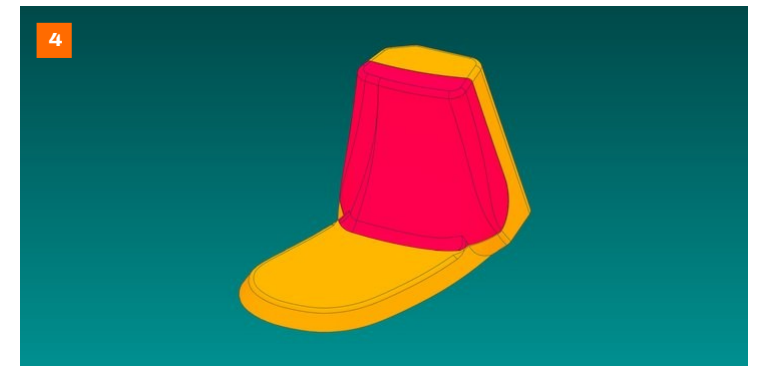
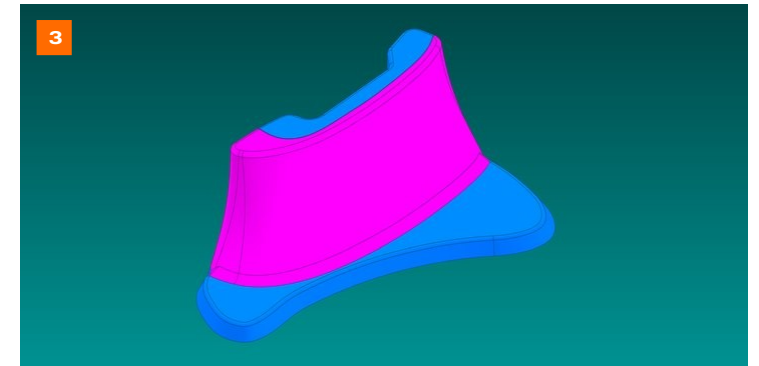
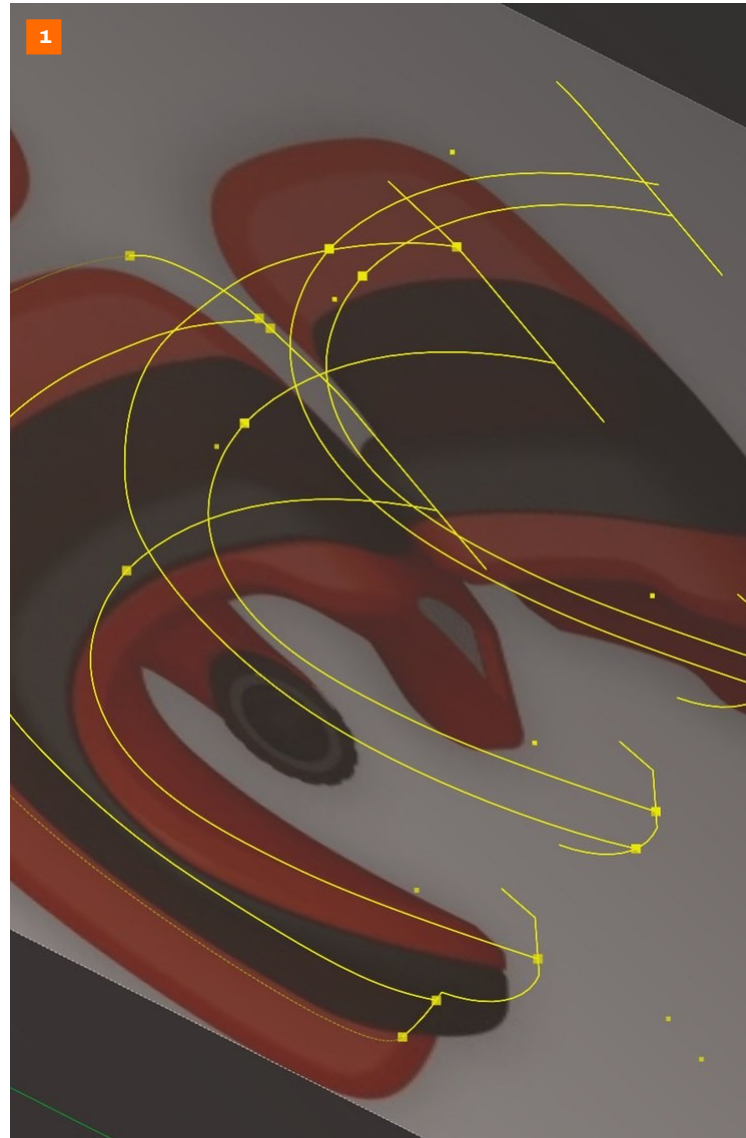
BASH GUARDS ALL AROUND

