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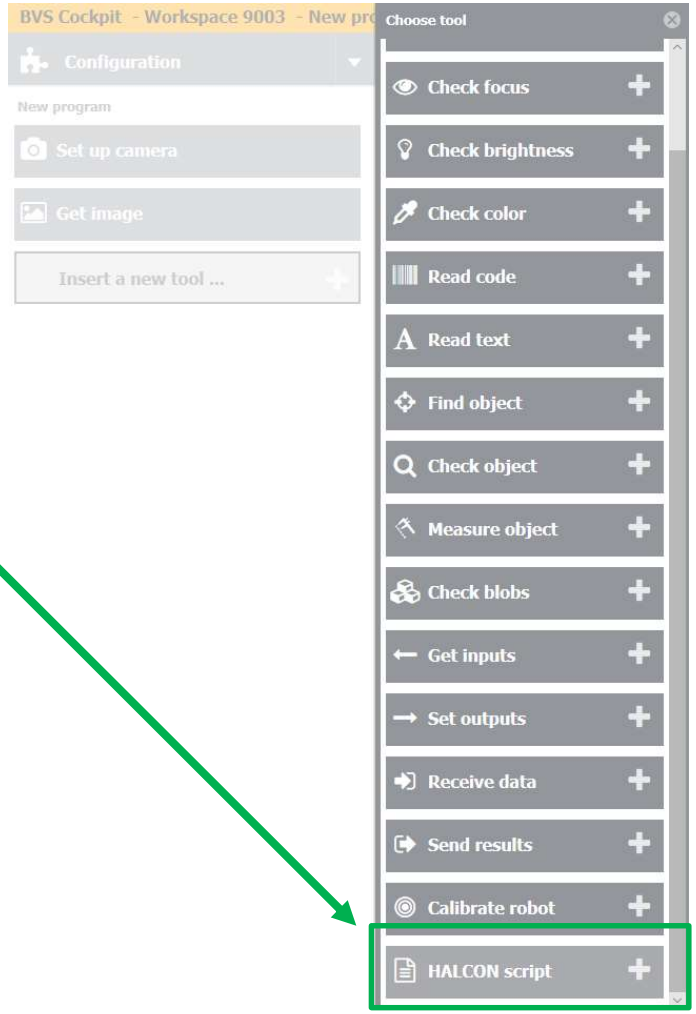
Step-by-Step Guide

