Tielogic

HORUS:
measure
with sharper
eyes

HORUS: measure with sharper eyes

Horus is a metrology software application ensuring unpaired system measurement accuracy thanks to its state-of-the art calibration algorithms and protocols.

Horus is a very intuitive and user-friendly software allowing for real time measurement of parts: its interface and procedures are designed to closely match traditional CAD software approach thus ensuring a quick and easy check of the measurement results.

Parts are automatically recognized and tracked over the entire field of view with no need of re-configuring the measurement procedure, while tools for automatic geometric primitives and part geometric construction search make metrology information even more easily available.

An advanced approach to edge detection and system calibration ensure maximum accuracy to your measurement system.

Statistics are really intuitive and easy to use, allowing for getting complete measurement reports and data extraction.

Horus can be easily configured and released independently by machine builders who want to address the specific type of process and needs of their customers.
Moreover, Tielogic can very quickly provide customizations of the program interface, of existing program features as well as creating new application-specific features, according to customer's need, including on-line measurement operation.

KEY FACTS:

- **Very accurate calibration and measurement over the entire field of view**
- **Live measurement and tracking of objects placed in any position**
- **Very intuitive interface, consistent with most CAD environments**
- **It's flexibile, configurable and open to the integration to other devices**

Horus is available in two versions:

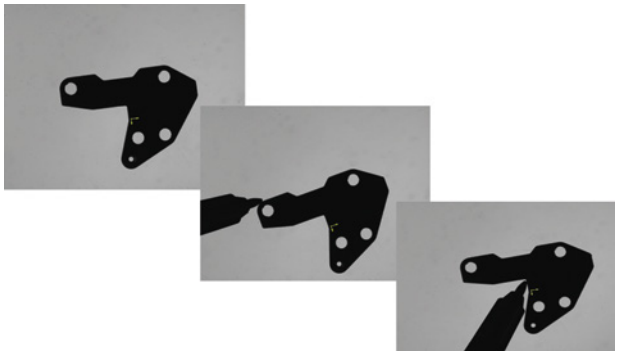
- **Hours FoV**: dedicated to online and offline measurement systems with one or more whole objects in the field of view.
- **Horus CNC**: dedicated to measuring systems based on numerical control methods (either motorized or manual).

HORUS MAIN FEATURES

LIVE MEASUREMENT

FOV

Objects are instantly recognized and measured in real time ensuring very fast measurement operations.



OBJECT TRACKING BY RECOGNITION

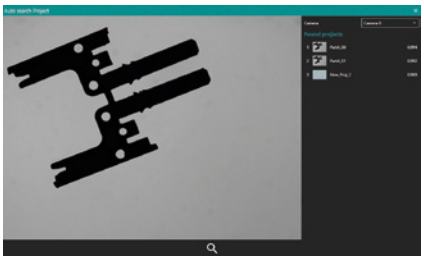
FOV

Synthetic models of multiple objects can be created from images or .dxf files. The software recognizes every object in any position and with whatever rotation within the field-of-view.

MEASUREMENT PROGRAM AUTO-SEARCH

FOV

The software can automatically recognize the object and apply its specific pre-defined measurement program. Based on the image, the software search for all the projects that best fit it, and returns a list of results.



EPISCOPIC MEASURING TOOL

FOV CNC

This tool is dedicated to measurement on front-illuminated (episcopic) setups. It doesn't require time-consuming parametrization and is extremely robust on variations of illumination and contrast.

The tool automatically identifies the object primitives, even if scarcely visible or defined by low contrast, where a clear edge extraction is not easy with standard tools. Measurements resulting are repeatable and stable.

CREATION OF PART AND/OR ASSEMBLY PROGRAM

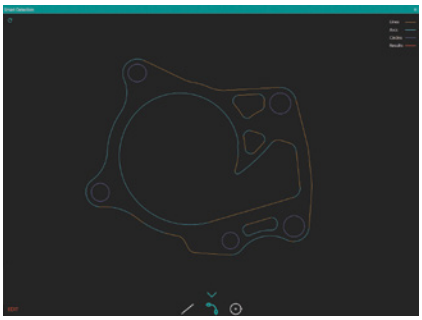
FOV CNC

With Horus it's possible to create multiple project files related to the same part. With this method, particularly indicated for multi cameras systems, you can use multiple projects to analyze the same part in different way, e.g. front view vs top view or side view.

