

CUSTOMER STORY

Kojima Industries 3D prints its own robot hands: part cost down 67%, lead time from 14 days to 1

Kojima now prints its robot hands in-house on Markforged 3D printers. The lighter hands removed the need for oversized robots and significantly reduced overall equipment investment.

QCD

Q Quality
Same strength
production strength kept

C Cost
–67%
robot hand part cost

D Delivery
14→1 day
outsourced vs. in-house

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COMPANY & CHALLENGE

01 Background

An 88-year-old auto parts maker automates a manual seal-attachment step

Kojima, now in its 88th year, has more than 8,000 employees across its group companies and operations in Japan, the United States, Thailand, China and Europe. It designs and produces automotive interior, engine and exterior components, and uses its group supply chain to offer one-stop service from development through high-volume production.

Electrification and system integration are reshaping the automotive industry, and globalization has sharpened competition among parts suppliers. Kojima works to the QCD principle—Quality, Cost, Delivery—in pursuit of manufacturing that is more precise, faster and less expensive.

One production step required operators to attach non-woven fabric seals by hand. As the number of seals increased, so did the labor hours. To improve efficiency and reduce labor requirements, Kojima turned to robotic automation.

Case file

Company
Kojima Industries Corporation
Kojima Press Industry Co., Ltd.

Industry
Automotive part manufacturing

Application
Robotic tooling & fixtures

Printers
Markforged Mark Two · X7

Operations
Japan · US · Thailand · China · Europe





Left: Kojima's head office in Aichi Prefecture, Japan. Right: Akira Kashima, Assistant Manager, Equipment Engineering Division, Kojima. Photo: Markforged customer story

88	8,000+	QCD
years in business	group employees	Quality · Cost · Delivery

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THE PROBLEM

02 The problem

Heavy metal hands required oversized robots

The robot hands on the automation equipment were originally made of metal. A robot hand sits at the end of the arm, and its weight counts directly against the load the robot has to carry.

The weight of the metal hands required robot configurations larger than the task itself called for, which raised overall equipment cost significantly. A robot's payload rating has to cover both the hand and the workpiece, so a heavier hand pushes the selection toward a higher payload class.

The weight of the metal hands counted against the robot's load, pushing robot specifications beyond what the task required and raising equipment cost.

How robot hand weight affects equipment investment

Before	Metal hand	→	Weight counts against robot load	→	Robot sized beyond the task	→	**Equipment cost rises**
With 3D printing	Printed hand	→	Lighter, same strength	→	No robot upsizing	→	Equipment investment down

Summarized from the Markforged customer story; the story does not disclose weight saved or robot models.



Cylinder Joint: Lets a cylinder adjust the angle of the jig base. Photo: Markforged customer story

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THE APPROACH

03 The approach

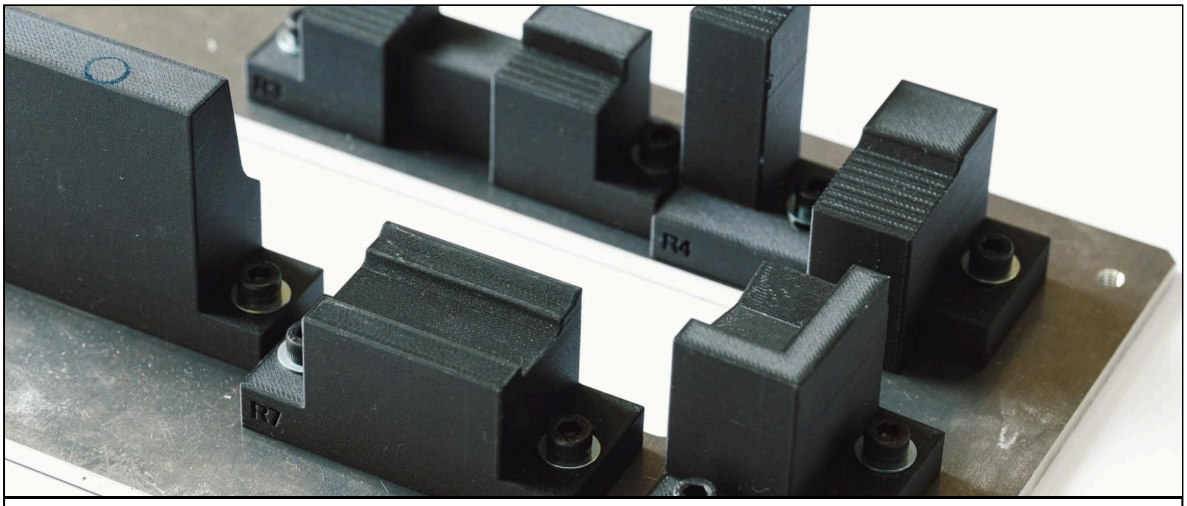
Robot hands printed in-house on Markforged

Kojima adopted Markforged 3D printers (the customer story lists the Mark Two and the X7) to produce its robot hands.