Measurements

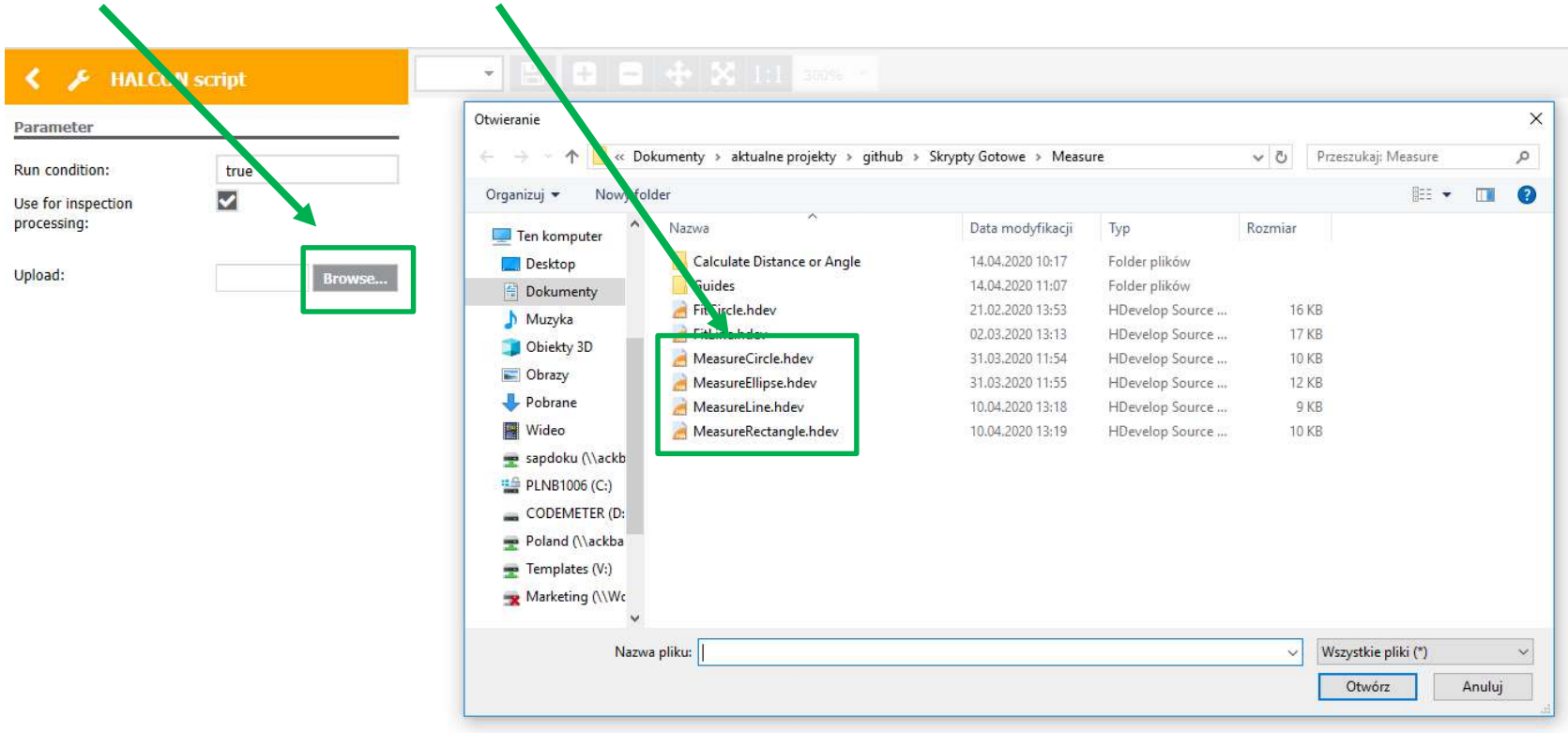
Step 1

Add new tool – Halcon Script – in your inspection program.



Step 2

Click „Browse” and choose „.hdev” file depending on what do you want to measure.

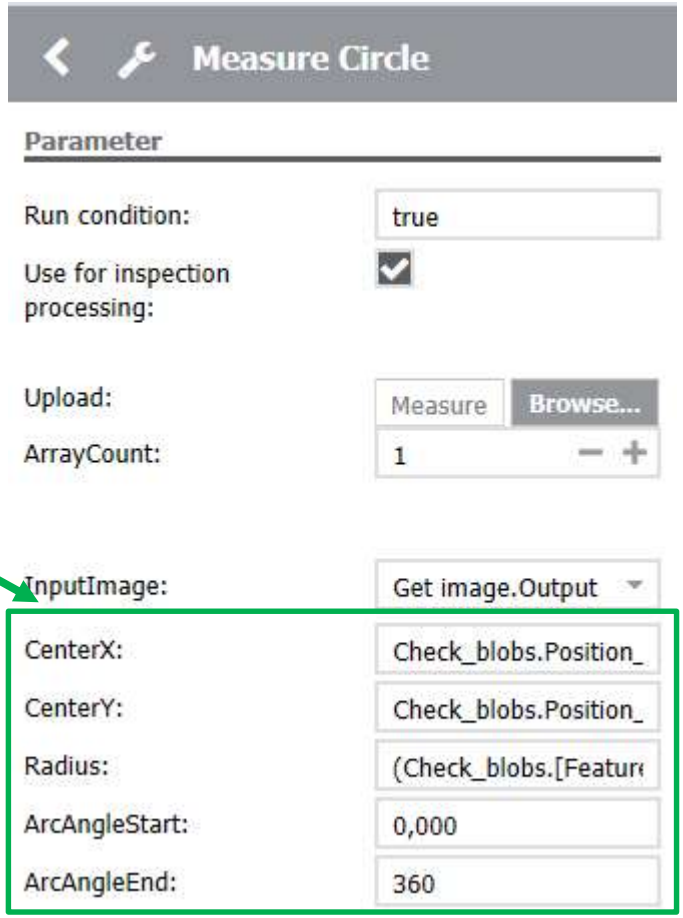


Step 3

If you want to measure circle – set the following parameters:

a) CenterX – X coordinate of circle's center point
b) CenterY – Y coordinate of circle's center point
c) Radius – circle radius
d) ArcAngleStart – arc's starting angle
e) ArcAngleEnd – arc's ending angle

It is possible to set outputs from previous tools (for example Check blobs) as input values.