The guards cover the areas most likely to be hit or scratched: the lower shell, the pedal edges, the suspension linkage and the speakers. Each one sits tight against the shell, with just enough play to fit and align.



PADS FOR LEG SUPPORT

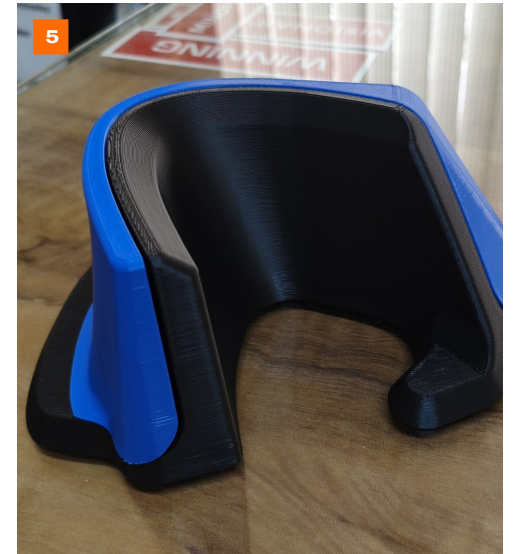
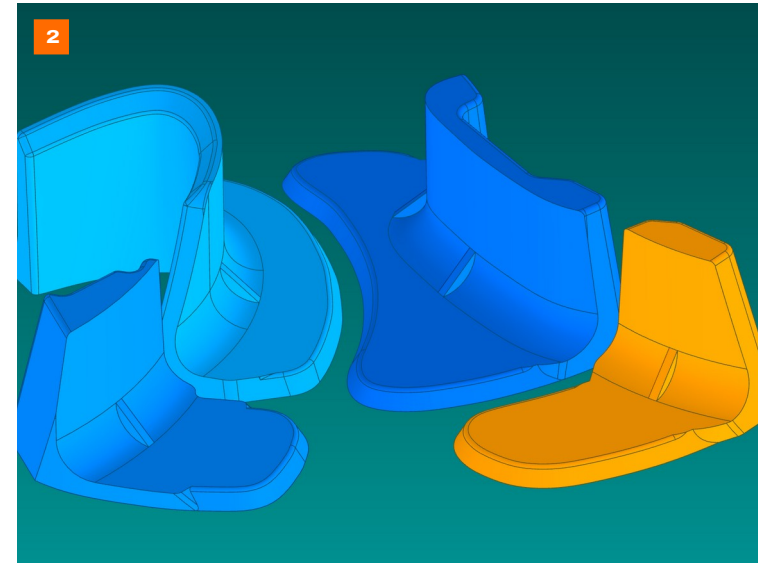
Power pads give the rider's legs something firm to brace against when turning and braking. The design is based on the *Grizzla Sync XL* pads: lines were sketched over reference images, then each pad was built as surfaces and fitted to the side panels with Velcro.





