



CASE STUDY: SHIFT KONCEPTS

Hung Ngo spends his spare time developing and finding ways to leverage technology. His passion for road racing and experience in the automotive industry exposed a gap in the automotive aftermarket. Impressed by the strength of Markforged 3D printed parts, Hung created Shift Concepts.

Hung Ngo is a pricing analyst at a law firm by day, but spends his spare time out developing and finding ways to leverage technology. His passion for road racing and experience in the automotive industry exposed a gap in the automotive aftermarket. On DCTs (Dual Clutch Transmission), paddle shifters sit behind the steering wheel and allow drivers to easily switch gears without needing to reach down for the clutch, sort of like the gear shift on a bike. They are usually relatively short, so while easy to manage in everyday driving, shifting while going around tight turns in a race can be tricky. Impressed by the strength of Markforged 3D printed parts, Hung created Shift Concepts and started making paddle shifter extensions for racers.



Hung's 3D printed paddle shifters behind the wheel of a Mitsubishi Lancer Evolution X MR.

When Hung first looked for a way to make longer paddle shifters, his options were limited - very few companies actually made custom or elongated shifters. He explored some opportunities, and had even 3D printed a set of paddle shifters out of PLA, but the material was too flimsy and looked cheap - two unacceptable traits for products in the automotive aftermarket. Hung's paddle shifters needed to be stiff, easy to install and look good if he wanted them on his car.



A close-up of one of Shift Concepts' paddle shifters.

He found his manufacturing solution when touring a local shop that was using a Markforged 3D printer. Impressed with the quality and the strength, Hung jumped onboard.

Starting with a Mark One and later upgrading to a Mark Two, the automotive entrepreneur started Shift Concepts in January 2016 and built his small business around his paddle shifter extensions. Hung started with no 3D printing or engineering experience and has since expanded his manufacturing bandwidth with an Onyx One - the quality and the reliability of the two Markforged machines ensured successful production for a number of different shifters.

While the strength and rigidity of the 3D printed paddle shifters come from the CFF composite reinforcement of the Markforged parts, Hung still needed his components to match the "industry standard" in the field - a field full of traditionally manufactured carbon fiber layups. To achieve this aesthetic, Hung lays up a single sheet of carbon fiber over the 3D printed parts to provide the look that his customers expect and will later expand to hydrodipping.

Hung started with no engineering background, and with his two Markforged printers developed a product based on an opening he saw in a niche market.

The 3D printers Hung runs at Shift Concepts have drastically reduced the barrier of entry for manufacturing and brought the company success. Now Shift Concepts creates paddle shifters extensions for a variety of different car models and for customers all over the world, speaking to the manufacturing agency Mark-forged printers inspire.



The paddle shifters with and without the aesthetic carbon sheet.



UNITED STATES | 877.266.4469

Mountain View, CA
Orinda, CA
Costa Mesa, CA

Ontario, CA
Ventura, CA
Woodland Hills, CA

Las Vegas, NV
Reno, NV
Bothell, WA
Portland, OR



CANADA | 866.587.6803

Richmond, BC
Calgary, AB
Edmonton, AB

Winnipeg, MB
Toronto, ON



HAWK RIDGE SYSTEMS



SHIFTKONCEPTS
PREMIUM INNOVATION