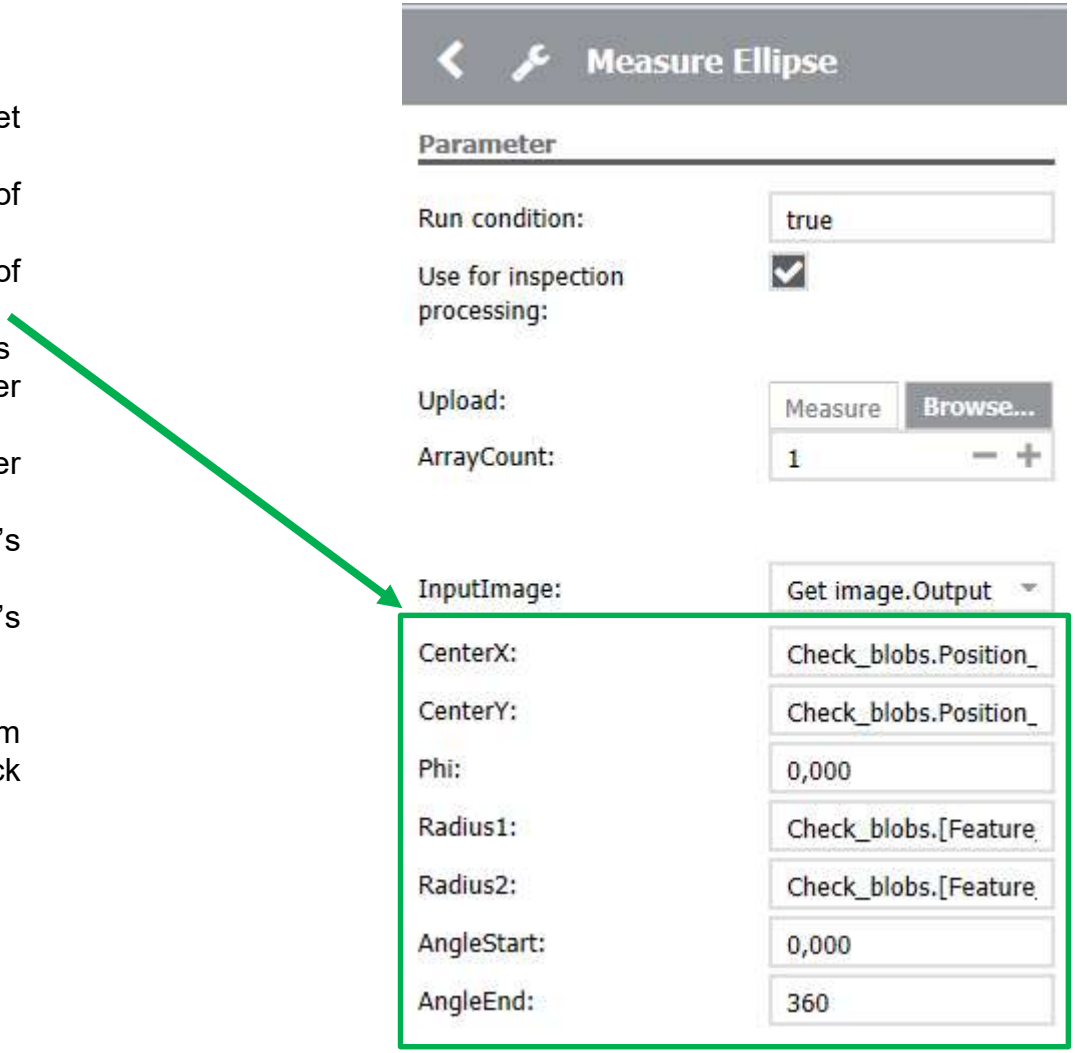


Step 3

If you want to measure ellipse – set the following parameters:

a) CenterX – X coordinate of ellipse's center point
b) CenterY – Y coordinate of ellipse's center point
c) Phi – orientation of the main axis
d) Radius1 – length of the larger half axis
e) Radius2 – length of the smaller half axis
f) ArcAngleStart – elliptic arc's starting angle
g) ArcAngleEnd – elliptic arc's ending angle

It is possible to set outputs from previous tools (for example Check blobs) as input values.

