Torino, 16th Febbruary 2012

Tangram Technical Note

Ph20 – Integration

Tangram V4.01. <beta release>

Rev.	Date	Change Reason

The version 4.01 of Tangram brings a number of new features. One of the most important is the integration of Renishaw PH20 head.

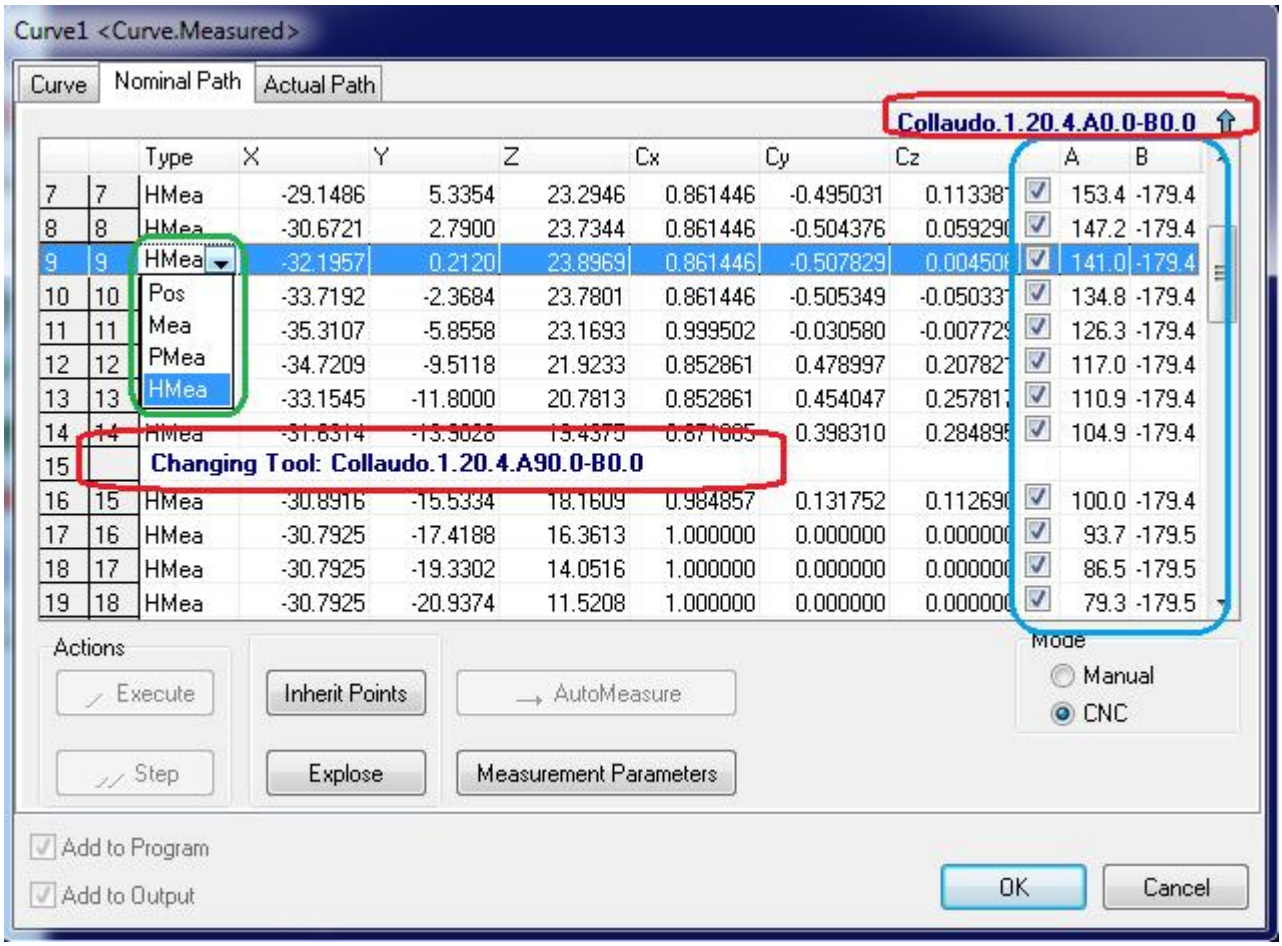
It is available only when I++ connection is selected and the I++ Server is Renishaw UCCServer. UCCServer performs calibration of head and probes, while in Tangram users can see in the Tool panel the usual list of probes:

Tools List (Server Side):

