



KREON / GEOMAGIC PLUG-IN

USER MANUAL

1 / Introduction

2 / Start the application

3 / Scan

4 / Using probes

5 / Alignment and references

6 / Real time color mapping



1 / Introduction

This plugin allows direct use of KREON technology in Geomagic Qualify and Studio software.

This plugin is then a part of Polygonia in Geomagic software interface.

The following functionalities of Polygonia are included in this plugin :

- machines sharing
- KREON scanners and touch probes
- Use of the scanners and touch probes

The following functionalities of Polygonia are not included in this plugin :

- facets creation
- grid creation
- sections creation

However, Geomagic existing functions, such as filtering, shading display, alignment and others, are integrated in this plug-in ; then named KREON / GEOMAGIC plug-in.

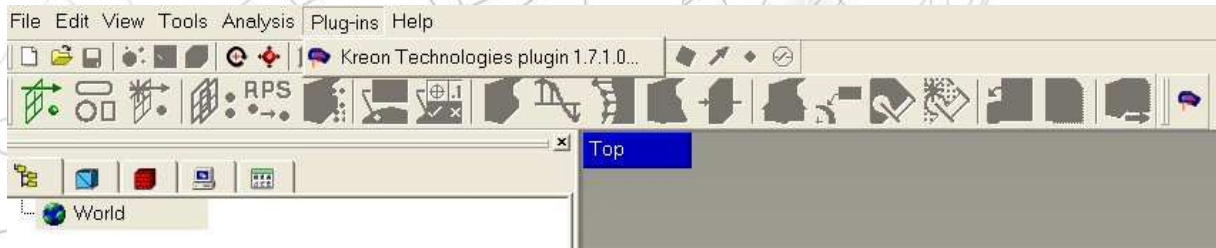
This allows, in only one working session, to complete a scanning and measures before starting an inspection or a reverse program in the same software.

Notes :

This plug-in can be only used with Qualify 8 and Studio 8 SRI.

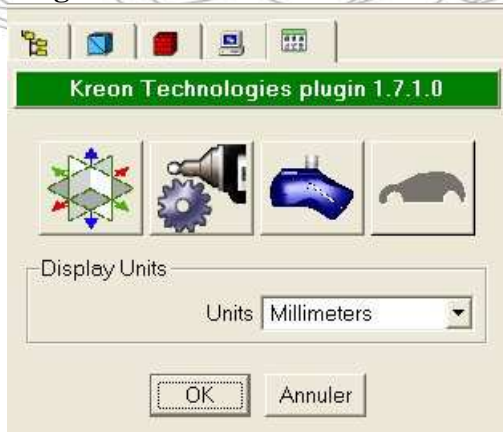


2 / Start the application



The KREON Plug-In application is launch with the menu or with toolbar icon.

Plug-In toolbar



- 1st icon : Alignments
- 2nd icon : Touch probes
- 3rd icon : Kreon sensors
- 4th icon : Real time color mapping

Notes :
The 4th icon doesn't exist in Studio
This icon is not available if no element (CAD) is in reference.



Same interface with active color mapping button



3 / Scan

Scan module general window



This module is made with different levels :

Working units

1. *Positioning phase (look below)*
2. *Toolbar (look details below)*
3. *Video settings*

Saving scan options : in an existing group, a new one or in a separate scan...

Real time view resizing, virtual camera (normal orientation and highlighting the current laser line).

Data options allow to scan in unordered (Kreon standard) or ordered (sort of grid) points mode. "Advanced options" function is detailed below.



Data Options

Order Point Data

Advanced Options

Remove Overlap

Remove Outliers

Spacing

Reduce Noise

Low High

Ordered Data Options

Spacing

Max. Edge Length

Max. View Deviation

Filter Angle

Keep Unordered Scans

Unordered Data Options

Shade Points

Sample Points

Spacing

Max. Error

These functions already exist in Geomagic. However, they can here be used during the real time scanning.

Overlap or outliers removing

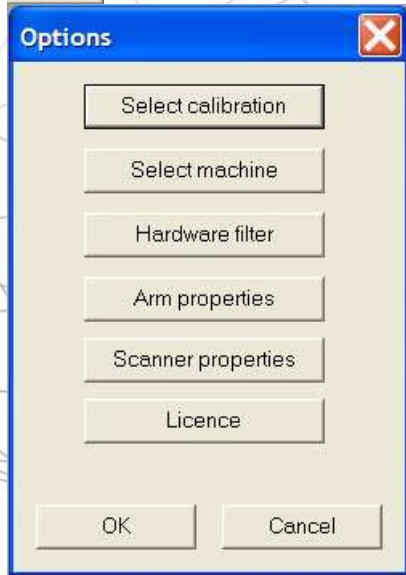
Real time reduction of the noise

Options for the capture of ordered points

Options for the capture of unordered points
For instance, we can choose to scan with shading display and to sample them during the scan.



