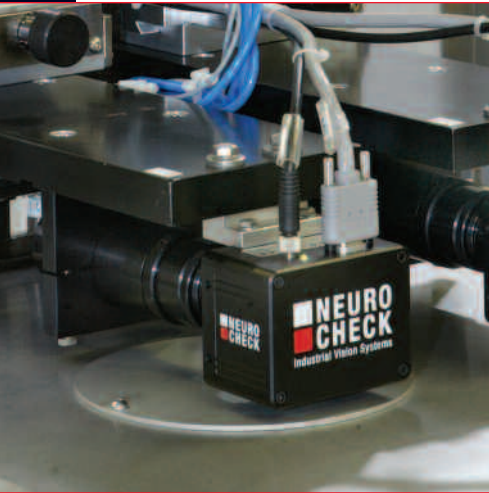


CASE STUDY



Extract from Advanced Imaging, September 2004

NeuroCheck gets to the point...

NeuroCheck is used in the automated inspection of insulin needles in the pharmaceutical industry.

Diabetics will find it less painful in future to self-administer injections of insulin, thanks to a machine vision system developed by Industrial Vision Systems Ltd.

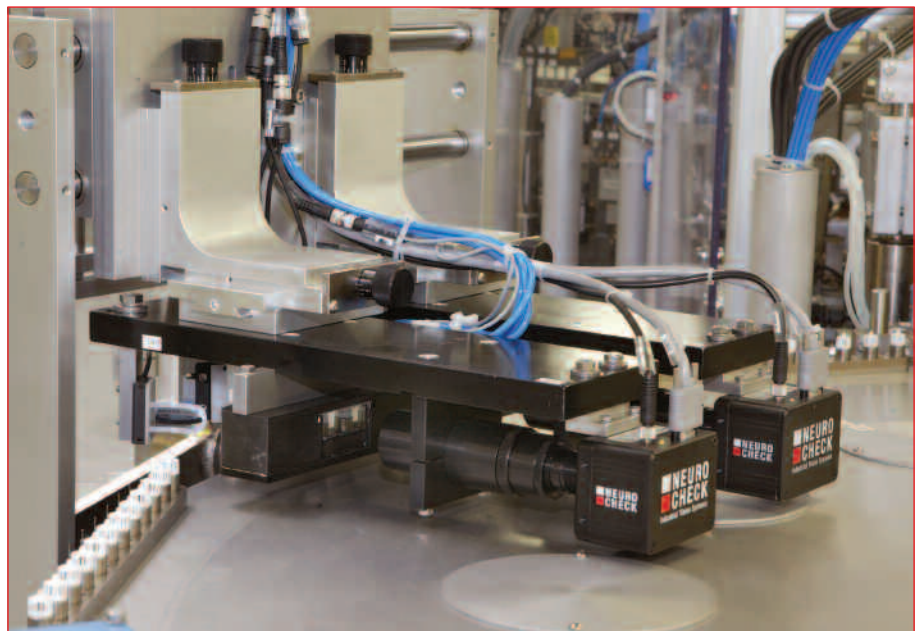
The disposable needles used in pen-injectors need to be straight and they need to be sharp. The IVS system, integrated into a needle-assembly machine being built by Sortimat, a machine tools company based in Winnenden, near Stuttgart, provides the assurance that bent or blunt needles will be rejected long before they reach the user.



Sortimat's manufacturing unit places 12 needles at a time onto a round-table workpiece-carrier and the machine vision system has to check all 12 in less than 1.4 seconds. It does so using two cameras, from the NeuroCheck Firewire range, each of which is moved mechanically to scan six needles. By placing some simple, but ingenious, prism-and-mirror optics between the camera and needle, each 'exposure' shows two images of the needle taken at 90 degrees from each other.

CASE STUDY

The high-repetition backlighting is provided by two red, small-panel LEDs from Sill Optics, also offset at 45 degrees to the line of vision. According to Dirk Zinnaecker, head of image processing applications at NeuroCheck, a bright flash is needed since the system has a shutter time of only 100 microseconds.

