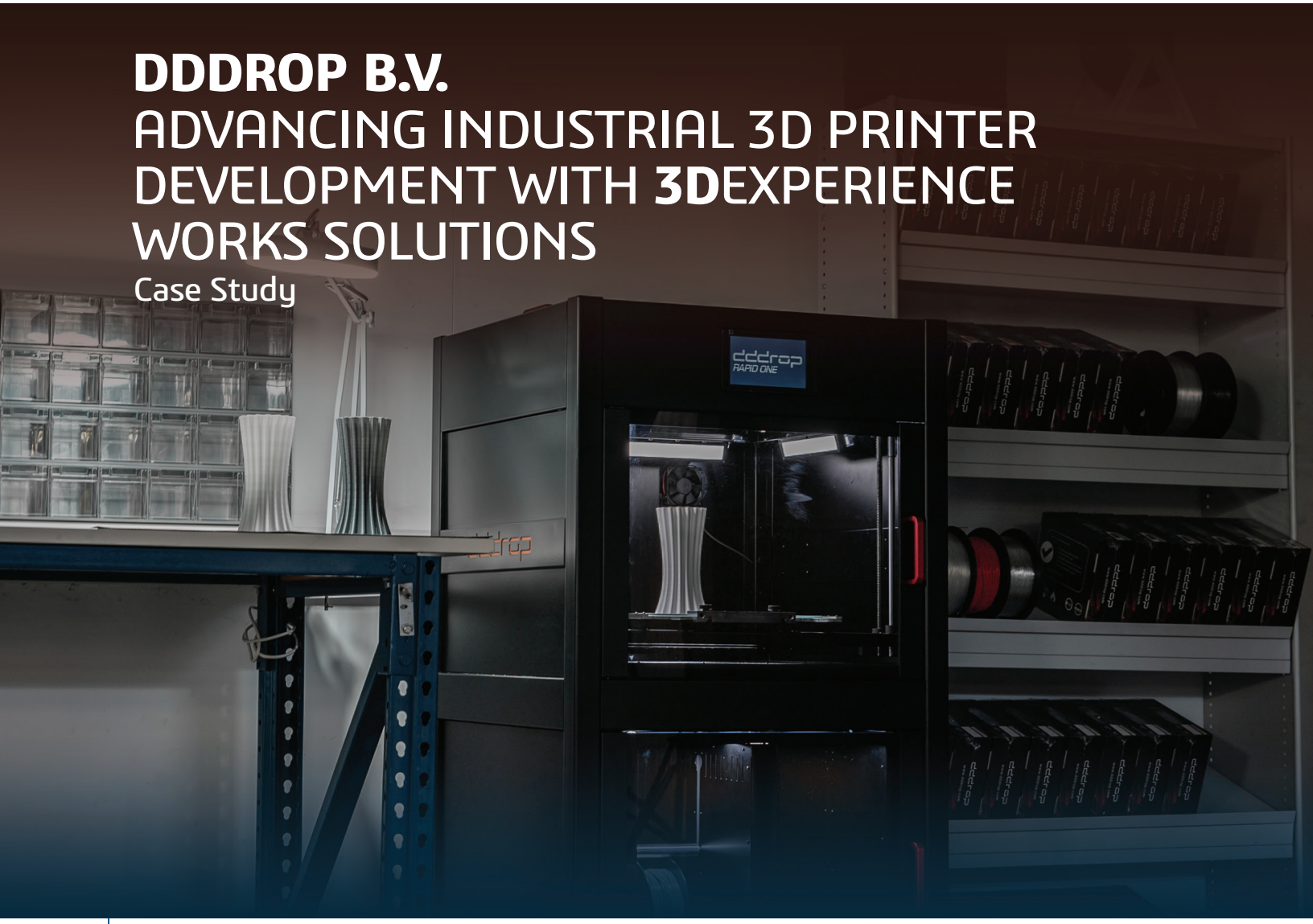
SOLIDWORKS

dddrop

DDDROP B.V.
ADVANCING INDUSTRIAL 3D PRINTER DEVELOPMENT WITH **3D**EXPERIENCE WORKS SOLUTIONS

Case Study



dddrop was already considering adding cloud-based solutions to its SOLIDWORKS product development platform when the COVID-19 pandemic struck, prompting the 3D printer manufacturer to add cloud-based **3D**EXPERIENCE Works solutions to complete development of its RAPID ONE industrial 3D printer.

