

# CASE STUDY

ENSURING PRECISION ALIGNMENT FOR ADVANCED OPTRONIC SYSTEMS



## > Background

Elynxo is a leading French company in the field of optronics, with over 35 years of expertise in optical and optronic systems serving defense, security, and industrial applications.

The company stands out through its full control of the value chain, encompassing optical, mechanical, electronic, and software engineering, as well as precision machining and complex optronic integration. This integrated approach enables Elynxo to design and manufacture high-value equipment with outstanding performance and industrial repeatability.

Elynxo has developed **Virtuose**, an ultra-compact multifunction monocular combining a visible optical channel, a laser rangefinder, as well as geolocation and connectivity capabilities. It addresses a key operational need for armed forces: providing a single, compact, and lightweight device that allows operators to detect, identify, and geolocate targets-day and night-without multiplying equipment.

## > Challenge

The system configuration requires **perfect alignment of the lines of sight between the visible and thermal sensors** to ensure reliable data in operational conditions.

This requirement is critical, as users operate at long distances where target designation and geolocation demand very high accuracy.

To meet this challenge, Elynxo needed a test solution capable of:

- Simulating infinity conditions
- Testing both visible and infrared channels
- Guaranteeing precision and repeatability
- Characterizing and validating electro-optical system performance

## > Solution

Elynxo selected HGH's **IRCOL** test bench, a multifunction optical projector designed for the characterization and performance validation of electro-optical systems. It features a mirror-based optical collimator and offers multiple configurations, making it a versatile tool for the most demanding performance measurements. With its advanced capabilities and modular design, the IRCOL test bench ensures precise and reliable performance validation.



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The **HGH IRCOL 150/1000 collimator** is used in the Virtuose alignment process through two complementary steps:

1. Alignment of Visible Channel and Laser Rangefinder (VDO & TM)

This first step consists of aligning the laser rangefinder aiming point with the visible channel reticle. A dedicated target is used to convert the laser pulse into a visible light signal, enabling precise verification and adjustment of the overlap between aiming points.

2. Alignment of Visible and Thermal Channels (VDO & VIR)

The second step ensures alignment between the thermal and visible channels. A pinhole target projected at infinity using the collimator displays markers visible in both the visible and infrared spectrum. This allows precise positioning and alignment so that the thermal image perfectly matches the visible channel.

## > Conclusion

The integration of HGH's IRCOL enables Elynxo to achieve **highly accurate alignment thanks to an image projected to infinity**, ensuring the quality and reliability of delivered systems.

In addition, the IRCOL collimator is also deployed on Elynxo's production line, supporting consistent quality during assembly.

*"HGH's IRCOL collimator guarantees the quality and reliability of our systems, delivering optimal performance from the very first use and ensuring industrial repeatability in line with defense requirements."*

Gaetan, Mechanical Engineer, Elynxo



Credits : © ELYNXO



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