SELF-DETECTION OF GEOMETRIC PRIMITIVES

FOV CNC

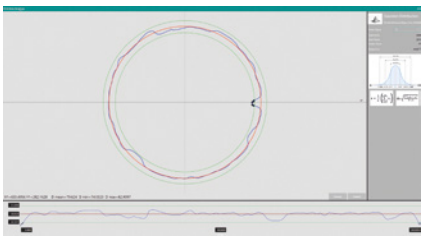
Geometric primitives can be either automatically identified or defined by the operator. This allows for the analysis tools to be easily created with a simple click from within a dedicated set-up window.



ACCURATE CONTROL OF FITTING PRIMITIVES

FOV CNC

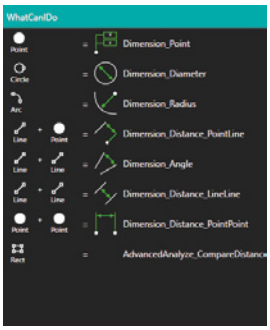
Geometric primitives can be point-by-point controlled by means of statistical tools: point distribution can be checked and used to apply filtering process.



SIMPLE FEATURES CREATION TOOL

FOV CNC

Creating dimensions, geometric shapes and any other feature is always guided by descriptions and commands suggested graphically in the user interface. Horus can manage easily either typical elements of CAD modelling (intersections, axes, perpendicularity and parallelism, etc.) or geometric nominal values and tolerances by automatic or tool-aided creation of dimensional data boxes.



STATISTICAL REPORTS

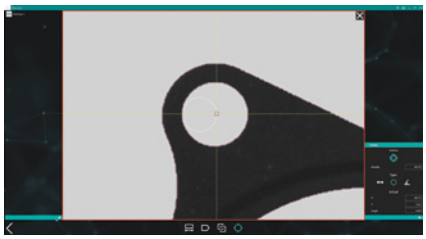
FOV CNC

Measurement values are saved in a database configured for easily checking and reviewing historical and statistical trends. Data can be read, modified, exported in CSV format and the reports printed. Other export format can be developed upon request.

CROSSHAIR (FoV version)

FOV

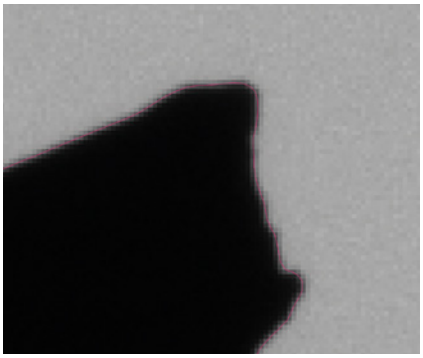
Crosshair function for manual measurements allows for the analysis to be made also in situations where the processing is difficult due to part/ environmental conditions and automatic tools might not be enough.
The graphical user interface helps as always in defining distances, diameters or angles.



ADVANCED IMAGE EDGE MANAGEMENT

FOV CNC

Black-to-white transition curves are analyzed and the most appropriate edge placement and position correction is applied using sub-pixel accurate edge extraction.
Different edge corrections can be applied to ensure maximum results and compensate material and shape refraction.



ADVANCED SYSTEM CALIBRATION AND OPTIMIZATION

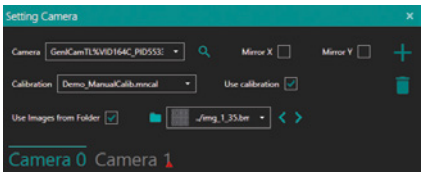
FOV

A complete set of advanced tools ensure the calibration and optimization of all the variables of the system to reach high accuracy and consistency.
Our calibration procedures ensure maximum measurement constancy over the entire field of view, thus making the measurement much less sensitive to object displacement over the field of view.
Lens calibration, light alignment, object plane control and adjustment and autofocusing tool combined with motorized vertical axis ensure optimum performance by minimizing any measurement issues arising from system asymmetry or misalignment.

FLEXIBLE CAMERA INTERFACE

FOV CNC

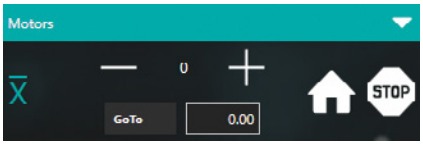
Horus supports cameras compliants with GeniCam, GigEVision, USB3 Vision and other main camera standards. Other types of cameras can be very easily integrated upon request.