DASSAULT SYSTEMES

Challenge:

Continually develop and introduce useful innovations in industrial 3D printer technology to consistently provide the 3D printing functionality and capabilities that engineers need to leverage 3D printing for prototyping and production.

Solution:

Add cloud-based **3D**EXPERIENCE Works platform solutions to its existing SOLIDWORKS product development ecosystem.

Results:

- Cut development cycle in half
- Streamlined production of modular configurations
- Completed development despite COVID-19 lockdowns
- Added unique printer capabilities and features

Taking its name from the popular Dutch drop licorice candy and 3D (ddd), dddrop B.V. has introduced innovative advancements in 3D printing systems since the company introduced its first 3D printer, the Recon, in 2012. Since then, dddrop has continued to push 3D printing technology forward, introducing the dddrop Leader single-head 3D printer in 2015, the dddrop Leader TWIN dual-head 3D printer in 2016, and the RAPID ONE industrial 3D printer in 2020.

The company's extensive background in 3D printing stems from management's experience in selling competitive 3D printers from 2004 until the establishment of dddrop in 2012. That experience demonstrated the pros and cons of existing 3D printers and set dddrop on the path to making better-performing, more-effective 3D printers, according to CEO Alfred Uytdewilligen. "Beginning in 2004, our group of engineers saw the potential of 3D printing and decided to implement the technology into their daily work," Uytdewilligen recalls.

"The team used different machines for many years but could never find the perfect balance between quality and price," Uytdewilligen explains. "We wanted an industrial 3D printer that is built for professional use, but is also affordable. At the time, the market offered only two categories, large machines that deliver industrial results but were out of budget, or smaller affordable machines that were not able to deliver reliable results needed in the business and R&D market. After years of frustration, our team of engineers decided to do what any engineer would do: Build our own."

However, just as development of the modular, customizable, automated RAPID ONE 3D printer was ramping up, the COVID-19 pandemic struck, creating work and development challenges for the company. "When COVID hit in early 2020, we were already considering the addition of cloud-based solutions to the SOLIDWORKS® product development ecosystem that we had in place, because under our company structure, the development team is not all based in one location," Uytdewilligen recounts.

"The COVID pandemic made this move even more urgent, so we quickly added cloud-based **3D**EXPERIENCE® Works solutions to our SOLIDWORKS implementation to continue our development progress without incurring any delays," Uytdewilligen notes. "We need a solid method for collaborating remotely on product development and also for launching products, both of which **3D**EXPERIENCE Works solutions provide. We implemented cloud-based solutions for Collaborative Design with SOLIDWORKS, Data Management, Project Planning, Change/Configuration Management, as well as Product Release Engineer. With these solutions, we were able to meet all of our development deadlines in spite of the pandemic."

CONFIGURATION ENGINE DRIVES MODULAR DESIGN

The dddrop design team heavily leveraged the **3D**EXPERIENCE Works Change/Configuration Management solution to efficiently manufacture the modular design of the Rapid One, which allows customers to order printers with build areas in increments of 15 cm and prepares specific configurations for production. "With the RAPID ONE's modular design, we can quickly build a printer with a 300 cm X 300 cm X 300 cm build area or customers can order any size they want in 15 cm steps," Uytdewilligen explains.

"Using the combination of SOLIDWORKS desktop tools and cloud-based 3DEXPERIENCE Works solutions provides us with the best of both worlds while we prepare for the collaborative cloud-based development of the future."

— Alfred Uytdewilligen, CEO

"We used SOLIDWORKS configuration tools to create the modular design for the printer, but we really needed the **3D**EXPERIENCE Works Change/Configuration Manager to more efficiently connect different design configurations to production," Uytdewilligen continues. "We've found the **3D**EXPERIENCE Works Change/Configuration Manager to be a simpler, more streamlined approach to handling design configurations in production."

