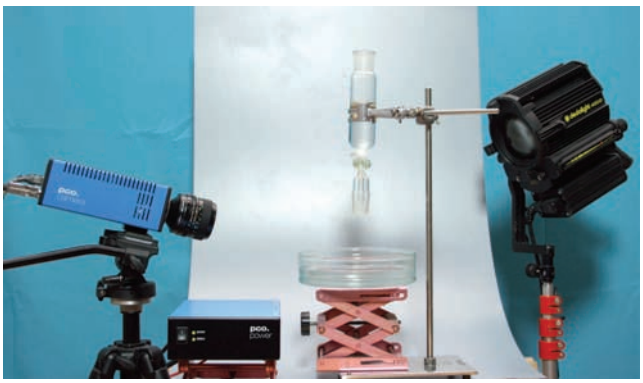
New options for better

10 Questions for Dr. Gerhard Holst, Research Scientist at PCO and Member of the EMVA Standard 1288 Working Group



Test setup: high-speed filming for advertising and special effect films

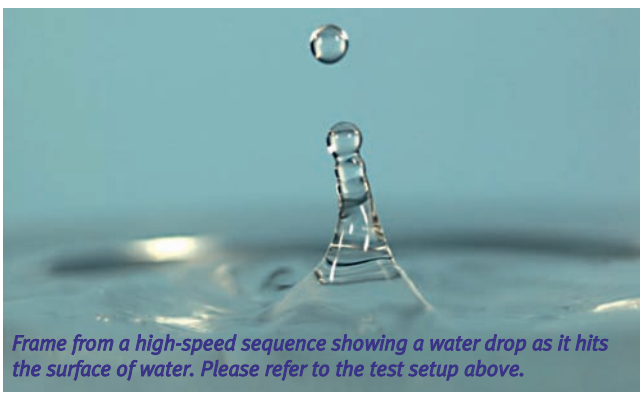
PRAXIS Profiline

Every year, the turnover in the industrial machine vision industry reaches double figures. And yet still only 15 to 20 percent of possible applications are realized. Is this the same for PCO, and where do you see new applications opening up?

G. Holst

With constant improvements in camera systems in respect of quality of image and local and dynamic resolution, data transfer and above all image processing algorithms together with new image sensor concepts are finding more and more applications, which were performed previously by tactile measuring systems, for example.

In addition, in biotechnology there is an increase in the use of optical measuring techniques as well as image processing applications. This means there are new markets for PCO to enter, as our customers always place very high demands on each individual camera system. And both high speed and film applications are useful for us. Similarly, there are new types of applications in Life Science, where moderate frame rates are combined with very high sensitivity.



Frame from a high-speed sequence showing a water drop as it hits the surface of water. Please refer to the test setup above.

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The benefits of the new EMVA Standard 1288

PRAXIS Profiline

The EMVA Standard 1288 makes it easier to compare performance data for cameras and sensors. For the first time, EMVA certified products will be shown at VISION 2005. What is PCO's involvement in this?

G. Holst

Right from the beginning, we have supported this standard, as we very much welcome the fact that this will make it easier and better for customers to compare camera systems. Much of what is contained in the standard is already an integral part of our quality control. The only thing which has really changed for us is a part of the data processing or display.

For the first time the customer now has uniform definitions for the quality features of camera systems, defined data descriptions and therefore a greater possibility of choosing the most suitable camera system.

We're a member of the Working Group and so we've been involved in its development. By Vision 2006, the existing product data sheets for most of our products will have additional data attached to conform to 1288 data requirements. The product data sheets will be completely replaced once the standard's modules are in place for all our usual data.

PRAXIS Profiline

The 1288 Standard is to be introduced by modules, to grow step by step, so that all new aspects of cameras can be defined. The first module was published at the end of the third quarter of 2005 and the next one should follow by the second quarter of 2006. How many modules are involved altogether and when do you expect to complete the process?

G. Holst

We don't exactly know yet, as the Working Group has still not decided how to deal with color sensors and whether there should be a special module for line sensors.

The next module will deal with linearity and homogeneity parameters, such as DSNU and PRNU, and various color aspects.

PRAXIS Profiline

The extent to which a manufacturer has to bring his products into line with 1288 obviously depends very much on their existing quality control procedures. What kind of costs do you expect this to incur?

G. Holst

We'll have to delay some things, as we need to do more measuring, but we have also resolved to have the measuring done by an independent laboratory, as a so-called neutral check.

ystems

The pco.1600, a cooled, low noise 14 bit CCD camera system, is one of the first cameras for which 1288 compliant data will be available to the public at Vision 2006

In any case, general product data sheets can guarantee to show typical values only. Otherwise, as already mentioned, the additional work we need to undertake is very minor, as we already have extensive quality control procedures in place.

Will there be real savings in terms of sales advice?

PRAXIS Profiline

The new standard should reduce to a large extent the need for advice in the sales process. Why is this and by what percentage do you think this will be reduced?

G. Holst

You will of course always be faced with sample measurements from customers at any given time which might be reasonable or not, depending on what they are. The standard now provides an objective description of the measurement and the meaning behind the relevant quality parameters to which customers can be referred.

I do think that, in the beginning, there will have to be a certain amount of explanation and clarification, not least with the multitude of graphics which look more like datasheets for electronic components. But once the customer has become familiar with it, advice will only be required where sophisticated units or parameters are sometimes used to describe camera products. To give a particular percentage though would not be appropriate.