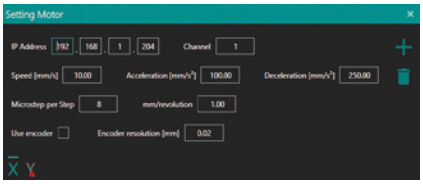


MOTORIZED AXES AND LIGHT CONTROL INTEGRATION

FOV CNC

Horus is compatible with pre-defined motion control units.
Z axis, for best image focusing, is driven and controlled by the application. XY translation stage readout, calibration and control, for CNC-type measurement machine, can be easily integrated though proprietary or customer specific axes control, together with a fourth axis providing the rotational degree of freedom.
Non-standard motion controllers can be integrated upon request.

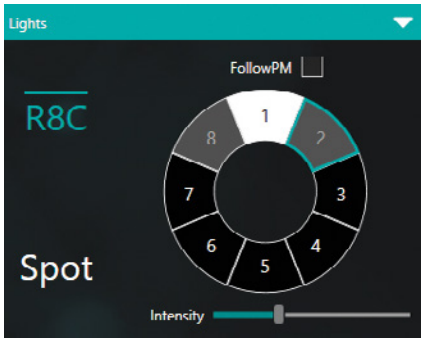


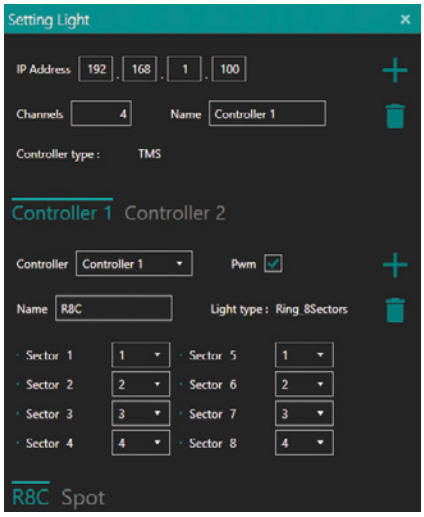


SMART LIGHT CONTROL INTEGRATION

FOV CNC

Horus is compatible with pre-defined illumination control units. The light control tool manages illuminators and specifically ringlights with 1, 4 or 8 sectors. A smart control of multi-sector ringlights is possible, where specific sectors are turned on depending on the part orientation and location on the FoV.
Non-standard illumination controllers can be integrated upon request.





TOUCH SUPPORT

FOV CNC

Horus is designed to be used with ease even without keyboard or mouse.
All menus, functions, filters and tools are right at your fingertips.

MULTILANGUAGE SUPPORT

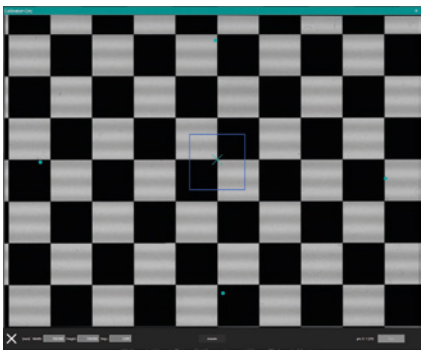
FOV CNC

Horus comes in 5 different languages: EN, DE, FR, IT, ZH.

LINEAR AXIS CALIBRATION

CNC

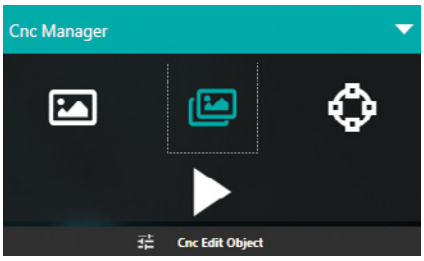
With Horus CNC, axis calibration is an easy and flexible process. First, a tool helps creating a linear calibration of the XY axes, keeping the sensor as a reference frame. A second tool applies the calibration map to the whole measuring Region of Interest, providing the remapped image and a correct result of the measurements.
Both tools are necessary to a complete calibration of the XY axes of the system, and are completely automatized for motorized axes, or guided, for manual axes.