SIMULATING LIGHTWEIGHT, REMOVABLE PRINTHEAD

Just as dddrop engineers used SOLIDWORKS Simulation capabilities to reduce weight and maintain stiffness in previous printheads, they used SOLIDWORKS motion and structural analysis tools to optimize and validate the RAPID ONE's 57-gram

removable printhead, and SOLIDWORKS Flow Simulation tools to do the same for the printer's innovative, water-based cooling system. "We developed a new, extremely lightweight, aluminum printhead that can be changed out in less than a minute," Uytdewilligen points out.

"We also added a water-based cooling system, which increases the maximum temperature of the printhead from 300°C to 450°C, and eliminates the need for special air blowers in the printing room," Uytdewilligen adds. "With the RAPID ONE 3D printer, we cool the printhead through airflow over a radiator instead of blowing air into the printing room, which is a more stable and effective approach. The RAPID ONE printer is four to five times faster than other 3D printers, automatically calibrates and levels the print bed, and can print a wider range of materials simply by changing the printhead."

RESHAPING FUTURE OF COLLABORATION

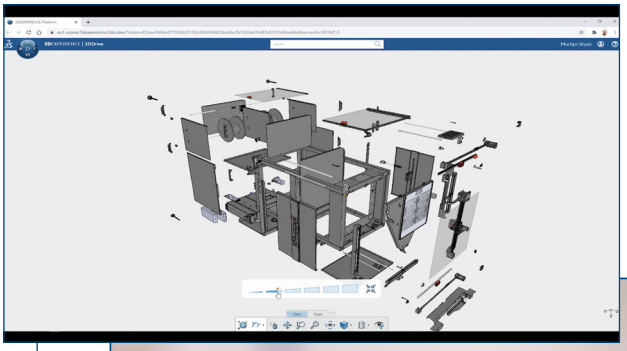
The reason that dddrop was looking into cloud-based product development solutions before the COVID-19 pandemic hit is the fact that the company has embraced the future of collaboration in the cloud because it aligns well with the company's structure. "The **3D**EXPERIENCE platform and **3D**EXPERIENCE Works solutions are much more than radical evolutions of the SOLIDWORKS portfolio," Uytdewilligen stresses.

"The **3D**EXPERIENCE platform represents an entirely new way of working that has allowed us to reshape the company to support greater collaboration, innovation, and productivity," Uytdewilligen says. "It's much more than a development platform. It's a product launching platform in which not everybody is using a SOLIDWORKS seat. Instead, each person has access to the tools and portions of the process that affect them. In essence, the **3D**EXPERIENCE platform stretches out the SOLIDWORKS portfolio for use in collaborative spaces in the cloud. We work in a way that was simply not possible before. Using the combination of SOLIDWORKS desktop tools and cloud-based **3D**EXPERIENCE Works solutions provides us with the best of both worlds while we prepare for the collaborative cloud-based development of the future."

Focus on dddrop B.V.
VAR: CAD2M B.V., Doetinchem, The Netherlands

Headquarters: Logistiekweg 34
7007CJ Doetinchem
The Netherlands
Phone: +31 (0)314 377050

For more information
www.dddrop.com



With cloud-based **3D**EXPERIENCE Works solutions, dddrop was able to continue development of the RAPID ONE remotely because the **3D**EXPERIENCE platform supports development via a browser or on a mobile device.

Our **3D**EXPERIENCE® platform powers our brand applications, serving 11 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3DEXPERIENCE** Company, is a catalyst for human progress. We provide business and people with collaborative virtual environments to imagine sustainable innovations. By creating 'virtual experience twins' of the real world with our **3DEXPERIENCE** platform and applications, our customers push the boundaries of innovation, learning and production.

Dassault Systèmes' 20,000 employees are bringing value to more than 270,000 customers of all sizes, in all industries, in more than 140 countries. For more information, visit **www.3ds.com**.

3DEXPERIENCE®

DASSAULT SYSTEMES | The **3D**EXPERIENCE® Company

Americas
Dassault Systèmes
175 Wyman Street
Waltham, Massachusetts
02451-1223
USA

Europe/Middle East/Africa
Dassault Systèmes
10, rue Marcel Dassault
CS 40501
78946 Vélizy-Villacoublay Cedex
France

Asia-Pacific
Dassault Systèmes K.K.
ThinkPark Tower
2-1-1 Osaki, Shinagawa-ku,
Tokyo 141-6020
Japan