

nexa3D®

CASE STUDY

KADEN Reshores Model Car Manufacturing, Shaving Months Off Production with Ultrafast 3D Printing



Customer

Kaden s.r.o

Industry

Consumer Goods

Products

- NXE 400 photopolymer 3D printer utilizing Loctite PRO410 polymer and medium soft rubber-like material Loctite xFLEX Black

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www.kaden.cz

Advantages

- Design to final production time has been dramatically reduced thanks to the streamlining of processes and the ability to quickly validate functional prototypes. The cost and three-month or longer wait for aluminum tooling and molds has been cut from the validation process.
- Moving from idea to physical prototype as quickly as within the same day.
- Intersection of parts and the stacking of multiple parts layers allows maximum use of the build volume. KADEN is able to produce 108 model car tires in 34 minutes by stacking 3 layers of 36 model tires in a single production run utilizing xFLEX Black.
- xPRO410 allows KADEN to manufacture the detailed interiors of their highly collectable model cars as well as aiding in the design process by producing functional prototypes.

Background

KADEN finds itself located in the small town of Nový Hrádek, in the picturesque Orlicke Mountains on the Czech Republic's border with Poland. Initially founded in 1950 as a commune of companies under government control, KADEN dedicated itself to carpentry and tool shop work. Under new orders in the 1960s, the company pivoted into manufacturing metal toys, which include many models that have brought fond childhood memories to many adults, such as the legendary Škoda 1203, which was manufactured between 1968 and 1981. KADEN has produced over one million metallic toy models of these popular vans that have undoubtedly traveled millions of kilometers on the wooden floors of many homes.



“I want to deliver know-how and added value while not having dependency on outside providers.”

Filip Klepek

Managing Director, KADEN

Challenge

During the 1990s, KADEN produced several toy car models made of zinc alloy and plastic. KADEN, along with many other companies in Europe, had been facing increasing foreign competition due to the lower costs of outsourcing labor and production to Asia (particularly to China). This tendency, which grew remarkably during the period 1990-2003, had a particularly negative effect on countries in Eastern Europe, which were trying to rebuild and establish themselves after the collapse of communism in 1989. By 2010 only two major diecast toy manufacturers were left operating in Europe.

Leading up to 2020, KADEN had been reduced to a company of about 40 workers, who provided specialized assembly services for other model manufacturers. Despite its diverse team of experts, KADEN faced the challenge of straying from its roots in production. A return to those roots was limited by lack of access to impactful, cost-effective, and timely manufacturing solutions.

2020 was marked with the incorporation of new Managing Director Filip Klepek – who quickly saw the need to bring production back to Europe and revive the industry.

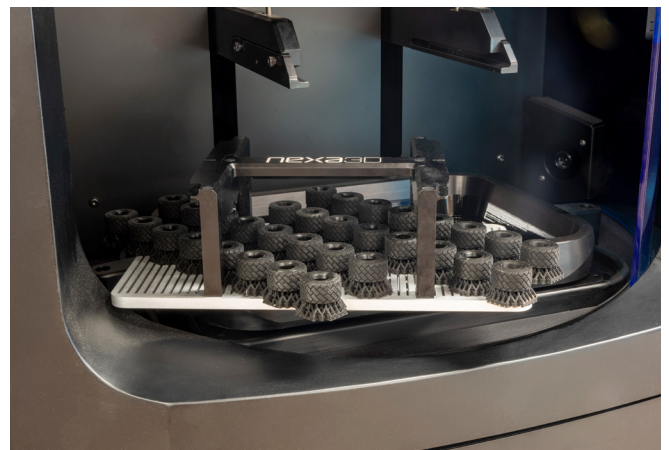
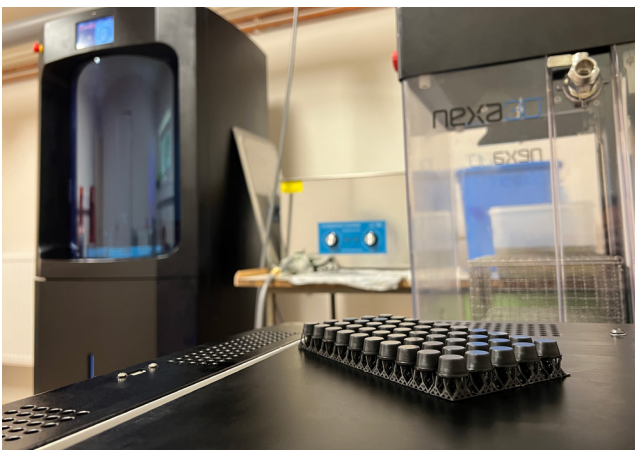
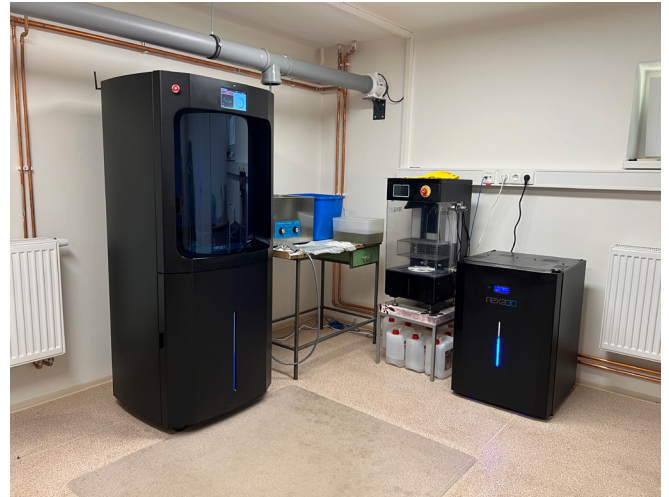
“I want to deliver know-how and added value,” Klepek explained, “while not having dependency on outside providers.”