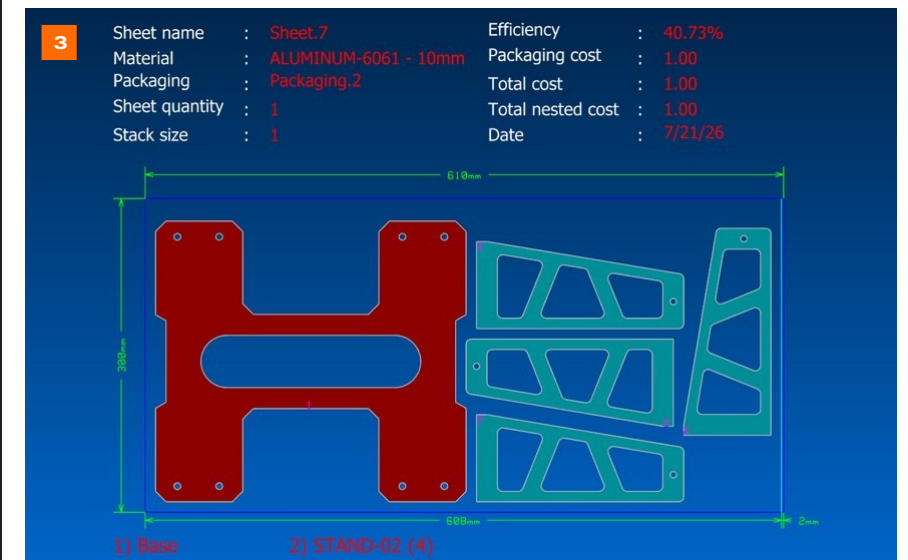
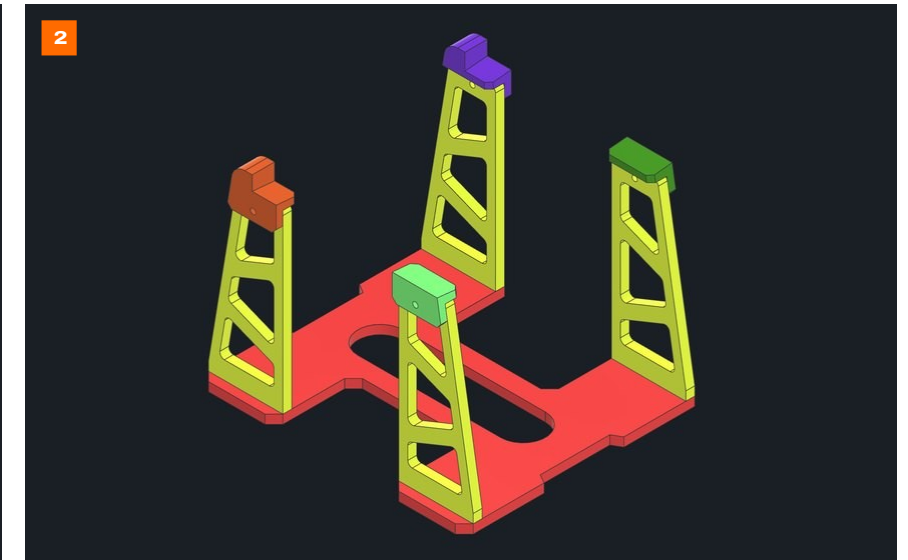
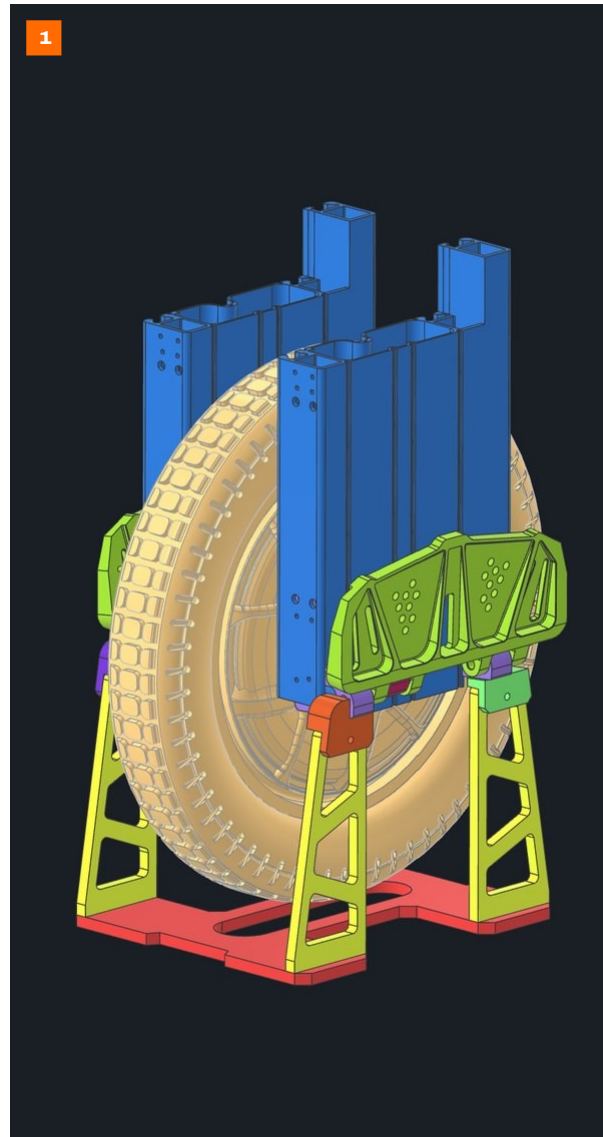
FOUR PADS, TWO COLORS

