



Precision machining with « Vision in-the-Loop »

Precision machining is often associated with lengthy, highly sensitive, iterative processes, sometime prone to non converging accuracy.

Diamond turning with Dynamic Part Indexing

For about 10 years, Wielandts UPMT have mastered precision diamond turning to reach sub-micron accuracy for the production of lens masters (incl. freeform) for various industries such as Automotive, Medical imagery, Virtual/ Augmented Reality, ...

Strong of their expertise, they have developed and patented a unique Dynamic Part Indexing (DPI®) technology allowing the precise manufacturing of high-density arrays of lenses on a single master without compromising on the individual lens nor complete array accuracy.

This unique system brings the best ultra-precision machining technique, i.e. on-axis diamond turning, to produce arrays of all kinds. By shifting the workpiece with respect to the main spindle in a dynamic, balanced and ultra-precise way, each surface of an array can be machined sequentially.

With this technique, the outstanding

- form accuracy,
- surface finish
- and geometric freedom

achieved by ultra-precision diamond turning on a single on-axis lens can be obtained on each lens of each array of a fully populated master. It results in outstanding product consistency and production efficiency.



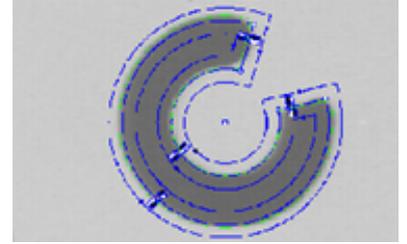
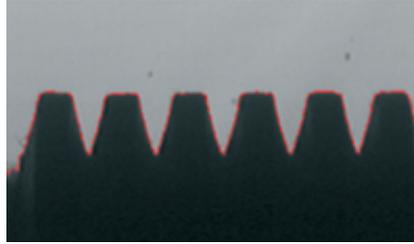
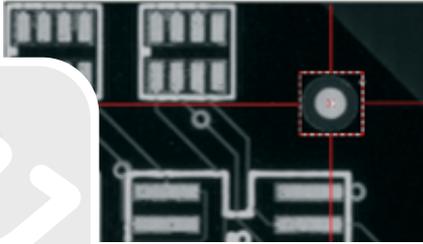
DPI Lens array master



DPI Lens array



Fully populated master with several lens arrays



examples of Open eVision Libraries functions

Vision-in-the-Loop

Integrating Machine Vision in the manufacturing process

Beyond the intrinsic performance of the technology (freeform, low surface error, true 100% fill factor,...) Wielandts UPMT make use of the Euresys Open eVision Libraries to introduce “Vision-in-the-loop” to their process and shorten the control-command cycle of their automated production facility.

Wielandts UPMT have picked among the wide range of Euresys libraries, the ones offering the possibility to capture, analyze and return the necessary parameters to the machining process in order to dynamically and on the fly drive the manufacturing process iterations.

Open by nature, the selected Open eVision Libraries can be used individually or combined to achieve a compounded function. Independent from the image sources (frame grabbers, GigE Vision camera, USB3 Vision camera, ...) and processing platform (Windows™ or Linux™, x86 or ARM™), they are easy to learn, tune and use.



Open eVision Image Analysis Software Tools

Precision and high speed are compatible

These libraries have allowed Wielandts UPMT to efficiently integrate machine vision functions into their proprietary control software and hardware, closing the loop in a specific and efficient fashion in terms of visual resolution and processing time.



Wielandts UPMT
www.upmt.be

Wielandts UPMT is a start-up company that has developed a unique patented technology called DPI® (Dynamic Part Indexing) that is a real breakthrough solution for the machining of lens arrays and monolithic multi-cavity molds. Using this technology, Wielandts UPMT manufactures lens array masters to customer specifications for diverse applications. The company also provides replication services of full thermoplastic lenses and MLAs from prototyping to volume production with a technology called HiFi Optics®



Euresys
www.euresys.com

Euresys is a leading and innovative high-tech company, designer and provider of image and video acquisition components, frame grabbers, FPGA IP cores and image processing software. Euresys is active in the computer vision, machine vision, factory automation and medical imaging. In terms of image analysis, Euresys' skills apply to blob detection, sub-pixel measurement, pattern matching, color analysis, optical character recognition, barcode reading and verification, 3D inspection and classification using deep learning