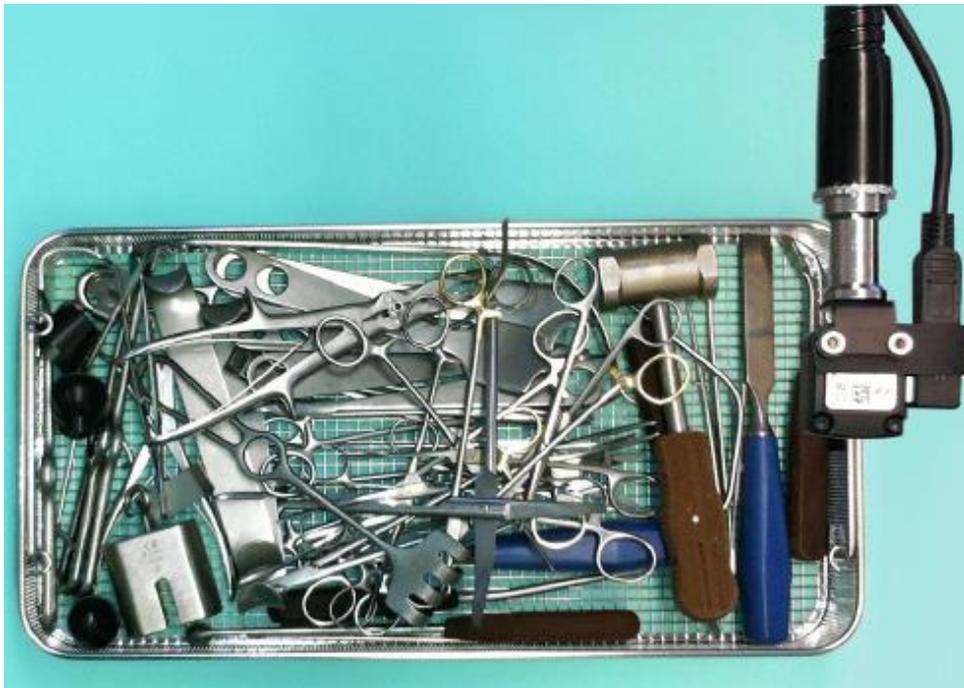


Industrial camera with auto focus supports the management of sterile goods

Every detail in the processing cycle of surgical instruments – ranging from their use in operating theaters, through to their sterilization and storage – needs to be recorded and managed. This task is handled by a software provider who specializes in sterile goods processing using a QM system, which has an integrated USB mini camera suitable for industrial use. This simplifies the packing process for disinfected sterile goods.

The job of the Central Sterile Supply Department (CSSD) is to clean, disinfect, sort, sterilize, and supply surgical instruments, among other things. Full, legally-compliant documentation of all process steps plays a key role within this processing cycle. The quality management software EuroSDS of IBH Datentechnik GmbH, based in Kassel, Germany, with its integrated machine vision, is used for this purpose. The system is designed to be as easy and as safe as possible to use. Thus, a USB XS industrial mini camera, produced by industrial camera manufacturer IDS Imaging, based in Obersulm, Germany, replaces a conventional digital camera at the packing station where the disinfected sterile goods are repacked individually or in sets.



*At the packing station:
USB camera XS from
IDS*

A new camera module is set to make this step in the process simpler and more reliable in the future. Images of individual sterile goods or entire sets are captured and archived directly at the packing station. Integrated in the master data for the instruments, these images make it easier for the operator to combine and pack the sets. Video sequences, of the packing process for example, can even be recorded, which also make the operator's job easier or are integrated in the packing list as a link.

Until now, images were captured using a conventional digital camera and read into the computer, reviewed and edited there if necessary, and linked manually to the respective data records. This was a laborious and time-consuming process, which was also prone to user error. Instead of a conventional digital camera, an industrial camera is now used. Image acquisition and camera control functions are fully integrated in the quality management system; images or videos of the sterile goods or the packing process are created with just a clicks of the mouse and linked to the corresponding data records.



Housing protects camera and USB port

IBH takes advantage of the benefits provided by the USB mini camera, which combines two worlds: It provides the convenient operation and wide range of features of a standard consumer camera, along with the compact design and software compatibility and connectivity of an industrial camera. According to the company, numerous automatic features, normally only found in conventional digital cameras, deliver exceptional user friendliness and also produce excellent image quality even under difficult lighting and ambient conditions, such as those found particularly in non-industrial environments. All functions are designed to enable integration in individual OEM applications through the associated software package using drivers and interfaces.

The USB camera is approximately 23 mm x 26.5 mm x 21.5 mm in size and can be integrated easily in any system. Although the camera has a magnesium housing and is designed with harsh industrial applications in mind, IBH provides additional protection for the camera and its USB connection in particular with a specially designed housing that is produced by a 3D printer. The camera, together with its plastic chassis, is attached to a standard gooseneck. The comparatively high resolution and auto focus, which delivers crisp images from distances of only 10 cm, are particularly important for the application.

The 5 megapixel Aptina CMOS sensor with a pixel size of 1.4 μm delivers exceptionally detailed true color images, with a choice of seven fixed image formats ranging from VGA to 5 megapixels. The integrated lens has a 53° horizontal angle of view, which corresponds to a focal length of 35 mm in small image format. The wide aperture angle captures a field of view that is sufficient for many applications. If just a smaller image section is needed, the digital zoom of the small camera can be used. Live and individual images can be enlarged almost continuously up to a factor of 16.

The camera also offers many features for automatic image adjustment. After all, unlike industrial environments, the conditions for capturing images at the packing station of the CSSD are usually far from ideal. Parameters such as exposure time, white balance, and ISO (gain) are adjusted automatically to the prevailing lighting conditions. Using various default settings for lighting types and fields of view, these functions can be fine-tuned even further, if necessary.



USB camera XS from IDS

The camera also has a backlight compensation function to adjust the brightness control. Using this function, objects in the foreground are always correctly exposed even when the picture is taken against the light. In indoor areas, another effect has a negative impact on the image quality: Artificial light sources such as light bulbs and fluorescent tubes create flicker that can be seen in the camera image. An anti-flicker feature adjusts the recording parameters for exposure time and frame rate, thereby preventing any noise from appearing in the image.

Thanks to the mini industrial camera's wide range of automatic functions, hardly any settings need to be adjusted in many situations and the images captured can be easily processed independently of the PC system. Nevertheless, each individual parameter of the mini camera can be changed using the software, if necessary. IBH has fully integrated the camera control and image acquisition functions into the quality management system. The DirectShow interface and the Software Development Kit (SDK) are included with the camera for this, as are the Twain- and GenICam interfaces. The SDK allows convenient integration via C, C++ or C# under Windows and Linux, with over 140 programming functions that allow access to all properties and performance features of the camera.

As the SDK is identical for all camera models, OEM customers are ideally equipped to meet future requirements. Thus, for example, it is possible to switch from one camera to a more powerful model. The application does not have to be reprogrammed, only the camera-specific parameters have to be adjusted.

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