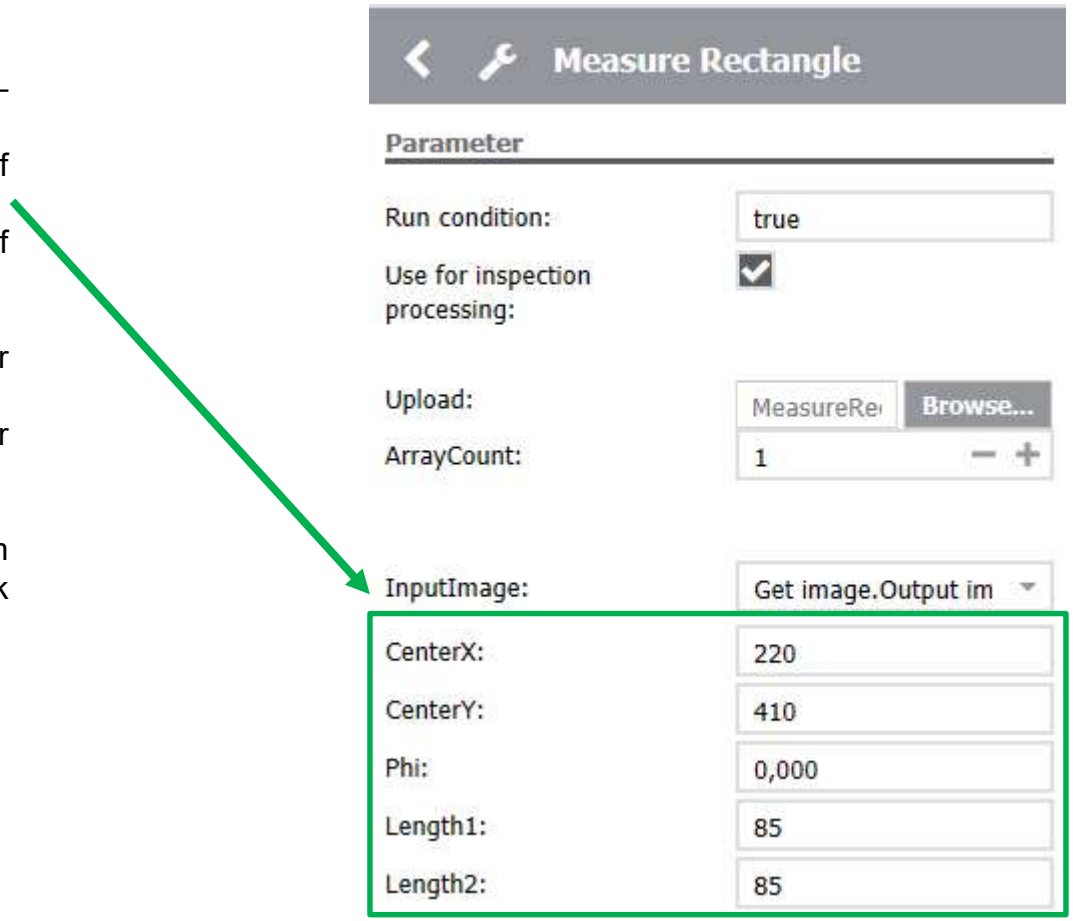


Step 3

If you want to measure rectangle – set the following parameters:

a) CenterX – X coordinate of rectangle's center point
b) CenterY – Y coordinate of rectangle's center point
c) Phi – orientation of the main axis
d) Length1 – length of the larger half edge
e) Length2 – length of the smaller half edge

It is possible to set outputs from previous tools (for example Check blobs) as input values.

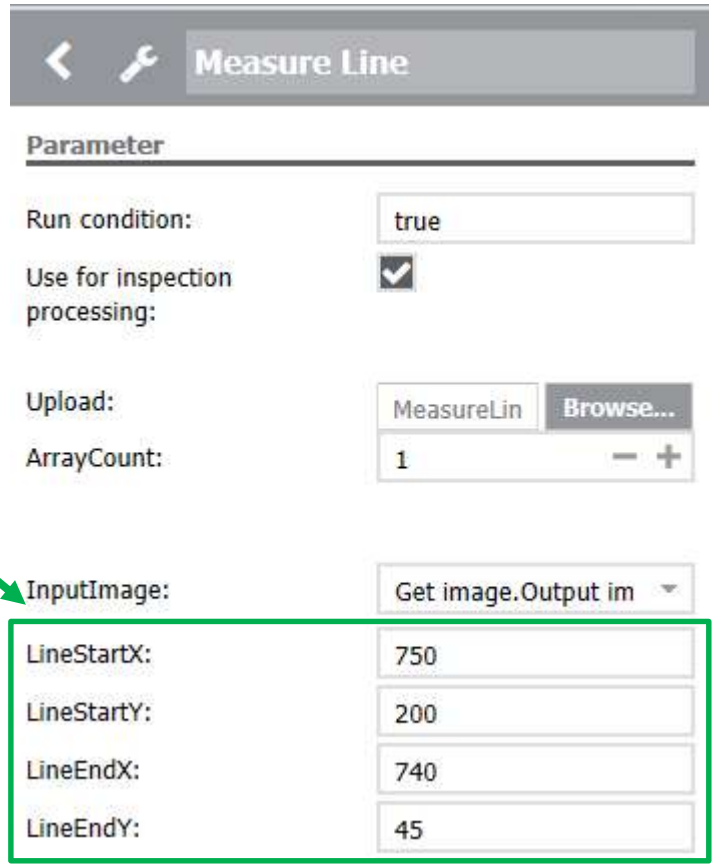


Step 3

If you want to measure line – set the following parameters:

a) LineStartX – X coordinate of line's start point
b) LineStartY – Y coordinate of line's start point
c) LineEndX – X coordinate of line's end point
d) LineEndY – Y coordinate of line's end point

