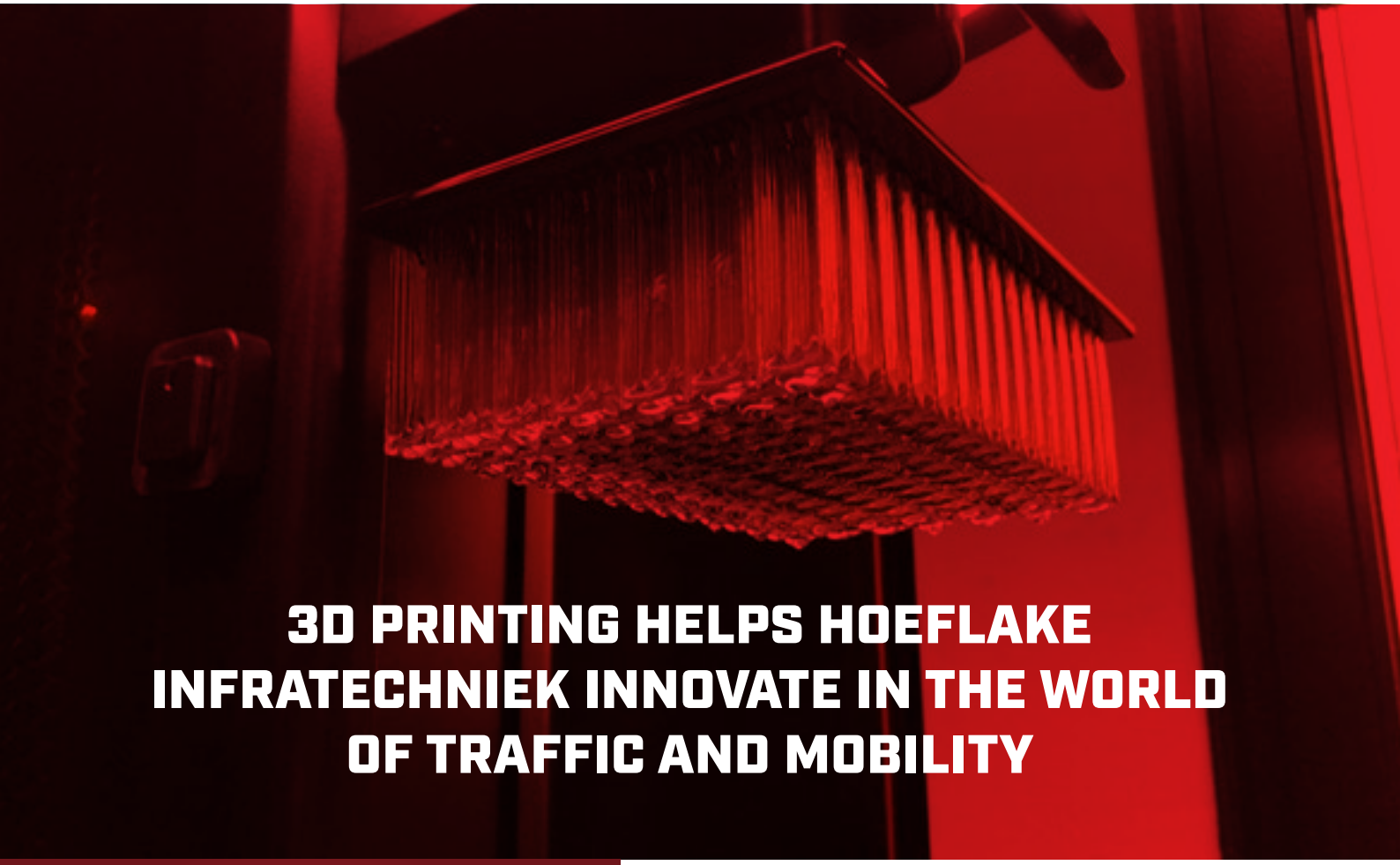
CASE STUDY: END-USE DIFFUSER FOR BICYCLE CROSSING MODULE ON TRAFFIC LIGHTS

LOCTITE®



3D PRINTING HELPS HOEFLAKE INFRATECHNIEK INNOVATE IN THE WORLD OF TRAFFIC AND MOBILITY

Background

QDP's client, Hoeflake Infratechniek, is a leading and sustainable operating company that has been active for many years in the field of traffic and mobility. Their expertise lies in the construction of public lighting, traffic control installations, warning installations and selective access installations. In addition, this leading partner is also responsible for various innovative solutions within the Infrastructural Technology field.

Together with these technically skilled, motivated people, QDP contributes to making traffic in the Netherlands (and other countries) safer and more dynamic. Thanks to their experience, QDP assures the entirety of the project, from design and installation, to the management and maintenance.

APPLICATION:
Diffuser lens for bicycle traffic lights

MATERIAL:
LOCTITE 3D IND405 Clear

TECHNOLOGY:
Carbon DLS 3D printer

The Challenge

QDP's client, Hoeflake Infratechniek, was looking for a lens to cover the wait sign for a bicycle crossing module on traffic lights. The challenge was to get this lens transparent so that the text "wait" was easy to read, but also gave a good diffusion so that the light from the LEDs was spread evenly and pleasant to look at.

The intention was that we would injection mold the lenses from plastic. For that we had to make a mold and after that we would have to test different material combinations to get the desired result.