Each side carries four pads that lock together around the shell. The test prints were made in two colors: a blue cushion over a black base.



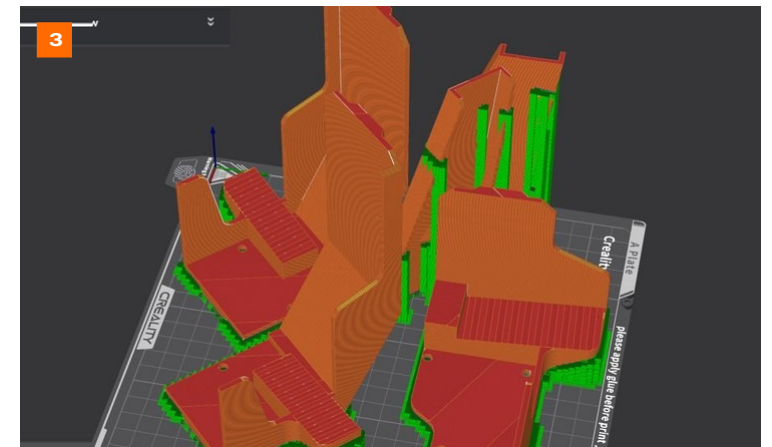
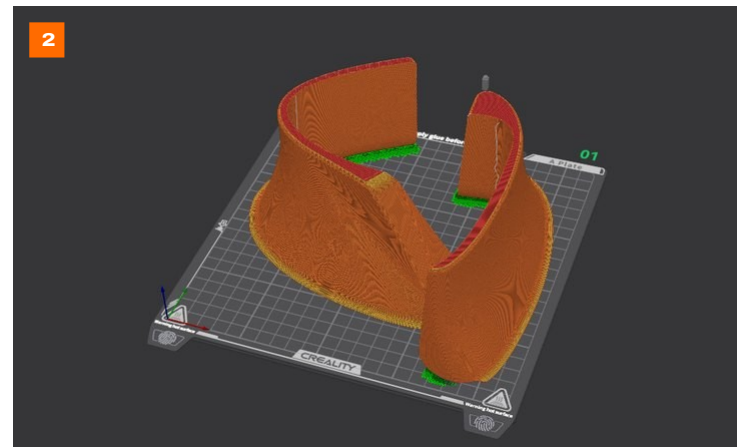
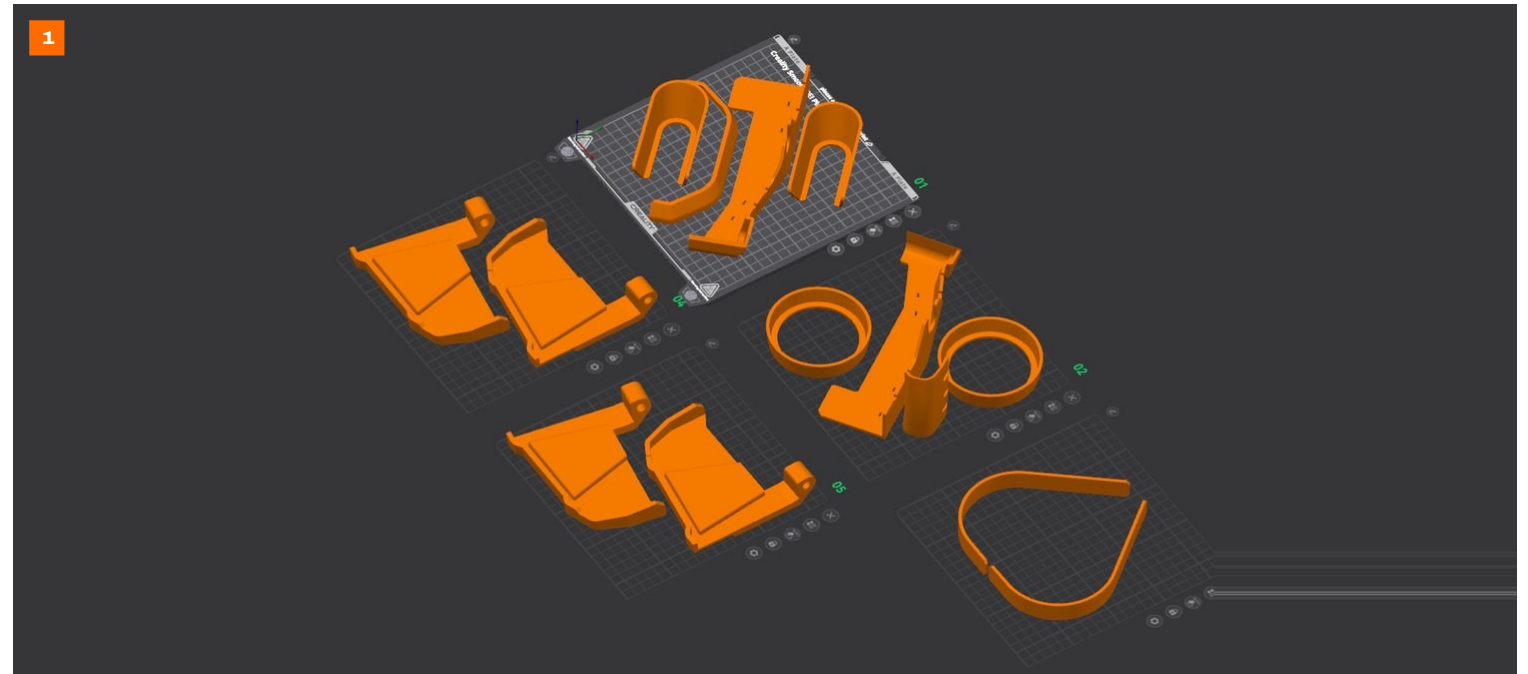
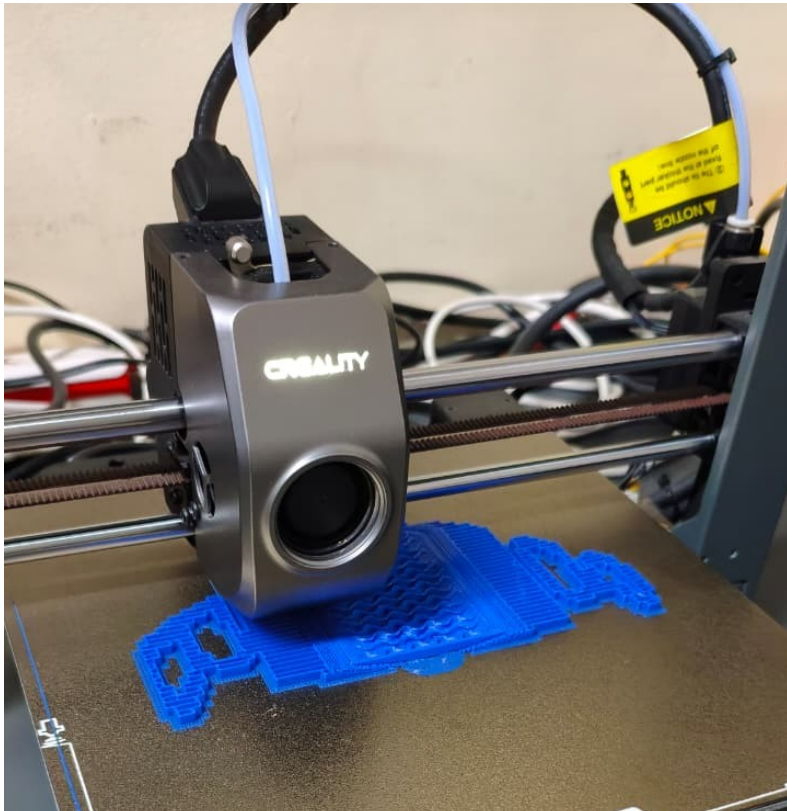
A STAND CUT FROM ONE SHEET

