# Designed for Heavy Duty

Ruggedized USB cameras assure quality in production machinery

From chipping come chips! The process conditions within industrial manufacturing environments are generally harsh. High temperatures, dust or lubricants make life hard for the sensitive electronics essential for automating the production processes. The modern cameras used e.g. in robot control or optical quality inspection are particularly affected. Their connectors and the fine mechanics of their lenses react very sensitively to external influences. With the uEye RE series, the German machine vision specialist IDS offers a camera range that is designed for heavy duty and especially suited for use in industrial manufacturing environments. Numerous OEM companies, such as the Germany-based companies Kaiser Computersysteme and ISOTRONIC Bildverarbeitungssysteme GmbH, therefore rely on cameras from IDS.
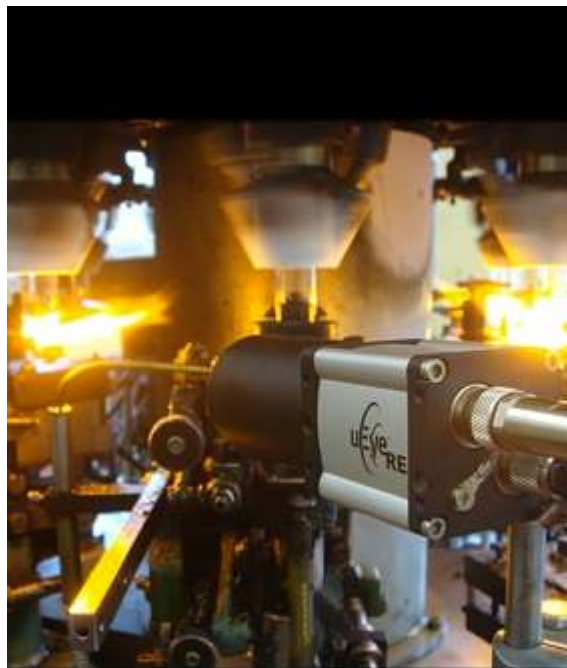
The two companies have been developing and manufacturing optoelectronic test and measurement systems since 1989. Under the product name IsotroniKa, they provide both standardized systems and customized machine vision solutions for many industries. The main application areas include surface inspection, completeness checks, optical measurements, and automated test sequences.

IDS cameras are used, for example, in quality assurance systems for the pharmaceutical industry, where conditions are not always ideal. Pharmaceutical packaging made of glass tubing, for instance, has to be tested and inspected directly at the machine, right during the industrial forming process and without inter-rupting production. The demands on quality assurance are particularly high in this case, as the strict Good Manufacturing Practice (GMP) Directive must be complied with. Among other requirements, the directive stipulates full documentation of the production process—which makes stability and reliability indispensable factors for the IsotroniKa systems.

Smack in the middle of the manufacturing en-vironment, the camera thus plays a key role. Since conditions at this exposed position are not always favorable, Kaiser and ISOTRONIC rely on the uEye RE cameras from IDS.

These models are IP65/IP67 protection rated, which means that they are protected against ingress of dust or splash water. The protective function is ensured by a carefully sealed housing and a screw-mounted lens tube that encapsulates the sensitive lens. The screw-on connectors for the USB 2.0 port, the trigger input and the digital output are also dust and water proof.

The cameras are as rugged as they are compact and space saving. Without the lens, the smallest version is only approx. 41 x 41 x 41 millimeters in size and weighs less than 150 g. To satisfy the vast variety of requirements, the uEye RE series features 19 different models with resolutions ranging from 640 x 480 to 2048 x 1536 pixels. The cameras are equipped either with CCD sensors or with rolling or global shutter CMOS sensors in monochrome or color. All models provide a universal, opto-isolated trigger input as well as an opto-isolated output, e.g. for operating a flash. A USB hub, which is also IP65/IP67 rated, and drag-chain compatible connection cables are available as accessories.

Supported by a comprehensive software package, the cameras integrate smoothly into OEM applications without major engineering work. The drivers and the software development kit (SDK) are included with every uEye camera.

A screw-mounted lens tube and screw-on connectors for the USB port and the digital I/Os make the uEye RE dust and water proof

By providing a single driver kit for all models, IDS allows smooth camera integration across all models and interfaces.

Besides more than 20 different demo programs for camera integration and image acquisition, the SDK also comprises the corresponding source code in C, C++ and VB. Developers can quickly integrate these demos in their own applications and customize them as required. Kaiser, for example, uses the supplied driver as the basis for their own software wrappers to flexibly implement the camera models in self-developed programs. The SDK supports all current Windows operating systems, including Vista, and additionally offers a TWAIN driver, an ActiveX component and a DirectShow/WDM driver for the users of standard software solutions.

All camera models from IDS use the same SDK—from the entry-level VGA model with USB port through to the high-resolution Gigabit Ethernet camera with 5 MP sensor. This software philosophy fulfills the wish of many OEMs who frequently use self-developed software for their systems. Changing from a USB camera to a powerful Gigabit Ethernet based camera is possible without problems. Instead of reprogramming the application, all that needs to be done is adjust a few camera-specific parameters.

This saves time and money. Kaiser are now planning to use the Gigabit Ethernet models from IDS besides the USB cameras to be able to cover greater distances between the place of inspection and the place of analysis. The changeover to the GigE models leaves them unperturbed, however, not only because of the "one-driver-fits-all" philosophy. "We welcome working with a German manufacturer because we benefit not only from short distances regarding support and services, but also from a close personal contact," confirms Manfred Kaiser, owner of Kaiser Computer-systeme.

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