Active	Name	Offset X	Offset Y	Offset Z	Tip Radius	Pitch (A)	Roll (B)	Scan Available	Calibrated	Calibrated Date
☑	Collaudo.1.20.4.A0.0-B0.0	0.0000	0.0000	-88.0250	2.0000	0.00	0.00	☐	☑	2011-10-28T14:46:50+01:00
☑	Collaudo.1.20.4.A30.0-B-30.0	-22.0063	-38.1159	-76.2319	2.0001	0.00	0.00	☐	☑	2011-10-28T14:50:18+01:00
☑	Collaudo.1.20.4.A30.0-B30.0	22.0063	-38.1159	-76.2319	2.0001	0.00	0.00	☐	☑	2011-10-28T14:51:21+01:00
☑	Collaudo.1.20.4.A30.0-B-150.0	-22.0063	38.1159	-76.2319	2.0001	0.00	0.00	☐	☑	2011-10-28T14:49:15+01:00
☑	Collaudo.1.20.4.A30.0-B150.0	22.0063	38.1159	-76.2319	2.0000	0.00	0.00	☐	☑	2011-10-28T14:52:24+01:00
☑	Collaudo.1.20.4.A90.0-B0.0	0.0000	-88.0250	0.0000	2.0000	0.00	0.00	☐	☑	Never
☑	Collaudo.1.20.4.A90.0-B90.0	88.0250	0.0000	0.0000	2.0000	0.00	0.00	☐	☑	Never
☑	Collaudo.1.20.4.A90.0-B-90.0	-88.0250	0.0000	0.0000	2.0000	0.00	0.00	☐	☑	Never
☑	Collaudo_90.1.50.5.A0.0-B0.0	0.0000	0.0000	-168.0300	2.4987	0.00	0.00	☐	☑	2011-10-28T13:29:18+01:00
☑	Collaudo_90.1.50.5.A90.0-B0.0	0.0000	-168.0300	0.0000	2.5014	0.00	0.00	☐	☑	2011-10-28T13:31:17+01:00

Measure with PH20

When PH20 is in configuration, movements and measures can be done with 2-3-5 axis according with the nature of this head. No scanning is possible with PH20.
As a consequence of the possibility to manage more than 3 axis the panel of points in all measure elements of Tangram has been re-designed.



1. The top-right label indicates the tool associated to the first point of the visible portion of the list. When users scrolls the list it always indicates the tool of the first visible point. Then it is applied to the following points until a change tool is found. When there is a tool change, a line “Changing tool” with the new tool name is automatically inserted in the list, to indicate that the following points will refer to it. (red boxes).

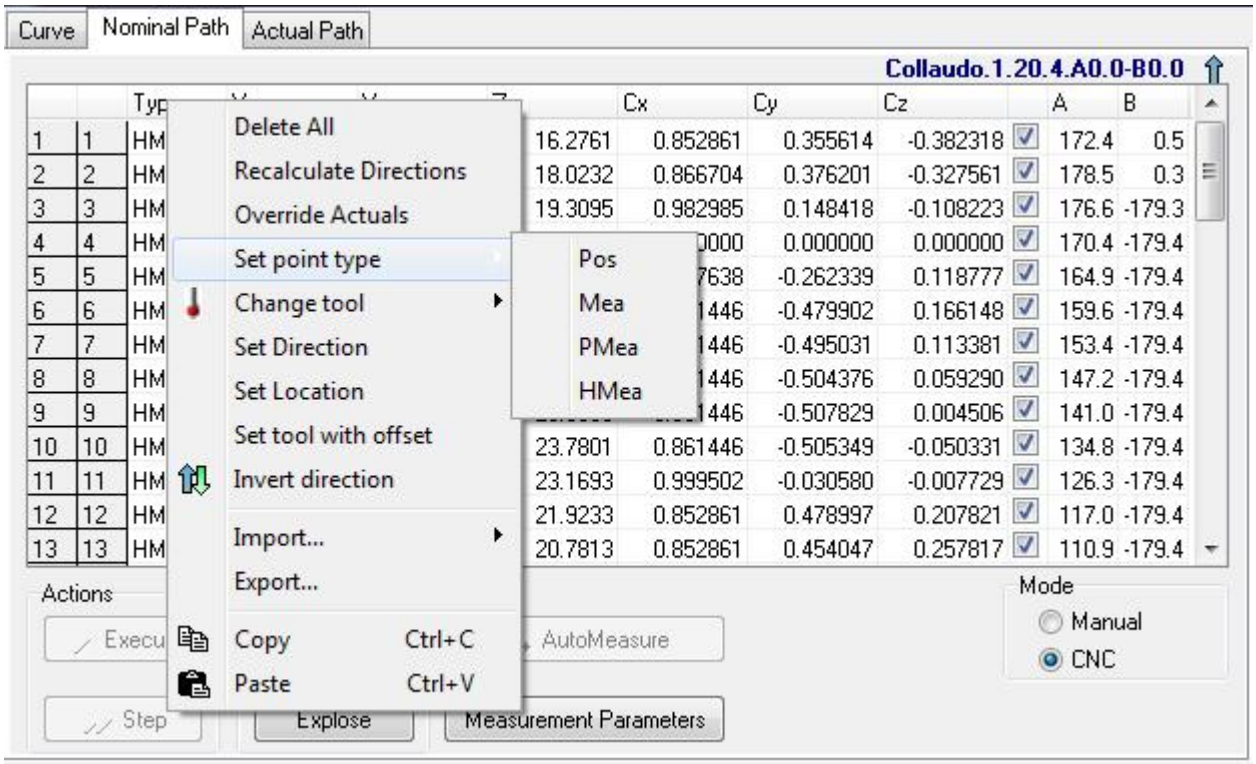
2. One more type of movement has been introduced: HMea . It indicates a measure point to be executed moving the Head A and B axes only (green box).