Options

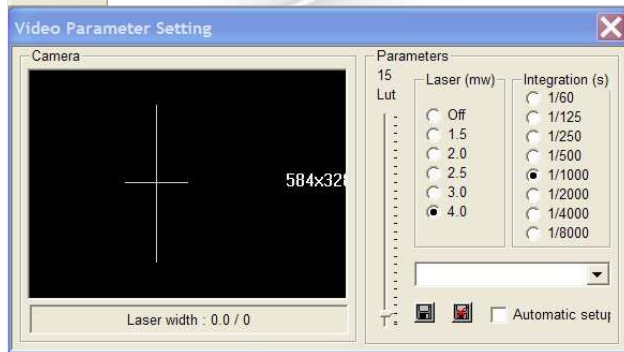


The Options window allows the selection of a sensor, the CMM and hardware filter.

Arm parameters as well as sensors and licensing information can be displayed



Video settings



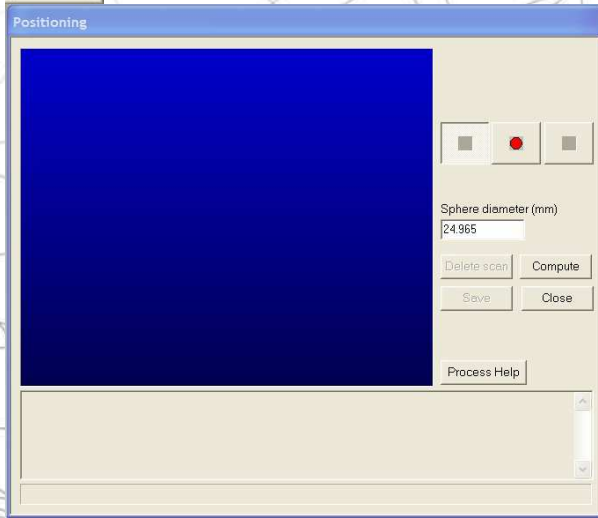
Once the video settings option is chosen, the same window as the Polygonia one is displayed.

Automatic setup : this option (if it has been activated in Polygonia setup program) allows to get an automatic time integration setup considering the scanned material.

Setup first the good parameters and then switch on this option. The system will try to keep this setup even if the color or the texture of the part is different.



Positioning



The positioning window is the same as the Polygonia one.

The use is also similar.

Note : use right click in the scanning window to change from a rectangular to a lasso selection.

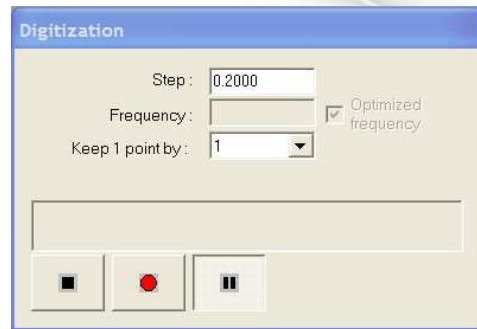


Digitization

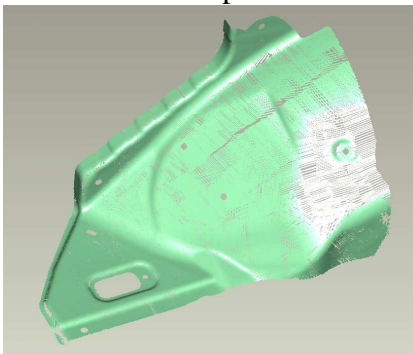
The scanning window is also the same. The scanned lines appear in the Geomagic main window.

Generally, we don't use "ordered points" and "shade points" is active in order to get shading points while scanning.

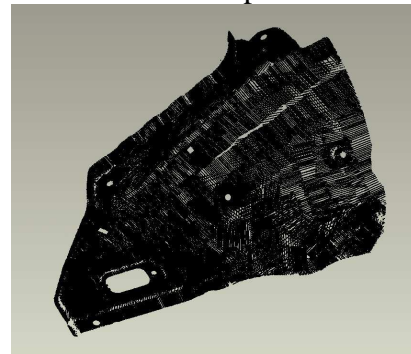
Points sampling option can also be used.