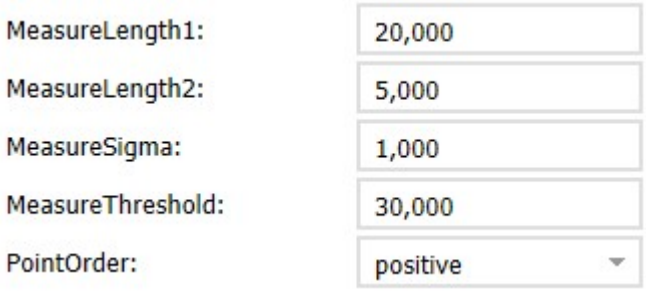
It is possible to set outputs from previous tools (for example Check blobs) as input values.



Step 4

Adjust edge parameters:

a) MeasureLength1 and MeasureLength2 – lengths of the measuring rectangle (visible as MeasureRegions variable on the image)
b) MeasureSigma – smoothing
c) MeasureThreshold – minimum edge contrast
d) PointOrder – counterclockwise (positive) direction or clockwise (negative) direction of the circular arc



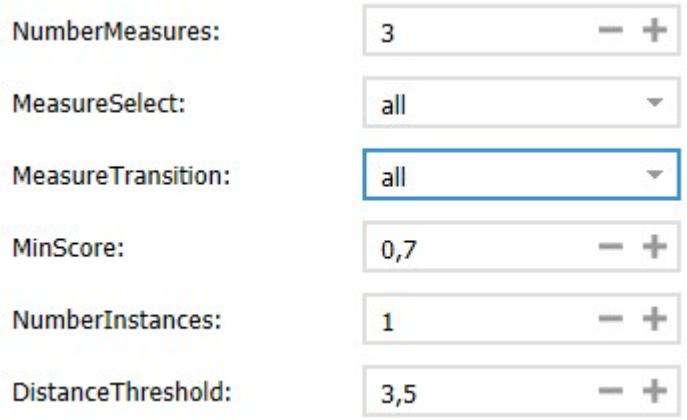
Step 5

Adjust metrology parameters:

a) NumberMeasures – number of measuring rectangles
b) MeasureSelect:
- First – only first edge within measuring rectangle will be found
- Last – only last edge within measuring rectangle will be found
- All – all of the edges within measuring rectangle will be found

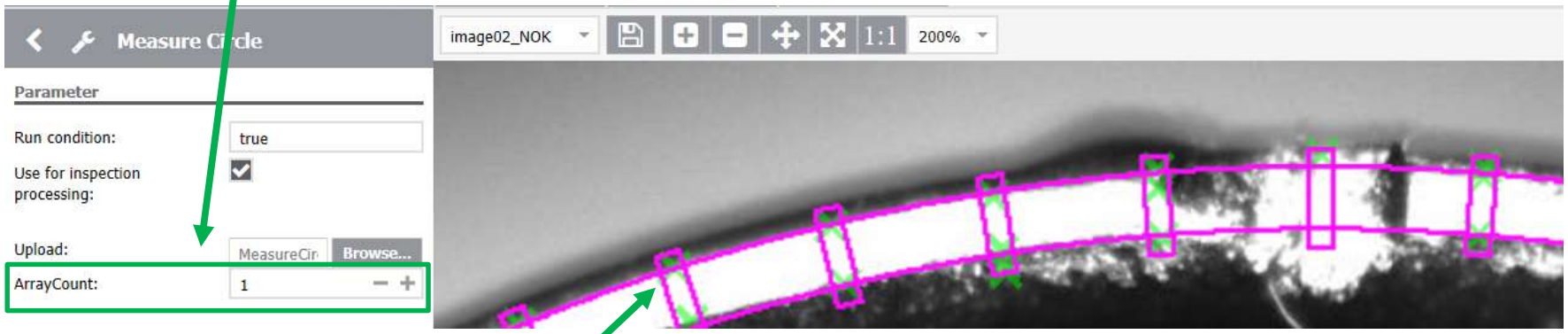
c) MeasureTransition:
- Positive – only edges with polarity from dark to light will be found
- Negative – only edges with polarity from light to dark will be found
- All – edges with both polarity will be found

d) MinScore – minimum score for a measure instance to be considered as valid
e) NumberInstances – number of measuring instances
f) DistanceThreshold – single found edge is considered to be a part of the fited circle if it doesn't exceed this parameter



Step 6

Set the number of instances that you want to get as an output.