3. Two more columns have been added showing the head A and B axes values. There is also a check-box to enable/disable head axes.

Then the combination of Type (Pos, Mea, PMea, Hmea) and A-B check-box allows the management of all possible PH20 modality with the Tangram custom. See following scheme:

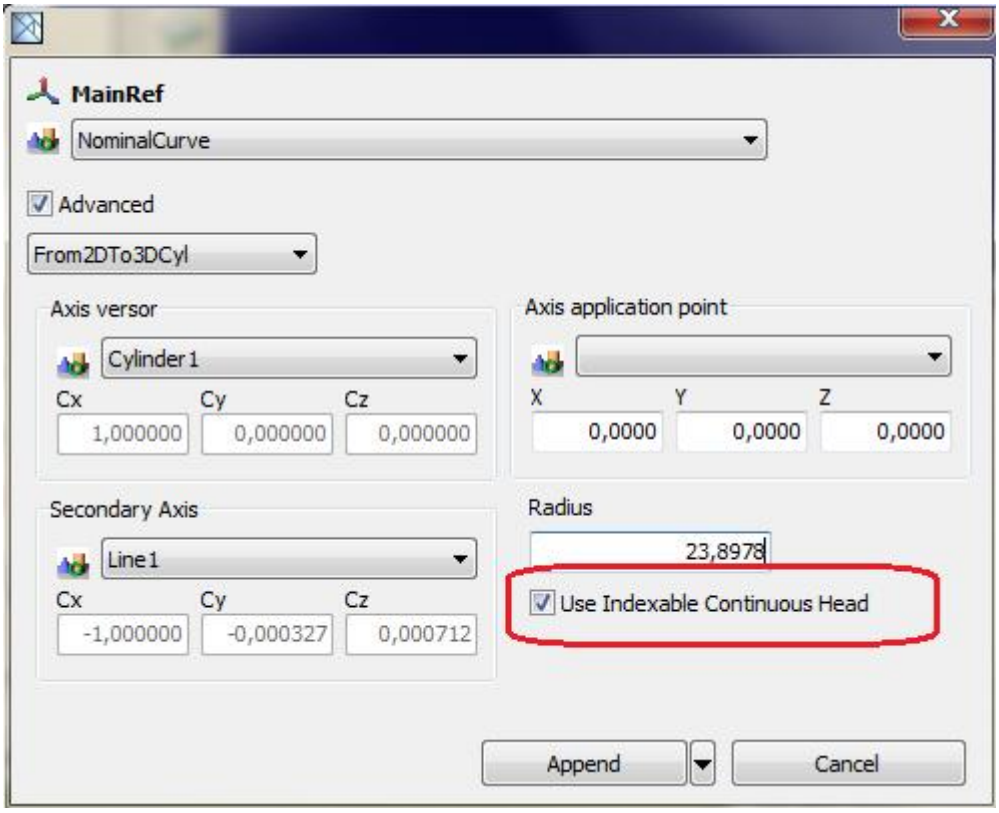
Type	A and B NOT Checked	A and B Checked
Pos	Standard movement with Machine axes: X,Y,Z	Movement is performed with all 5 axes: X,Y,Z,A,B
Mea	Measurement with X,Y,Z	Measurement with X,Y,Z (A,B ignored)
PMea	Approach movement and Measure are both executed with X,Y,Z	Approach moment is performed with 5 axes (machine and head); measure movement with the machine axes only (X,Y,Z)
HMea	Machine does not move. The measure is taken with the head (A,B).The arm must be already in such a position that the touch point is reachable with head move only.	Approach moment performed with 5 axes (machine and head); measure movement with the head axes only A,B)

A new pop-up menu has been added when users click on the points header. It includes options to change parameters to all path. In particular you can find the possibility to change the points type.



Import Feature Advanced in case of PH20

The function “From2DTo3DCyl” in the panel dedicated to Import Feature Advanced allows transformation during the import of 2D points into 3D distribution around a Cylinder shape. In this case PH20 can follow the points direction automatically **à** Hmea records are generated by default with A-B check enabled. Then they can be converted in Pmea if the combination of tool and part makes critical the head measurement.
Set the new “Use Indexable Continuos Head” option to obtain this behavior.



See below the effect when selecting “Show tool” in the CAD toolbar in three positions of the curve path both in Tangram and in UCCServer display:

Tangram	UCCServer