Making a mold is an investment of time and money and without validation it is questionable whether you can immediately achieve the desired result. To first make sure that the measurements would be correct and that the part would fit well in the traffic light, we made a 3D print to test the dimensions.

The Solution

By using LOCTITE IND405 Clear together with Carbon 3D printers and the DLS™ process we were able to 3D Print the lenses required. As a cleaning agent we used the Smart Part Washer with DPM (Methylpropoxypropanol).

Henkel

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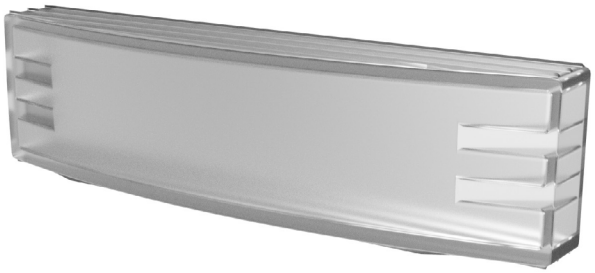
52 MPa	1378 MPa	130 %	70 J/m	53 °C
Tensile Stress at Break	*Young's Modulus*	*Elongation at Break*	*Impact Strength*	*HDT at 0.455MPa*

We made several test prints and sent them to our client. We did not expect the response we received. They especially liked the way the light was diffused from the LEDs and exactly how they had envisioned it. The lens was already perfect as it was printed so it was not necessary to use any tools or material for finishing.

They asked us to give a cost and time estimate and they refuted it against the cost of making the mold and the lead time. They then made the choice to mass produce the part by means of 3D printing.



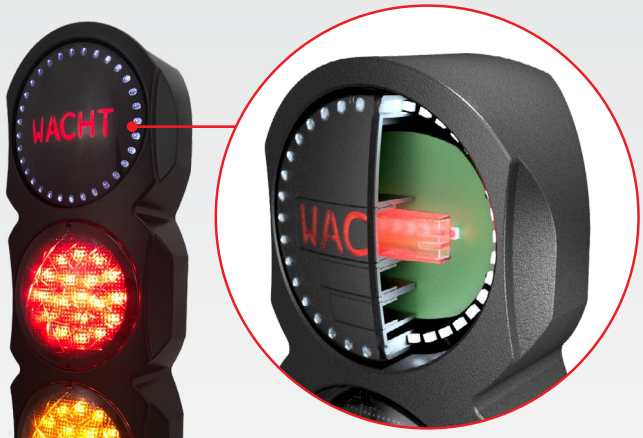
3D Printed diffuser for bicycle crossing module on traffic lights

BENEFITS

Using Loctite IND405 Clear on the Carbon Platform, we were able to shorten the lead time by approximately 8 weeks thanks to not having the need of injection molding tooling, production, and air transport. Due to the fast-printing time, a worthy production method in the form of 3D printing where more than 2000 pieces can be produced within 48 hours. This way a production batch can be delivered within a few working days.

The first batch was printed in one day so there was a huge amount of time saved. Due to the simple shape of the part, we can also print many of them on a platform, which results in a very positive price per part. In the end, the 3D printed production part was 5 times cheaper than the injection molded part.

Printing with Loctite IND405 Clear ensures that we can offer a reliable clear material in our range that is easy to print and offers good quality. The post-processing options that we didn't have to use this time have allowed us to determine the transparency of the material ourselves, so we can use the material in many different situations.



3D Printed diffuser within the traffic lights

End product containing 3D Printed diffuser

Want to learn more about Henkel's unique material solutions for the additive manufacturing industry?
Visit Henkel's LOCTITE 3D Printing at **LoctiteAM.com** or reach out to us via **loctite3dp@henkel.com**

About LOCTITE®

LOCTITE Additive Manufacturing delivers unique photopolymers with production capability, customize resins and deliver engineering services to identify the best application to address your needs. With a constantly growing portfolio of high-performance materials, specialized equipment and post-processing solutions, LOCTITE overcomes the limitations of conventional 3D printing to enable additive manufacturing for the production of durable, functional parts. Through its strategic partnership with technology leaders for specialized equipment, LOCTITE is driving the adoption of 3D printing beyond prototyping and toward the production of final parts. **(www.LoctiteAM.com)**

About qdp

QDP has been designing and producing products for many applications for more than 20 years. With extensive material knowledge and production know-how, their designers guarantee a product that is not only functional, but also has the right looks and is easily makeable. Nowadays, a short time-to-market is purely necessary to be able to respond quickly to customer questions and stay ahead of the competition. QDP's one-stop shopping approach ensures speed and top quality. **(https://qd-p.com/contact/)**

About Hoeflake Infratechniek

Hoeflake Infratechniek is a leading and sustainably operating company that has been active in the field of traffic and mobility for many years. Their expertise lies in the construction of public lighting, traffic control systems, warning systems and selective access systems. In addition, Hoeflake Infratechniek has various innovative solutions to its credit within this field. **(https://www.hoeflake.nl/infratechniek/)** **(https://www.verkeerslantaarn.nl/)**

About Carbon®

Carbon® is a 3D printing technology company helping businesses to develop better products and bring them to market in less time. The Carbon DLS™ process combines versatile printers, advanced software, and best-in-class materials to deliver functional parts with end-use performance and aesthetics, helping engineers and designers to create products that outperform. Carbon is a venture-backed company headquartered in Redwood City, CA. Currently, Carbon has customers in 17 countries and is continuing to expand globally. **(www.carbon3d.com)**