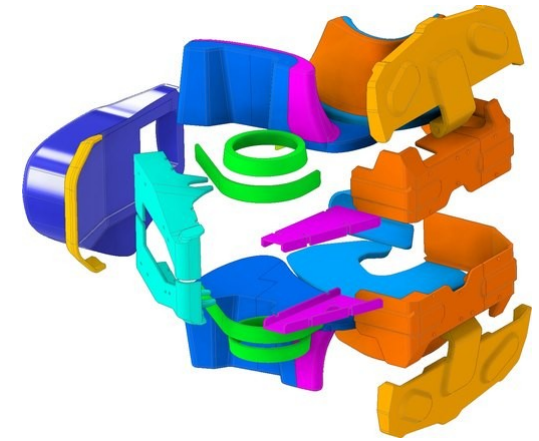
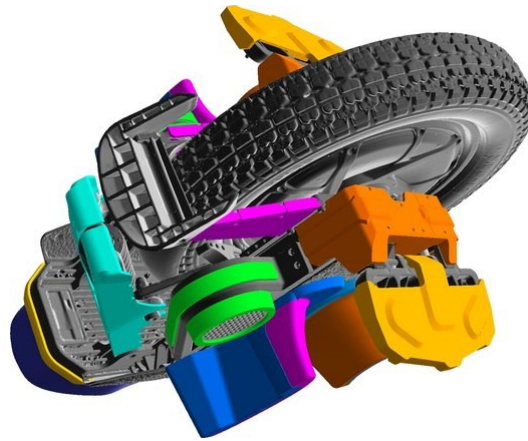
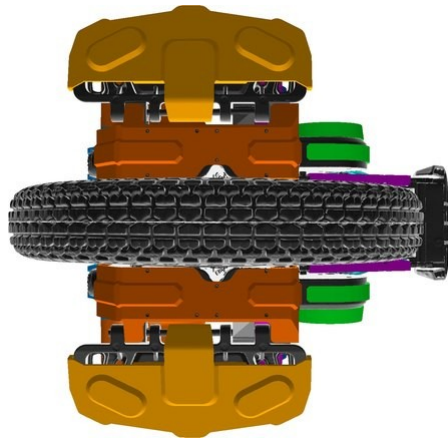
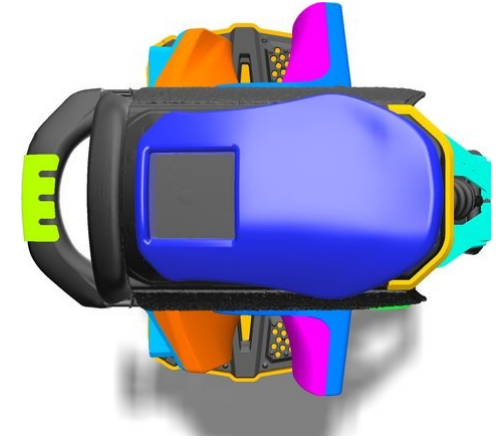
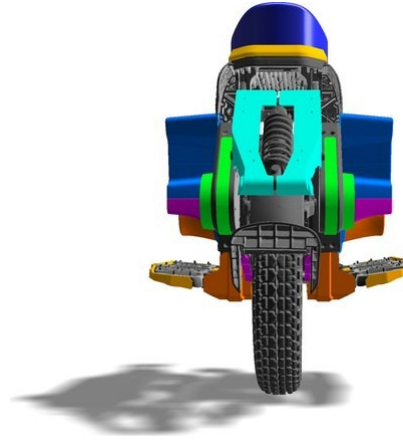
An aluminum stand holds the unicycle upright for storage and service. Its base and four pillars are cut from a single 10 mm sheet of 6061 aluminum, with 3D printed resting blocks.



SET UP FOR 3D PRINTING

Every accessory apart from the stand was designed for a desktop 3D printer, with no tooling to make. The guard set alone is 14 parts on five build plates, in mirrored left and right pairs.





LET'S BUILD THE NEXT ONE

CONTACT

EMAIL business@tactiledesign.in

PHONE [+91 7276090421](tel:+917276090421) CALL OR WHATSAPP

WEBSITE www.tactiledesign.in

