

# KENSTOMOTO INNOVATING 3D-PRINTED CUSTOM MOTORCYCLES, PARTS, AND ACCESSORIES WITH SOLIDWORKS

Case Study



Kenstomoto relies on SOLIDWORKS Premium 3D design and analysis software, as well as 3D printing technology, to develop custom aftermarket motorcycle systems and reimagined one-of-a-kind motorcycle designs, such as the Kenstomoto Ju shown here.

**Challenge:**

Quickly and cost-effectively develop 3D-printed motorcycles, parts, and accessories.

**Solution:**

Utilize SOLIDWORKS Premium 3D design software in conjunction with 3D printing production techniques.

**Results:**

- Shortened time to market by 80 percent
- Cut design cycles by 70 percent
- Reduced production costs by 20 percent
- Minimized need for hard tooling

Kenny Yeoh has dreamed of making a collection of custom motorcycles since he was a kid. The Malaysian design engineer works by day as the chief design director of SKS Coachbuilders, a leading motor coach and bus manufacturing company. He has now realized his childhood dream, using SOLIDWORKS® Premium 3D design software and 3D printing. These solutions have enabled Yeoh to quickly and cost-effectively design, create, and assemble custom-designed motorcycles and launch Kenstomoto—short for Kenny’s Custom Motorcycles.

Inspired by the colorful, vibrant, and fantastic motorcycle designs featured in Japanese anime (animation media), such as Akira and Gundam, Yeoh’s custom motorcycle designs have become increasingly popular, mostly through his company’s visibility on social media and the overwhelming reception at motorcycle trade shows. With names like Valkyrie, Ju, Mechastallion, and Demolisher, Yeoh’s creations would not have been possible without 3D printing and SOLIDWORKS design tools.

“I began using SOLIDWORKS years ago to design buses at SKS Coachbuilders,” Yeoh explains. “It was the first 3D CAD program that I’d used after we replaced our CAM modeler to accelerate time to market. I now use SOLIDWORKS to design everything that I’m working on, including the Kenstomoto bikes.”

Yeoh says that he chose to use SOLIDWORKS for his custom motorcycle business because it is easy to learn and use, and works accurately and efficiently with additive manufacturing, which is critically important to producing one-off, custom designs quickly and affordably. “Until we implemented SOLIDWORKS at SKS, I wasn’t a 3D CAD guy,” Yeoh notes. “However, with all of the online resources and YouTube videos that are available on how to use SOLIDWORKS, I quickly became very comfortable with the software. I credit the software’s ease of use with getting me hooked, so there really wasn’t a choice when it came to my custom motorcycle design work.”

**FROM LIVING ROOM PROP TO ONLINE BUSINESS**

Kenstomoto’s first custom motorcycle build that utilized 3D-printed parts designed in SOLIDWORKS was a retrofit of a used Kawasaki motorcycle that was completed in conjunction with a renovation project at Yeoh’s home. “I had my house renovated, and the renovation took a whole year,” Yeoh recalls.

“I pretty much had nothing to do during the renovation, and we had just started using 3D printers at my day job,” Yeoh continues. “So, I decided to buy a used Kawasaki motorcycle and make it special—not as something to ride but actually for use as a prop in my new living room. That was the first bike that I customized, and I enjoyed the project so much that I decided to keep doing custom builds. That’s how Kenstomoto was born.”



**“What has enabled me to increase efficiency and decrease costs is the ability to evolve the design and make design changes very quickly in SOLIDWORKS.”**

**— Kenny Yeoh, Founder**

**SHORTER DESIGN CYCLES, REDUCED DEVELOPMENT COSTS**

With each motorcycle design and build, Yeoh leveraged SOLIDWORKS software and 3D printing to implement the lessons learned on previous custom designs, resulting in substantial design cycle and development cost savings, and shorter times to market. “What has enabled me to increase efficiency and decrease costs is the ability to evolve the design and make design changes very quickly in SOLIDWORKS,” Yeoh stresses.

“For example, I was able to reduce the modeling time in SOLIDWORKS between the Demolisher and the Ju by 70 percent,” Yeoh says. “By refining the design in SOLIDWORKS, I don’t have to translate data or build prototypes, which saves time and money. Using 3D printing for the most part—I still need to laser-cut metal at times—reduces production costs by 20 percent because it minimizes the need for hard tooling. These savings have allowed me to reduce time to market by as much as 80 percent.”



## LAUNCHING AFTERMARKET HEADLAMP, COVER SET SYSTEMS

The social media exposure that Kenstomoto's custom motorcycle builds have received has created demand for custom-designed motorcycle subsystems and accessories, such as motorcycle headlamp systems and cover sets, which customers use to replace factory systems that come with existing bikes. Kenstomoto has launched headlamp systems under the Monocle, Cyclops, Sabre, and Illumioto brand names and also develops custom cover sets for individual customers.

"When you're dealing with accessories like headlamps and cover sets, which is a much larger potential market than individual builds, there are a lot of combinations required to match different motorcycle makes, sizes, and models," Yeoh points out. "While I try to make these designs as modular as possible, there are many specific differences. I use SOLIDWORKS design configuration tools to quickly create design variants to meet all possible combinations from the base design, saving additional time while ensuring that all parts fit for each particular order."

Kenstomoto chose SOLIDWORKS for its custom motorcycle business because it is easy to learn and use, and works accurately and efficiently with additive manufacturing, which is critically important to producing one-off, custom designs quickly and affordably. By utilizing SOLIDWORKS Premium software for its custom motorcycle, parts, and accessories business, Kenstomoto shortened product time to market by 80 percent, cut design cycles by 70 percent, reduced production costs by 20 percent, and minimized the need for hard tooling.

### Focus on Kenstomoto

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### For more information

[www.facebook.com/kenstomoto](http://www.facebook.com/kenstomoto)



In addition to using SOLIDWORKS Premium software to develop complete custom motorcycles, Kenstomoto custom-designs motorcycle subsystems and accessories, such as motorcycle headlamp systems and cover sets, which customers use to replace factory systems that come with existing bikes.

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