Torino, 3rd February 2020

Tangram Technical Note

Nominal Points List To Compare

Rev.	Date	Change Reason
1	10-12-2020	First Release

Summary

Overview

Sometimes users who are used to measuring by scanning require to compare a specific number of theoretical points with respect to the obtained curve. This list may not be adapted to manage the measurement path. So, it is an additional list specifically dedicated to comparison.

Therefore, a relevant subset of the measured points of the same number of points of the nominal set must be obtained with local interpolation techniques.

Furthermore, this set of nominal points and the corresponding extracted measured points can be used to evaluate the best roto-translation that minimizes the deviations.

This new option has been added to the Curve Element only, for the moment. Next, it will be added to other geometries.

Measured Element tabs

At creation of a new Curve:

Element Curve Creation					
Curve	Nominal Path	**Nominal Points**			
X	Y	Z	Cx	Cy	Cz
0.0000	0.0000	0.0000	0.000000	0.000000	0.000000

Opening an existent Curve Element:

Curve4 <Curve.Inherited>

	X	Y	Z	Cx	Cy	Cz
	Curve	Nominal Path	**Nominal Points**	Actual Points		
1	36.5000	3.0410	45.3900	0.000000	0.000000	0.000000
2	36.5000	1.4590	45.3620	0.000000	0.000000	0.000000
3	36.5000	-0.1180	45.2800	0.000000	0.000000	0.000000

Two functions available by RMC on the grid:

Import from File..
Delete All
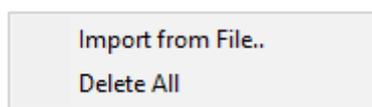
- Click "Import from File" to fill the grid with nominal points to compare. A dialog will be open to choose the text file with any extension and one point coordinates per row (direction is optional).

After the usual selection of option to import brings up:

and the resulting points will be added to the Nominal Points grid.

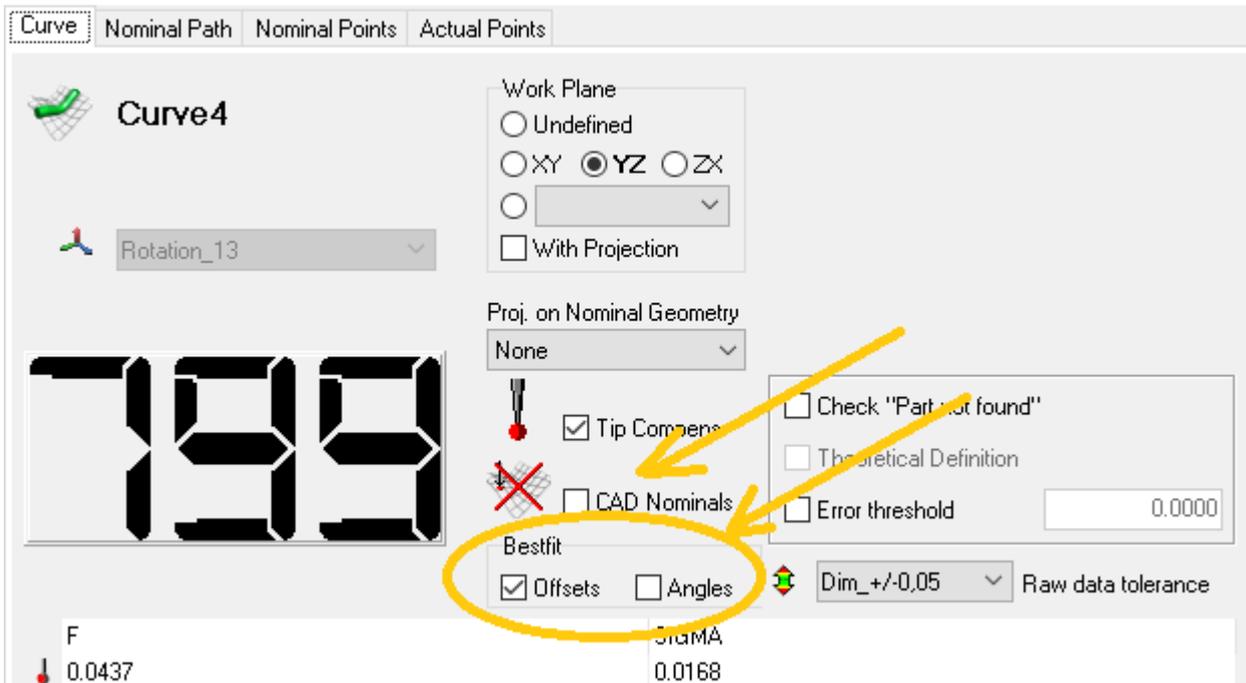- Click "Delete all" to clear the grid.

