



## COHERENT Laser - Viewing a Golden Image

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Illuminating a Uniquely Large Hologram as Part of the Dausmann retrospective holography exhibition now on show in Prien, Germany

Günther Dausmann is a well-known figure throughout the world of holography, with an illustrious career spanning 40 years, marked by numerous innovations, awards and patents. For example, he made a major contribution to the development and acceptance of the anti-counterfeit hologram now incorporated in the German passport. To mark his pending retirement from Hologram Industries Research GmbH\*, Mr. Dausmann donated his lifetime collection of approximately 130 holograms to the town of Prien, Germany. Now, this collection is going on display in the Gallery in the Old Town Hall with the official opening on Saturday, February 24th.

In technical terms, holograms can take a variety of forms, including transmission holograms, rainbow (white light) holograms and reflection (Denisyuk) holograms; all three types are well-represented in the Dausmann collection. Of more interest to the public, these different holograms together support an incredible variety of applications: from aesthetic, purely artistic, unique images, to precision light delivery optics used in medicine and electronics, to data storage, and mass-produced anticounterfeit examples as used in government documents and the currencies (both “paper” and coinage) by a growing number of countries, to name just a few. In fact, an entire section of the exhibition is dedicated to the use of holography for anticounterfeiting purposes, including brand protection and product safety. This part of the exhibition is presented in cooperation with Papierfabrik Louisenenthal GmbH, Veridos GmbH and Surys Group, the world’s leading companies in providing security documents. Their products are used in currencies and other official documents by over 100 countries, and this part of the exhibition provides the visitor with fascinating insights into the important world of banknote and document safety features.

While the anticounterfeit display shows arguably the largest practical application for holography, a dramatic centerpiece of the Dausmann collection is perhaps **the world’s largest single hologram**. Measuring 3 meter<sup>2</sup>, this is a transmission hologram originally commissioned for MTU Aero Engines AG, showing an entire Tornado jet engine in fine detail. This was used by MTU to dramatic effect at various tradeshows around the world.

The challenge of creating such a large plate hologram in 1983 cannot be understated – it required a 32 minute exposure using a massive optical setup. In addition, a transmission-type hologram was used for maximum resolution and image fidelity. And this type of hologram can only be viewed by illuminating it with laser light, unlike the white light and reflection holograms which can be seen using conventional light sources.

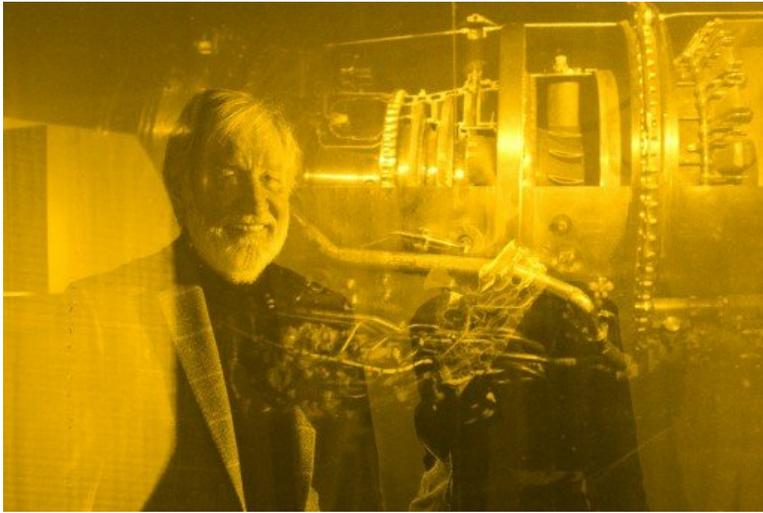
This transmission hologram predates the solid state revolution in the laser industry and was recorded using a krypton ion laser - an old-fashioned red wavelength laser using a very large and inefficient gas plasma tube. Today, modern solid-state technology enables compact and powerful lasers to be manufactured at virtually any wavelength (color) in the visible spectrum, as used in applications from spectacular light shows to medical therapeutics. In the Prien exhibition, the jet engine hologram is illuminated by a **yellow laser** supplied to the gallery by **Coherent Inc.**, one of the world's leading providers of lasers and laser-based technology for scientific, commercial and industrial customers. With a wavelength of 577 nm, this **Genesis MX laser** was selected at the request of Herr Dausmann because its yellow color would make the mainly metal jet engine appear gold for maximum dramatic impact. And the high power of this laser also enables simultaneous viewing by multiple visitors at the exhibition, without the need to enclose the hologram and viewer in a darkened room.

Andreas Zuck, a Sales Manager at Coherent notes, "The laser is fundamental to the entire field of holography and their histories are inexorably intertwined. Indeed, holography was one of the first applications Coherent supported over 50 years ago. Today, as we recognize the retirement of one of the pioneers in bringing holography to commercial applications and mass audiences, Coherent is truly honored to play a small part in this beautiful and informative exhibition. We join with many others in saying 'thank you' to Günther Dausmann for his many contributions to this important laser application, and for donating this landmark collection to public ownership."

*\*Hologram Industries Research GmbH serves as the R&D division of SURYS, an international leader in anticounterfeit technologies*



Wallenta, Dausmann, Zuck



Dausmann