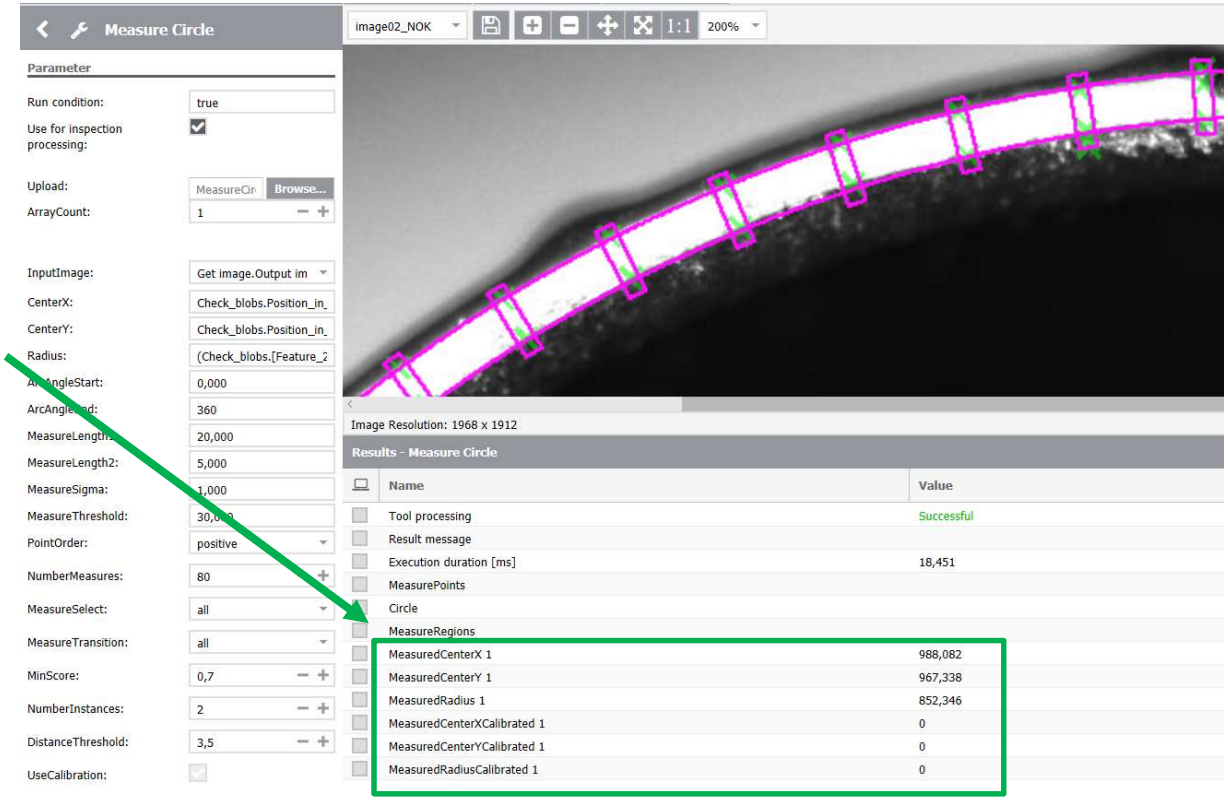
Found edges will be displayed as crosses (MeasurePoints output variable) on the image.

Step 7

Fited circle will be displayed in Circle output variable (as circle on the image).

Available output parameters:

a) MeasuredCenterX – X coordinate of the circle's center point
b) MeasuredCenterY – Y coordinate of the circle's center point
c) MeasuredRadius – circle radius
d) MeasuredCenterXCalibrated – X coordinate of the circle's center point after calibration
e) MeasuredCenterYCalibrated – Y coordinate of the circle's center point after calibration
f) MeasuredRadiusCalibrated – circle radius after calibration