When list is assigned the Nominal point list, it is used for evaluation in the meaning that it enables a filter of the measured points to provide point-to-point comaprison.
In case of active CAD, uncheck the **CAD Nominals** option to ensure that the nominal points are not coming from the projection of points to the CAD model. The CAD option is prevalent

Check the **Bestfit** options to enable the calculation using Nominal list imported and Measured points filtered.
Offset and angle corrections can be selected independently.

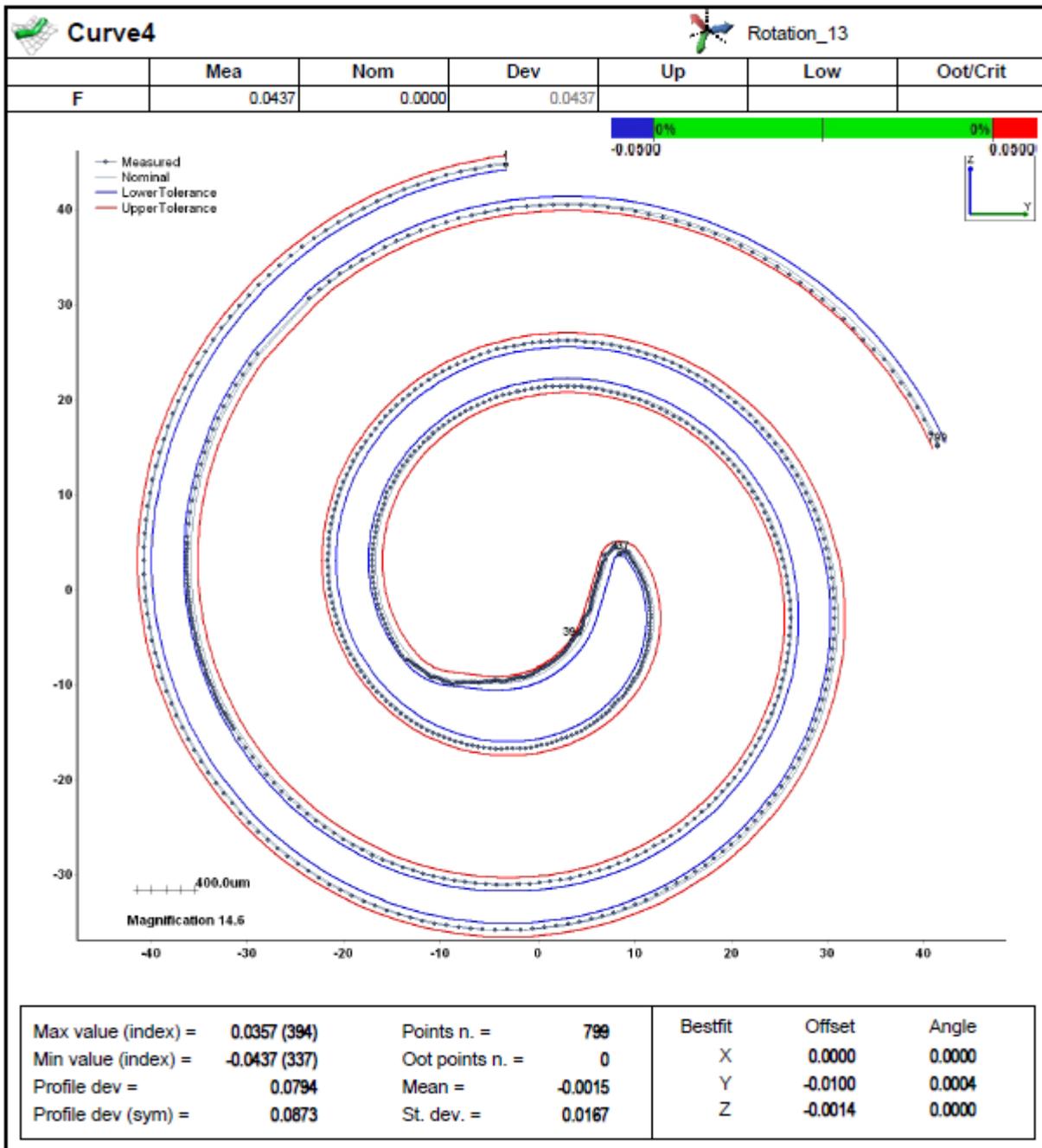## Graphical report enhancement

In case of Bestfit, the distribution of points in 2D will generate the following layout including results information of the bestfit calculation.

