

OPTIMIZE YOUR MACHINE VISION SYSTEM



As inspection requirements continue to grow more demanding, optimizing your machine vision system can make a significant difference in accuracy, reliability and overall performance. While cameras often receive the most attention, system performance depends heavily on the integration of **lighting, optical filters and lenses** working together.

DETERMINE THE OPTIMAL WAVELENGTH

Every machine vision application begins with selecting the right wavelength of light. Different wavelengths interact with materials in different ways, revealing features that may be invisible under standard white light. For example, specific wavelengths can enhance contrast on printed markings, highlight surface defects or improve visibility through certain materials.

Using a broadband light source with optical filters allows you to determine the

optimal wavelength for your inspection. Filters isolate specific wavelengths while blocking unwanted ambient light, creating a controlled imaging environment and establishing the foundation for reliable inspection.

BUILD THE RIGHT LIGHTING STRATEGY

Once the wavelength is defined, the next step is selecting the appropriate illumination. Lighting geometry – such as ring lights, backlights, dome lights or bar lights – determines how light interacts with the object and which features become visible. Proper lighting can dramatically improve contrast, reveal surface details and minimize shadows or reflections. Match lighting to filter with our [LED TO FILTER](#) guide.



ENHANCE CONTRAST WITH FILTERS

Optical filters refine the light reaching the camera sensor. By isolating specific wavelengths and reducing unwanted ambient light, filters improve contrast, suppress glare and enhance feature visibility. From Bandpass Filters to Polarizers, the right filter can transform a challenging inspection into a clear, reliable image. Select the right filter with our [CURVE COMPARE](#) tool.

MATCH THE LENS TO THE APPLICATION

Lens selection plays an important role in determining field of view, magnification and depth of field. Choosing a lens that properly matches the sensor size and working distance helps ensure optimal resolution and consistent image quality across the entire field of view. The right lens also minimizes distortion and allows the camera to fully utilize the sensor's capabilities.



Select the right lens with our **MOUNT SIZE**
FINDER tool.

THE POWER OF INTEGRATED IMAGING

The best machine vision systems are designed as a complete optical solution – wavelength, lighting, filters and lenses working together to control how light interacts with the object being inspected.

At MidOpt®, we work closely with engineers and integrators to help optimize imaging performance through precision filters and accessories designed specifically for machine vision applications.

If you're evaluating ways to improve inspection reliability, we're happy to help.

[LEARN MORE](#)

MIDOPT® FILTER KITS

TEST BEFORE INVESTING

Before investing in new lighting hardware, evaluate how optical filters affect imaging results. MidOpt® **Machine Vision Filter Kits** allow engineers to quickly test multiple wavelengths and filter types with their existing setup, helping to determine the best lighting and filter combination for the application. Simplify system optimization and reduce trial-and-error.



[FILTER KITS](#)