Shaded points

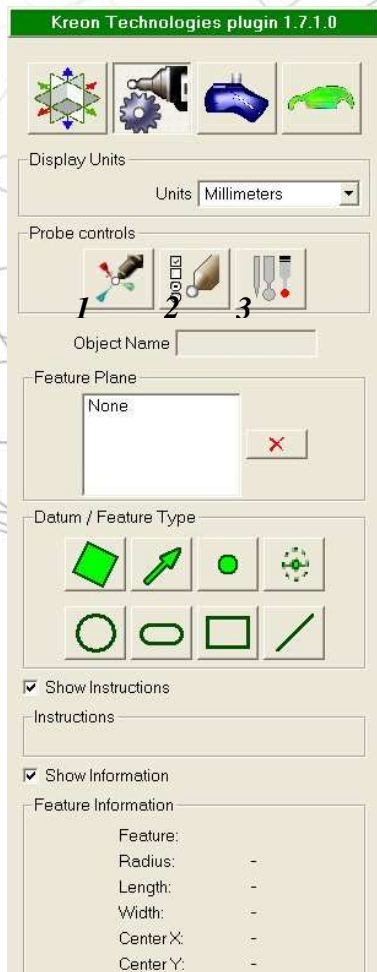


Unshaded points





4 / Probe



Probe module allows to create, calibrate and use touch probes.

1 . Calibration of probes

2 . Options (choice of the CMM...)

3 . Probes creation

Creation of datums/features by using a probe
To create a plane for instance, click on the plane icon and follow the instructions (look details below)



Probe calibration

Touch probe calibration

Probe: PALPEUR 6mm

Calibration

X: -0.019
Y: -0.044
Z: 221.254

Diameter: 6.000
Sigma: 0.004

By Sphere: Sphere diameter (mm): 24.97

By Hole

Message: Selected probe : PALPEUR 6mm (diameter : 6.000 mm)

Buttons: Start, Stop, Start, Stop, Save, Close, Help

Probe calibration is similar as the calibration in Polygona ; either with a sphere or b using a cavity (cone).

Entities creation example : plane

Datum / Feature Type

Icons: [Square], [Circle], [Cylinder], [Cone], [Sphere], [Plane], [Hole], [Slot]

Show Instructions

Instructions:

1. Define a plane by probing 3 or more points on the surface of the object using the first button of the arm. To complete the process, define the offset direction by probing a single point above the plane using the second button
2. Continue this process to define multiple planes.

Show Information

Feature Information:

Feature: -
Radius: -
Length: -
Width: -
Center X: -
Center Y: -
Center Z: -

Buttons: OK, Cancel

The instructions are described for each entity.

A Kreon window is opened at the right bottom of the screen.

It allows to visualize acquired points from the probe.

It has to be closed at the end of a probe session (several entities can be created in one session).

Touch probes management

Touch probes:

PALPEUR 6mm

Buttons: Add..., Delete

Properties:

Diameter (mm): 6.000

Trigger

Calibrated

Buttons: OK, Cancel

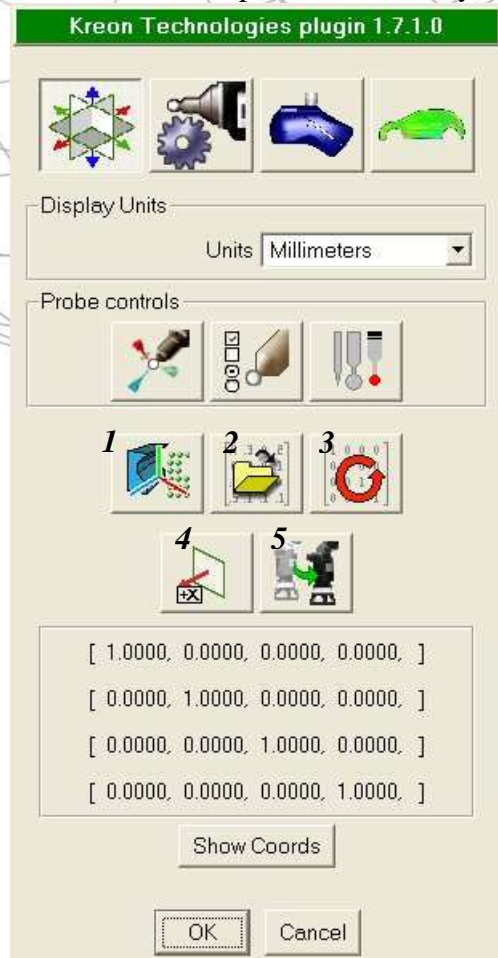


5 / Alignment and references

This module allows to change the working reference point.

For example, while scanning with an arm, the reference point is the base of the arm. There is here a possibility to go to a CAD or part reference and to scan in this new reference point.

There are several possibilities. They are described below.