Curve4   Rotation_13

	Mea	Nom	Dev	Up	Low	Oot/Crit
F	0.0437	0.0000	0.0437			

Max value (index) =	0.0357 (394)	Points n. =	799		Bestfit	Offset	Angle
Min value (index) =	-0.0437 (337)	Oot points n. =	0	X		0.0000	0.0000
Profile dev =	0.0794	Mean =	-0.0015	Y		-0.0100	0.0004
Profile dev (sym) =	0.0873	St. dev. =	0.0167	Z		-0.0014	0.0000

Magnification is by default is automatically evaluated like in the picture where the tolerance band has been magnified 14.6 times.

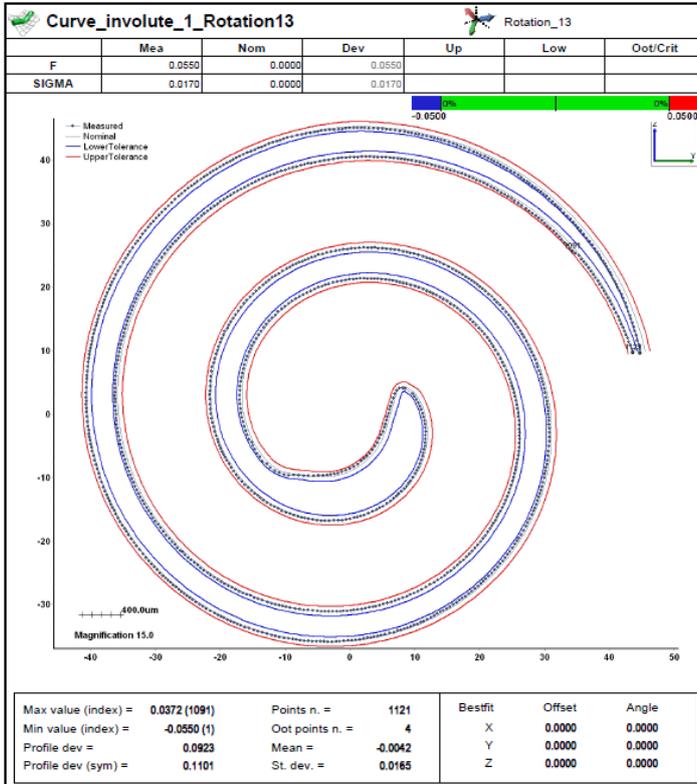But you can assign this scalar value in the Protocol settings:
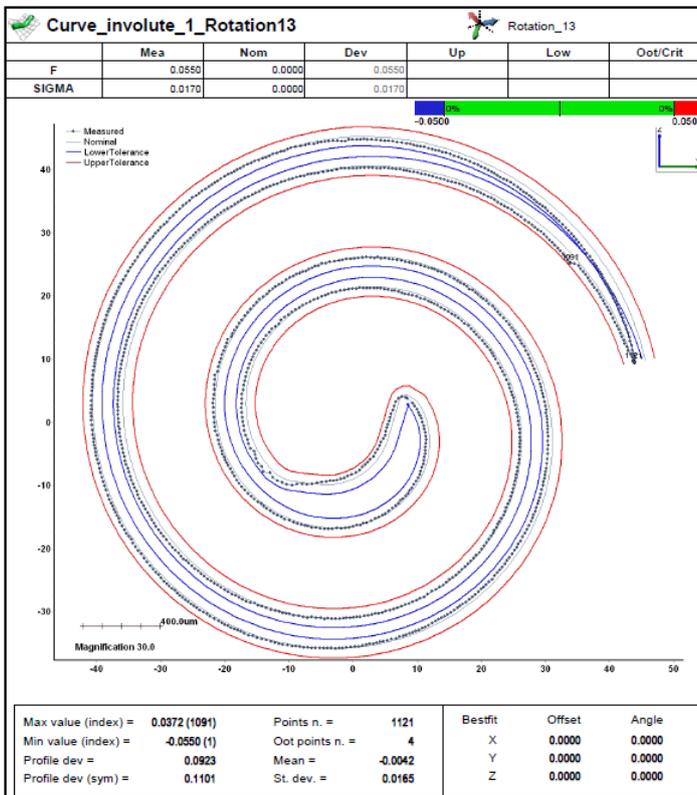
Here are two samples to compare different magnifications:

Magnification=15

Magnification=30