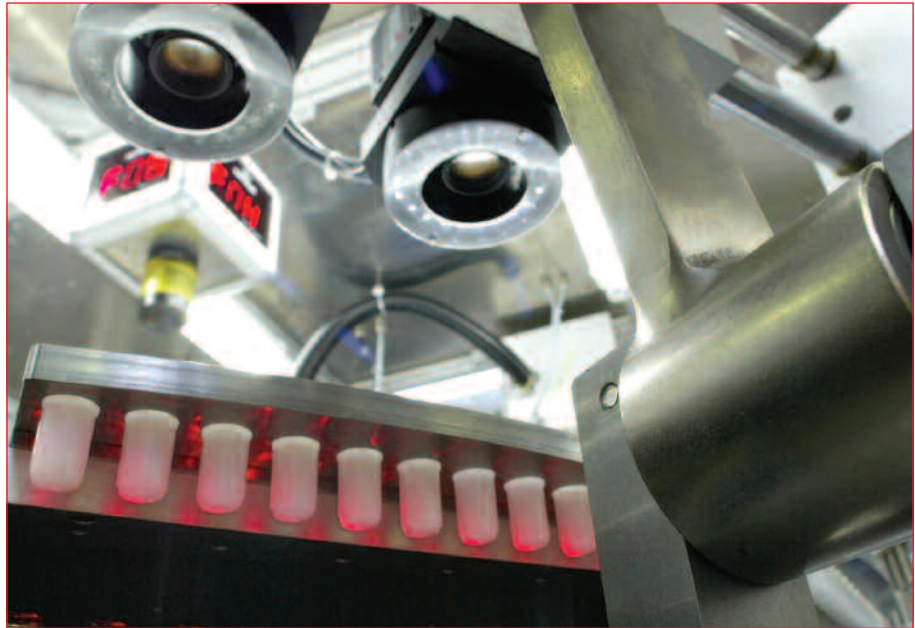


NeuroCheck's software compares the straightness of the needle to a reference pin and employs a second algorithm to check the contour of the tip and ensure that it comes within the specification for sharpness. The accept/reject decision is done in parallel with the next image coming in, Zinnaecker said. Image acquisition and processing requires two standard industrial PCs, which send a signal to the process control computer as to whether the needle assembly is satisfactory or whether it is to be rejected.

Olaf Witzel, the design engineer in charge of the project for Sortimat, pointed out that, because the product from the assembly plant was a medical device, its manufacture had to conform to US Food and Drug Administration rules for documentation and record-keeping. Thus, in addition to the accept/reject signal, the machine vision system also has to generate an electronic record to be filed as part of the audit trail for the plant.

The cameras are connected to the PCs through FireWire – part of a trend whereby NeuroCheck is moving toward significant use of FireWire technology. According to the company's managing director, Christian Demant, more than 30 per cent of users who encounter problems with image processing are simply unable to get the camera to work and thus capture an image. FireWire represents a giant step towards 'plug and play', in PC-based image processing, according to Demant. He noted that, as NeuroCheck's customers increasingly use FireWire, the demands on the company's support staff are lessening and changing. Staff can now be re-assigned from support to research and development, he said.

CASE STUDY



The assembly plant is in the final stages of testing at Sortimat's workshops before delivery to the pharmaceutical company Yposmed in Switzerland. Although Sortimat would not disclose the cost of the equipment, it is believed to be between two and three million euros. The machine vision component – including cameras, optics, other hardware, and the software – accounts for around 10 per cent of the entire cost.

Sortimat specialises in making high-precision assembly systems for the pharmaceutical healthcare and cosmetics industries. It claims to be globally the foremost company in the manufacture of assembly lines for medical products and pharmaceutical dosing devices. Witzel remarked that, unless its customers specified differently, the company worked closely with NeuroCheck to provide the machine vision aspects of the finished product.

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