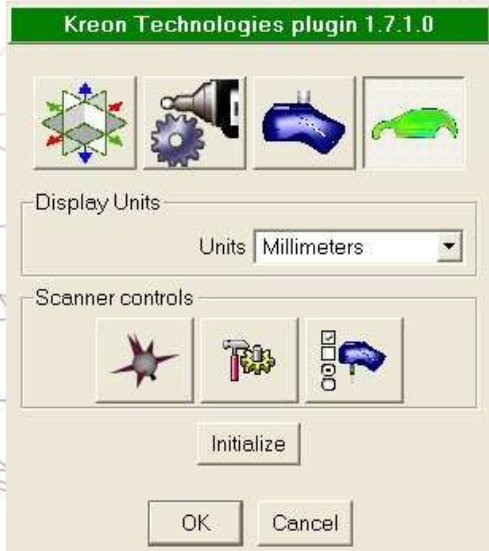
Probes management buttons are available because some alignments use touch probe.

- 1 . *Use the latest Geomagic alignment*
- 2 . *Load an existing alignment*
- 3 . *Use the arm or CMM reference point*
- 4 . *321 alignment*
- 5 . *Alignment with references*

Once the alignment defined, we are in the new reference point. All the future digitizing or probe works will be done in this new reference.

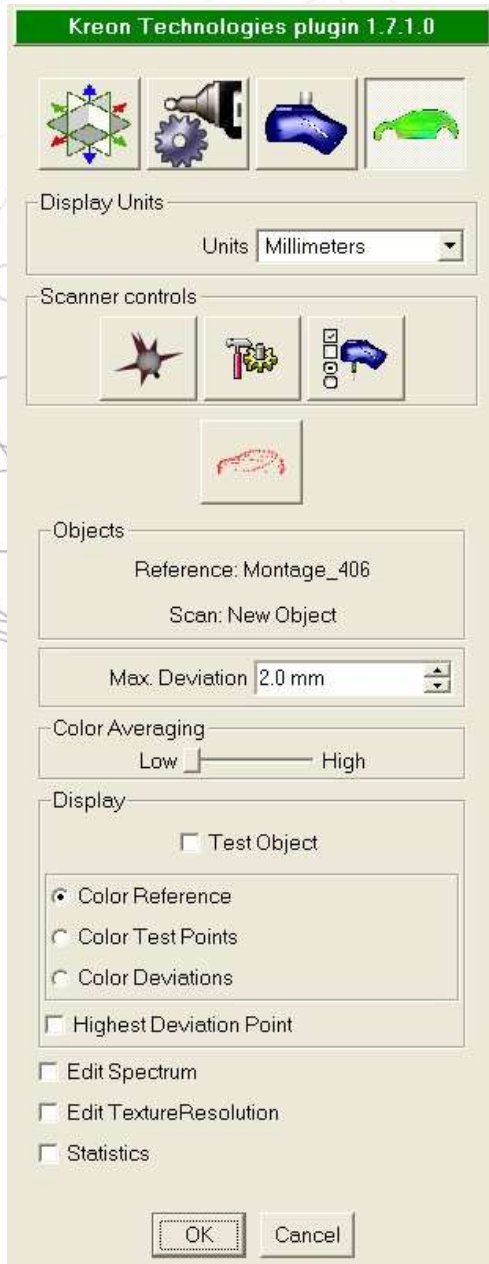


6 / Real time color mapping



When we are in the “color mapping” module, there are the same options possibilities as in the “scan” one (positioning...)

A button allows to initialize the reference point depending to the last alignment defined in “Alignment” module.



Once the init performed, the “scan” button is active.

Before starting a digitization, all the color mapping setup can be modified.



Edit Spectrum

Spectrum

Result

Color Segments 13

Max. Positive 2.0 mm

Min. Positive 0.2 mm

Min. Negative -0.2 mm

Max. Negative -2.0 mm

Decimal Places 3

Edit TextureResolution

Texture Resolution

Automatic

Texture Size 1M

Texel Size 0.1 mm

Statistics

Maximum Distance:
positive: 0.000000 mm
negative: 0.000000 mm

Average Distance: 0.000000 mm
positive: 0.000000 mm
negative: 0.000000 mm

Standard Deviation: 0.000000 mm

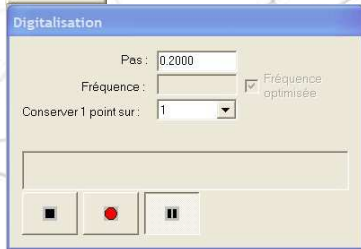
OK Cancel

The spectrum scale, number of segments, texture resolution can be edited before and after the digitization.

Statistical results can also be displayed.



Start digitizing with real time color mapping



The same Polygonia scanning window is displayed.

The result of the scanning appears in the main window with the CAD in gray. The color mapping is displayed in real time.

