DR MANUEL THOMÄ

“Candle”: anniversary TRUMPF laser at GLOW light art fete

The German laser specialist TRUMPF supplies high tech companies throughout the world and is celebrating its centenary this year. The company will be demonstrating a show laser at the GLOW festival. Under good weather conditions, the laser can be seen for up to 80 kilometres around Eindhoven.

At the GLOW light art festival in Eindhoven in the Netherlands, probably the world’s tallest birthday candle will be lit from 11 till 18 November 2023. To celebrate its centennial company anniversary, the German high-tech company TRUMPF is pointing one of the world’s most powerful show lasers into the sky. For the initiative, the company’s engineers and show laser manufacturer “Lightline” have converted an industrial high-power laser to create an event laser. “We would like to take the occasion of the festival and our anniversary to give our staff, partners, customers and all citizens of Brainport Eindhoven a real treat. This laser consumes hardly any energy and yet, according to our research, is still one of the most powerful show lasers in the world,” says project leader Philipp Barthold.

The Netherlands are an important TRUMPF market

The family company TRUMPF most recently generated sales of € 5.4 billion with around 18,400 employees. With over 80 companies, the group is represented in nearly every European country, in North and South America and in Asia. As a worldwide leading laser manufacturer, the company supplies the Dutch company ASML with high-power lasers for EUV lithography for the production of up-to-date microchips. TRUMPF also develops and sells photonic chips in Eindhoven which are used in smartphones, among other things. In the Netherlands, the company is also considered one of the leading manufacturers for digitally networked machines and systems for sheet metal processing. The show laser is at the TRUMPF site in the north-west of Eindhoven. Depending on weather and air traffic conditions, it will be lit up on several days during the light art festival. With a height of around 10 kilometres, the green laser beam will be visible within a radius of up to 80 kilometres.

Low power input

The green light is created by a laser with three kilowatt power. “This laser is particularly energy-efficient. When we operate the laser for an hour, it uses about as much energy as eight people blow-drying their hair at the same time,” says Barthold. Around 35 laser experts, safety specialists, engineers and other experts participated in this project. Operating a laser like this requires not only laser competence, which TRUMPF is contributing, but also extensive expert know-how. Among other things, the airspace has to be monitored so that the air traffic is not endangered. For this project, this is the responsibility of the show laser company Lightline, as well as operational implementation. Lightline has over 30 years of experience in show laser technology and specialises in demanding laser applications. Lightline customers include personalities from the entertainment sector known all over the world.

Initial lighting: the anniversary laser was fired up for the first time for the anniversary of the high-tech company TRUMPF on 6 August 2023 at the company's headquarters in Ditzingen, Germany.

The most important questions and answers concerning the TRUMPF mega laser

How high does the laser beam go?
The laser is still clear and distinct at a height of ten kilometres. Then it starts to get weaker as the particles in the air decrease.

Why is the laser green?
TRUMPF is one of the leading companies for green light lasers. The automotive industry in particular uses these for the production of components for electric cars.

How much energy does the laser consume?
The laser uses about as much energy as eight people blow-drying their hair at the same time.

How thick is the laser beam?
When the laser beam exits the laser system, it is approximately two centimetres wide.

Why does the laser go out sometimes?
If an airplane approaches, a specially built radar system ensures that the laser goes out.

How likely is it that an airplane pilot could get blinded by the laser?
TRUMPF has taken several precautions to ensure that this risk does not occur: The laser is pointing straight upwards. It is already very unlikely that an airplane will fly directly over the laser with the pilot looking downward at the same time. TRUMPF has also registered the laser with the responsible aviation authorities. Airplanes and helicopters using a relevant system will detect the laser as an obstacle on the map. In addition, two radar systems will be monitoring the airspace. The laser will be switched off if an airplane should approach.

What happens if the laser should overturn?
A double safeguard is in place. The service engineers have mounted the laser securely onto a structure. If the structure should overturn anyway, which is actually impossible, the enclosed protective housing will come to good use. The laser beam will be directed against a steel plate surrounding the laser. Two employees from Lightline monitor the laser constantly. They can switch the laser off at any time using various emergency stop buttons.

What does the laser cost?
The price for this green laser with 3kW power is an approximate low six-figure number in euros.



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