CNC MANAGER FEATURE

CNC

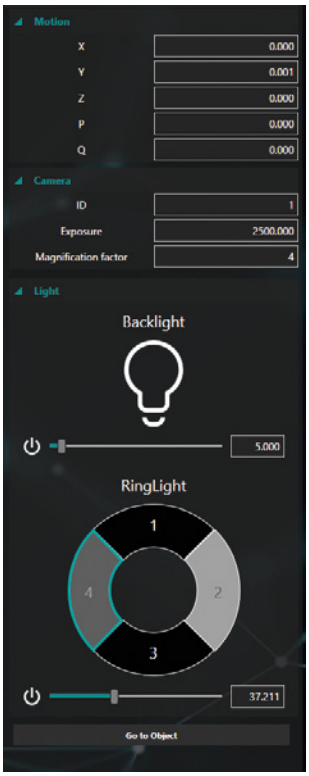
All CNC-related main features are managed from within this tool. CNCManager starts and stops the analysis programs, shows the preferred view (live image, stitched images, with/without edge or edge-only), gives access to the editor tools for measurements on the object created.



OBJECT EDITING TOOL

CNC

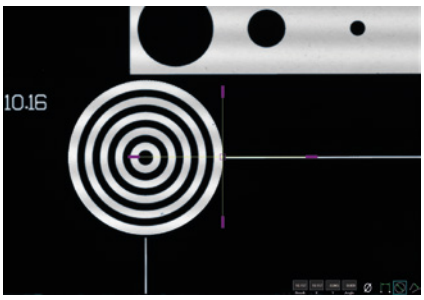
Any new object can be managed within this tool. Editing capabilities include axes positioning for each object, illumination, camera settings etc. It's possible to do a live test run on a single created object to verify changes.



CROSSHAIR

CNC

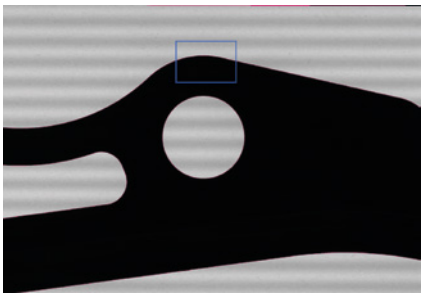
Crosshair function for manual measurements allows for the analysis to be made also in situations where the processing is difficult due to part/ environmental conditions, and automatic tools might not be enough. The graphical user interface helps as always in defining distances, diameters or angles. The tool is integrated to the axes movement, either manual or motorized, to be able to follow the measurement on parts which are larger than the FoV.



EDGE FOLLOWING FUNCTION

CNC

This function allows for the automatic edge following for a full reconstruction of the object, without having to manually provide the full set of axes positions.



LIVE IMAGE ACQUISITION MODE

CNC

With live acquisition mode, it's possible to acquire images in real time of the part under inspection. Live images allow for an immediate analysis of the part; moreover, a live view help to create and optimize in a faster and easier way the measurement tools which will be used later for the CNC program.

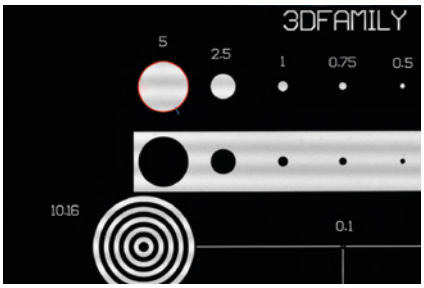
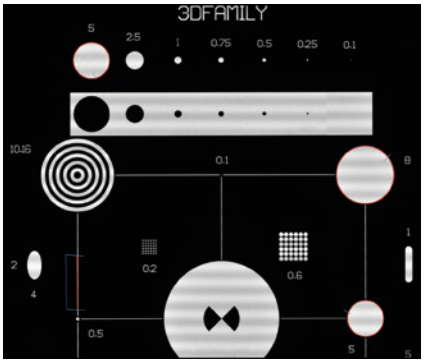


IMAGE STITCHING

CNC

With Horus it's possible to stitch images and edges. Image stitching allows for a full view of the whole analyzed part after the execution of the CNC program. Edge stitching provides information on the edge detected on the stitched image. Visualization of the measurement set connected to the part is also possible.



ADD-ON FEATURES

MULTIPLE CAMERA MEASUREMENT

Horus can manage multiple cameras or multiple magnification of the same image provided by the optics also combining different object views or different resolution images to achieve the same measurement accuracy on different sample sizes.

3D MEASUREMENT

Horus can perform 3d measurement and analysis based on triangulation techniques of objects scanned by laser blades and combine those results with 2d measurement date of the same sample.

... AND MORE!

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