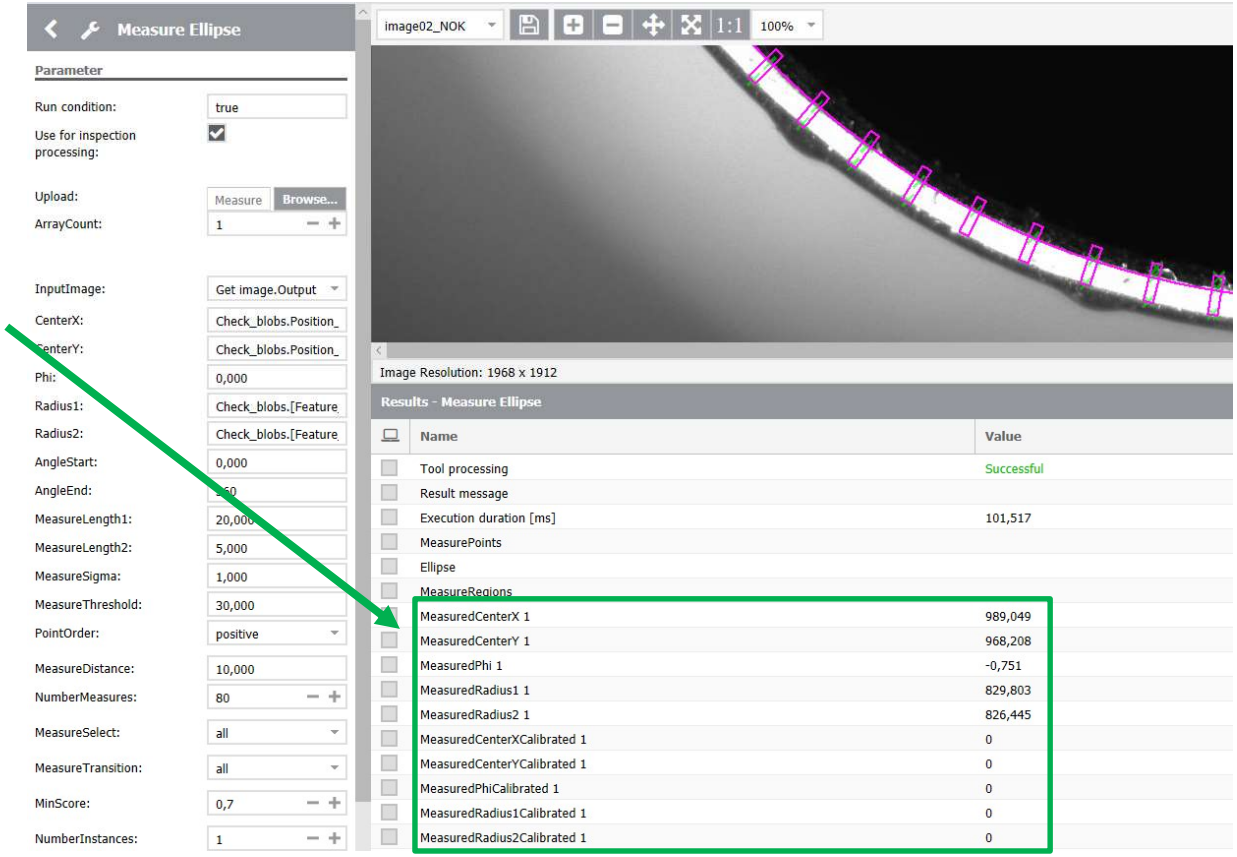


Step 7

Fited ellipse will be displayed in Ellipse output variable (as ellipse on the image).

Available output parameters:

a) MeasuredCenterX – X coordinate of the ellipse's center point
b) MeasuredCenterY – Y coordinate of the ellipse's center point
c) MeasuredPhi – measured orientation of the main axis
d) MeasuredRadius1 – measured length of the larger half axis
e) MeasuredRadius2 – measured length of the smaller half axis
f) MeasuredCenterX – X coordinate of the ellipse's center point after calibration
g) MeasuredCenterY – Y coordinate of the ellipse's center point after calibration
h) MeasuredPhi – measured orientation of the main axis after calibration
i) MeasuredRadius1 – measured length of the larger half axis after calibration
j) MeasuredRadius2 – measured length of the smaller half axis after calibration