PRAXIS Profiline

Products which conform to the standard will be marked with an EMVA 1288 logo on a self-certification basis. Is EMVA influential enough to rein in anyone who doesn't play to the rules?

G. Holst

At the moment we have still not discussed the measures to be taken in case of abuse. If such a case occurred then I am sure that ways and means would be found to address it.

However, I wouldn't want to speculate about possible steps. Looking at it the other way round, it would of course be preferable for the standard to become so well established that companies who manufacture products which are doing badly have to consider how to improve their position. Not playing to the rules would of course be an entirely wrong and reprehensible way of going about it.

The benefits of the increasing variety of interfaces

PRAXIS Profiline

There has been a marked increase in the variety of interfaces in industrial machine vision in recent years. Camera Link, Firewire a and b, USB and USB 2.0 are gaining a greater presence in the market. And now we have the fast 10 GigaBit-Ethernet (GigE) as well. What does this mean for your company and for the machine vision industry?

G. Holst

For us the application of new data interfaces with all their specialties is dependent on customer requirement. As we've already created solutions with Firewire and Camera Link, the next step for us will be GigE.

Certainly, we are very interested in GigE, as it provides functional and inexpensive hardware in a simple and easy way. It remains to be seen if and when the AIA succeeds in defining a camera-specific GigE standard. But there are already businesses who we know have created this product and are working with it. Maybe it will just be accepted de facto.

Finally, Firewire a and USB 2.0 are comparable from the point of view of speed and workable cable lengths. If Firewire b really happens then there will be a speed bonus. Fast data transfer is achieved with Camera Link with short cable lengths and using very expensive special cables. GigE uses long cables and standard components but there are still questions regarding speed and data security.

Probably the pressure to innovate is comparatively greater for GigE using networks and computers, so that we'll soon be talking about 10 or 100 GigE. That would then at some stage or other deliver benefits in speed with relatively low hardware costs.

An example of an OEM camera for industrial applications designed to meet the more stringent adjustment and dynamics requirements of 3-D mesurement applications.

An example of a moderately coold 12 bit OEM CCD camera with very high offset stability. The camera is used in a life science application.

What changes will the new Stuttgart Trade Fair Center bring?

PRAXIS Profiline

On Stuttgart's doorstep and right beside the airport, from 2007 onwards the new Stuttgart Trade Fair Center will offer 100,000 square meters of exhibition space and provide the most advanced shop window for high-tech products. How will your company respond to this and what is your colleagues' reaction

G. Holst

It won't change much for us. We'll still be traveling by car to get there.

It will probably be of benefit for the internationalization of Vision, so not only will more international competitors come in but also even more international visitors, which has to be good for everyone.

As we are already exposed to competition at an international level, we're pleased about it.

PRAXIS Profiline

Over the coming year there will be more show opportunities for the machine vision industry than this year. Hanover Trade Fair, VISION, SPS/IPC/Drives and now Automatica. Will this affect your show commitments?

G. Holst

We straddle the borders of machine vision, as we also have many customers in the measuring technology and research sectors, and so it doesn't affect our show commitments.

Dyaderm, a machine vision diagnostic and therapy tool which is used to treat skin cancer. It records live color and fluorescence images quasi simultaneously. It is built around an ultra-compact 12 bit CCD camera

It might offer more show opportunities to our competitors within the machine vision industry. We focus more on other conferences and exhibitions.

Assessing developments for 2006

PRAXIS Profiline

Now for a look at the future. How has your company performed in recent years and how do you think this will develop in 2006? What do you hope for in 2006?

G. Holst

As we rely on research funding more so than others, one effect of the shortages in the last two years has been a stagnation in performance, but current figures show an improvement again this year.

As a result we hope that the next year will bring a further increase and better penetration with our new products.

Also in 2006 we have two new product ranges in the pipeline, which we think will meet the requirements of various component markets.

PRAXIS Profiline

Dr. Holst, thank you very much for this illuminating discussion.

Dr. Holst spoke to Armin Schwarz, Editor in Chief, PRAXIS Profiline, Würzburg

Company
In 1987, PCO AG was founded with the objective to develop and to produce specialized fast and sensitive video camera systems, mainly for scientific applications. Meanwhile the product range of PCO cameras covers digital camera systems with high dynamic range, high resolution, high speed and low noise, which are sold in the scientific and industrial market all over the world.

Currently PCO is one of the leading manufacturers of scientific cameras. Worldwide representatives, together with our own sales department and technical support assure that PCO keeps in touch with the customers and their needs. The actual wide range of specialized camera systems is the result of technical challenge and product specific know-how.

Products
The product range is structured into the following sections:
- **sensitive cameras** 12bit & 14bit dynamic CCD camera systems with high sensitivity and low noise
- **intensified cameras** high resolution MCP image intensifier camera systems
- **speed cameras** ultra- & high speed CMOS and image intensifier camera systems
- **specialized cameras** CCD camera systems with double shutter features or modulation capabilities

Furthermore PCO develops customer specific solutions (OEM), like camera systems for industrial applications, where high dynamics and image quality are an important issue.

Committment to excellence
A technical design according to advanced technolgies, a high standard of production, and strict quality controls guaranty a reliable performance of our cameras. Our own developments in conjunction with an excellent contact to leading manufacturers of image sensors ensure our access to state-of-the-art CCD-and CMOS-technology for our cameras.

In America contact:
www.cookecorp.com