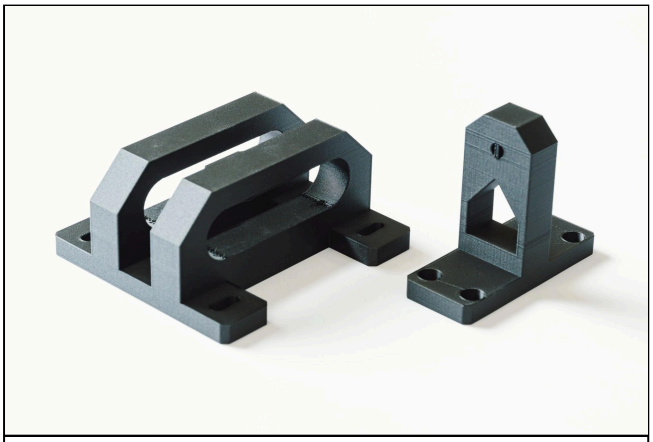
According to the customer story, switching from metal to 3D-printed components cut the weight of the robot hands significantly while keeping the strength required for production use. The robots no longer needed oversized configurations, and equipment investment came down.

The story also shows several printed parts in use on the line: a cylinder joint that lets a cylinder adjust the angle of a jig base, a fixture that locates and holds the product during the process, and a stand that stores rolls of seal stickers.

Three printed parts shown in the story



P-02 **Jig Fixture** Locates and holds the product during the process.



P-01

Cylinder Joint

Lets a cylinder adjust the angle of the jig base.



P-03

Sticker Storage

Stores rolls of seal stickers.

Part names and uses as given in the customer story; materials and printer per part are not disclosed. Photo: Markforged customer story

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RESULTS

04 Results

Part cost down 67%, lead time from 14 days to 1

QCD scorecard

Q Quality	C Cost	D Delivery	+ Design work
Same strength	**–67%**	**14→1 day**	**~ –30%**
production strength kept	robot hand part cost	outsourced vs. in-house	certain parts; no 2D drawings

Part lead time

Outsourced machining — **14** days

Printed in-house on Markforged — **1** day

Robot hand part cost

Machined parts — **100**

3D-printed parts — **33**

index, machined parts = 100 (–67%)

Where the figures come from: all three are taken from the Markforged customer story; 14 days vs. 1 day is from the lead time comparison in the story PDF. The cost index is derived from the stated 67% reduction.

Before and after

	Before	With 3D printing
Production method	Metal, machined	**Markforged 3D printing**
Where it is made	Outsourced machining	**In-house**
What it takes to start	Detailed 2D drawings before ordering	**3D CAD data is enough**
Hand weight	Heavy, counts against robot load	**Much lighter, production strength kept**
Robot configuration	Sized beyond the task	**No upsizing needed**

Cost. The 3D-printed robot hand components cost 67% less to produce than conventionally machined parts.

Lead time. The customer story compares 14 days for outsourced part production with 1 day for printing in-house on Markforged. Against outsourced machined parts, both cost and lead time came down sharply.

Design work. Outsourced machining required detailed 2D drawings before an order could be placed; 3D printing starts directly from 3D CAD data. Depending on the part, design labor fell by approximately 30%.

Quality. According to the customer story, the printed hands kept the strength required for production use after the weight reduction.

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TAKEAWAY

05 Takeaway

Check hand weight before specifying the robot

The printed parts in this case are all production tools used on the line: robot hands, fixtures and storage stands. Parts of this kind are usually designed around a single process and needed in small quantities, which is where the cost and waiting time of outsourced machining weigh most; all three figures in this case come from parts of this kind.

When specifying a robot cell, hand weight directly affects robot selection and the equipment budget. Finalize the hand design and its weight before selecting the robot. If the hand is close to the robot's rated payload, or its machined components take weeks to arrive, it is worth comparing a printed version against the machined one on both cost and lead time.

About Kojima Industries

Kojima Industries Corporation (Kojima Press Industry Co., Ltd.) is a major Japanese automotive parts manufacturer in its 88th year, with more than 8,000 employees across its group companies and operations in Japan, the United States, Thailand, China and Europe, offering one-stop service from development through production.

About Markforged

Markforged, Inc. supplies industrial additive manufacturing systems, enabling manufacturing and sustainment organisations to produce functional parts, tooling and spares at the point of use through continuous fibre composite and metal solutions.

SOURCES

1. Markforged customer story: Kojima Industries Corporation (English, published October 22, 2026). All facts, figures, titles and part descriptions in this article are drawn from it and its downloadable PDF
   https://markforged.com/resources/case-studies/robotic-tooling-with-kojima-industries-corporation
2. Japanese edition of the same customer story, the original-language text, including the interviewee's full title
   https://markforged.com/jp/resources/case-studies/robotic-tooling-with-kojima-industries-corporation
3. Kojima Industries Corporation official website
   https://www.kojima-tns.co.jp/en/
4. Photos and logo from the Markforged customer story; copyright Markforged or Kojima Industries Corporation

Robot hand and fixture assessment

A feasibility assessment by the Markforged engineering team against your actual robot hand and fixture drawings and operating conditions, with hands-on demonstration available. Sessions can be arranged in Taiwan, China, Hong Kong or Vietnam.

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