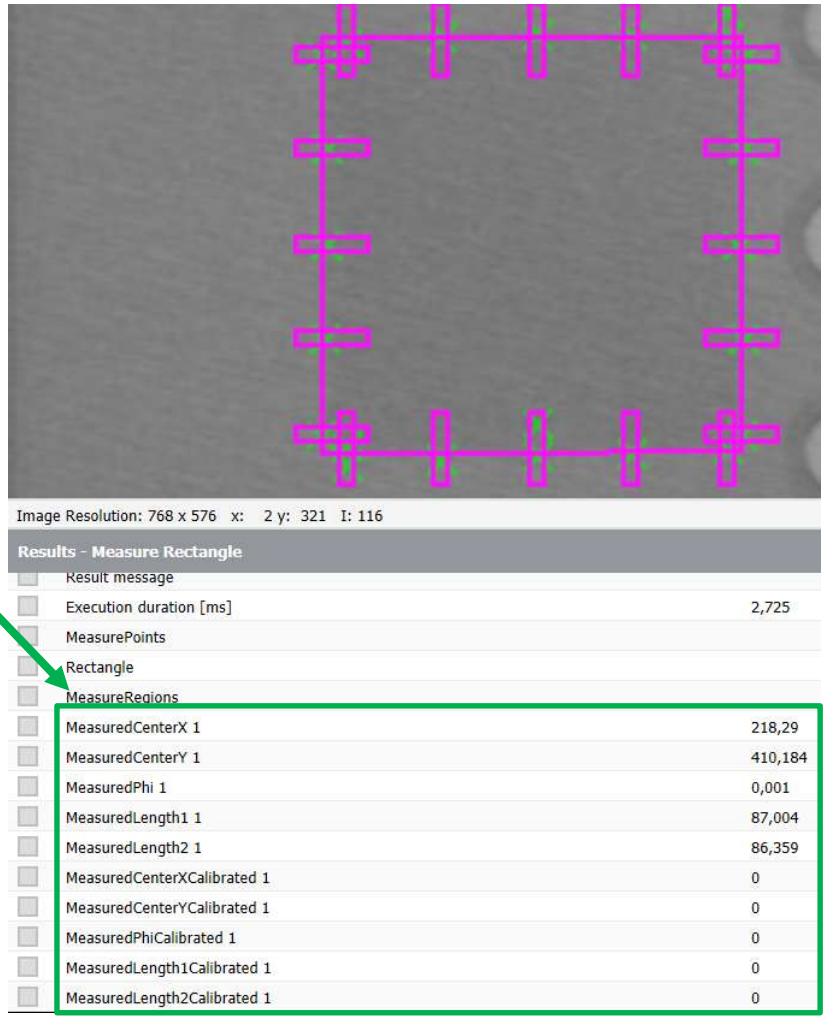


Step 7

Fited rectangle will be displayed in Rectangle output variable (as rectangle on the image).

Available output parameters:

a) MeasuredCenterX – measured X coordinate of rectangle's center point
b) MeasuredCenterY – measured Y coordinate of rectangle's center point
c) MeasuredPhi – measured orientation of the main axis
d) MeasuredLength1 – measured length of the larger half edge
e) MeasuredLength2 – measured length of the smaller half edge
f) MeasuredCenterXCalibrated – measured X coordinate of rectangle's center point after calibration
g) MeasuredCenterYCalibrated – measured Y coordinate of rectangle's center point after calibration
h) MeasuredPhiCalibrated – measured orientation of the main axis after calibration
i) MeasuredLength1Calibrated – measured length of the larger half Edge after calibration
j) MeasuredLength2Calibrated – measured length of the smaller half Edge after calibration



Step 7

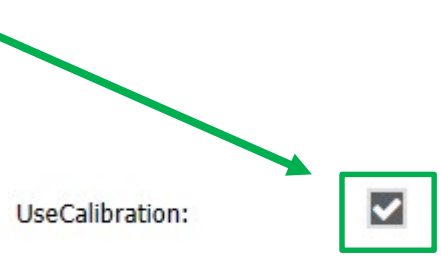
Fited line will be displayed in Line output variable (as line on the image).

Available output parameters:

a) MeasuredLineStartX – measured X coordinate of line's start point
b) MeasuredLineStartY – measured Y coordinate of line's start point
c) MeasuredLineEndX – measured X coordinate of line's end point
d) MeasuredLineEndY – measured Y coordinate of line's end point
e) MeasuredLineStartXCalibrated – measured X coordinate of line's start point after calibration
f) MeasuredLineStartYCalibrated – measured Y coordinate of line's start point after calibration
g) MeasuredLineEndXCalibrated – measured X coordinate of line's end point after calibration
h) MeasuredLineEndYCalibrated – measured Y coordinate of line's end point after calibration

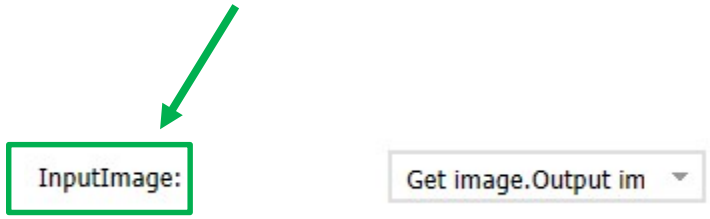
Step 8

Calibrated output parameters have proper values if the UseCalibration variable is checked and calibration data is available.



Step 9

It is also possible to use locator from previous tools – in InputImage choose output image from locator tool (for example Find object tool).



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