Solution

Klepek oversaw the implementation of CAD design software and the addition of in-house additive manufacturing capabilities in order to restart production. The KADEN team had evaluated other 3D printing offerings before without finding the right fit. A cold call from fellow Czech company Industrial Technology Systems (ITS) introduced Klepek to a new partner in the 3D printing market: Nexa3D. A quick turnaround of benchmark parts from their own CAD designs quickly showed the value that industrial 3D printing can bring to reshoring the manufacturing process and an understanding of the size and production capabilities of the NXE 400.

The KADEN team faced a steep learning curve, but through perseverance and with the help of the ITS team, they were quickly up and running. Ultrafast 3D printing capabilities with affordable Loctite xPRO410 material completely changed the tempo of production capabilities at KADEN. From nine hours to 3D print a single part on a previous 3D printing system to printing a full plate of the same parts in a fraction of the time, the team saw an immediate production increase by incorporating Nexa3D solutions into their workflow.

The adoption of in-house additive manufacturing has enabled KADEN to return to its original roots





and compete head-to-head with foreign companies. Further, by investing in an ultrafast production-focused system with a larger build plate, the team quickly found they were decreasing design and production costs while increasing output and quality.

While additive manufacturing is now the “core” technology used at KADEN to cover the production of plastic and soft rubber parts, the company has not lost sight of the craftsmanship and art of putting together a quality product. All models are still finished and assembled by hand, with their diecast exteriors being airbrushed by hand, and the decals applied meticulously. The end result is a product that has a genuinely unique appearance and feel, that is both for children and adults alike.

Klepek is looking forward to testing the full range of material available from Nexa3D, with particular interest in finding new applications that will further help KADEN – which celebrates its 75th anniversary in 2022 – maintain the momentum of growth it has experienced since 2020.

Looking ahead, KADEN now has aspirations to manufacture model parts for other companies, expanding its production capabilities to benefit other European operations. Not only has the NXE 400 allowed KADEN to branch out by adding more services for external customers, it has once again placed KADEN in the hearts and minds of a new generation of children.

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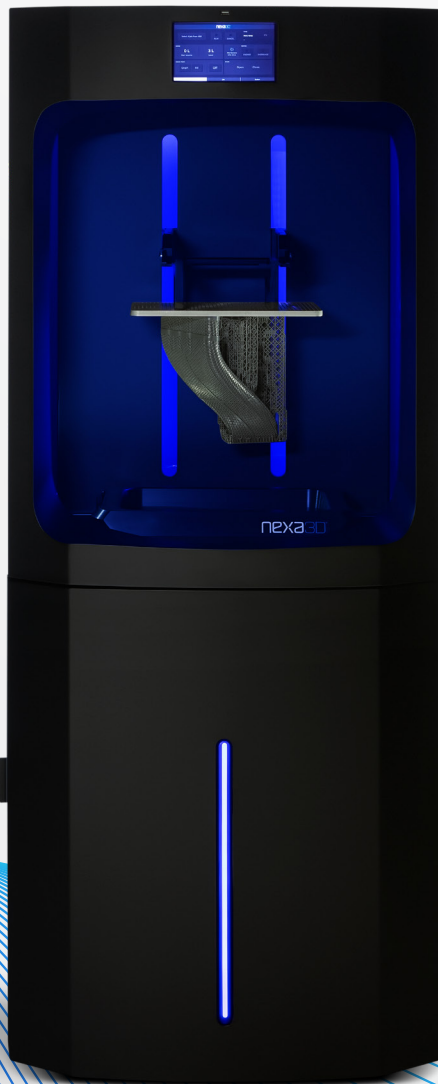
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