Rhino Beam Tools - User Manual

Introduction

Rhino Beam Tools is a plugin for Rhino 3D, designed to draw mechanical Beams and Nodes in context, then export them in a Beam calculation software. Currenttly, *RhinoBeamTools* is only compatible with © Steel¹ (Editor: ®Bureau Veritas).

Plugin installation

Overview

The plugin installer can be downloaded at: https://www.tomkod.com/product/rhino-beam-tools/ A free trial is included, and yearly licenses can be purchased on the aforementioned page. *Rhino Beam Tools* works for Rhino 5^{2}, Rhino 6^{3}, and Rhino7⁴.

Yak

Our plugins are also compatible with <u>Yak</u>, Rhino's new package manager ⁵⁾, which is basically an application store for Rhino. You just need to call Rhino's command **_PackageManager**:

Last

update: 2021/02/08 start:plugins:rhinobeamtools:rbt-usermanual https://wiki.tomkod.com/doku.php?id=start:plugins:rhinobeamtools:rbt-usermanual&rev=1612792490 14:54 × Package Manager

nkod				1.0
	AttributeAnalysis AttributeAnalysis is a tool designed to give you a fast Analysis of your rh DrawUserTexts This plugin for Rhino6 brings several life changing tools for your 2D drawi LightweightSurvey V1.0.3-beta	Url: Description: AttributeAnalysi	AttributeAnalysis 3 Matthieu Arnold (To 2.0.4-beta * lundi 14 décembre https://www.tomko product/attribute-r s is a tool designed i your rhino model att	2020 ad.com/ inalysis/ to give you a
)	This plugin for Rhino allows your technicians to conduct a vessel s full su MarineWeightSchedule v1.1.0 The Marine Weight Schedule plugin for Rhino6 can generate a bill of masses	an attribute: all y automatically ar	your objects will be d a color key table v vill also be able to se	colorized will be
IT	v1.1.2 RhinoBeamTools Rhino Beam Tools is a rhino plugin built as a bridge between Rhino and spec			Install

You can also install from the repository with the following command line:

"D:\Program Files\Rhino 6\System\Yak.exe" install 'PluginName'

If you add this in a batch file (*.bat) at windows startup, it is probably the best way to keep all your plugins up-to-date 😉



License activation

Prerequisites

The free evaluation can be used once per computer, and requires network access to www.license.tomkod.com The license activation requires network access to www.tomkod.com

Please check your firewall in case of failure.

Activation form

The activation window automatically shows up when the plugin is loading and a valid license or trial is not registered. If you want to see, change or remove your license while the plugin is already loaded, you can use the Rhino commands **PluginName_License**.

Activation status is always visible on the upper right corner of the form, if the icon is green your plugin will be enabled:

\checkmark

Trial Tab

This first tab is dedicated to the trial requests. Your trial status is displayed, and the button is disabled if a trial is not available for your computer (Your trial has already been activated, or the server is unreachable)

TomKod license activation -	Table 3.x	?	×
TomKod > Softwares for users, by users	Plugin Status Enabled - license is valid	0)
Free Trial License Commercial	License Details		
Computer ID:	*******		
Re	equest Free evaluation (*)		
	equest Free evaluation (*) date: 21/12/2020)		

Commercial Tab

This tab's two main buttons let you Check-out (Activate) or Check-in (Desactivate) your license from

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our license server.

TomKod licens	e activation - Table	: 3.x		?	>
FomKod oftwares for use		Plugin Status Enabled - licens	e is valid	Ø	
Free Trial License	Commercial Licens	e Details			
Email	and an order	com.			1
Product key					ļ
Activ	rate (Check-Out)	- 3	Desactivate (C	heck-in)	
Status: Dis	abled				
Enable floa	ating licenses (Affe	cts every TomKo	d plugins)		
Use a license ce	artificate				
	anti-in mathead for all	fline activation u	sing a certifica	te file	
Alter This can a	void network activa	tion issues, but th	e license won	't be floating.	

When the checkbox "Enable floating licenses" is checked, every TomKod's plugin will try to deactivate the license automatically when closing (Making it available for another of your computers)

Finally, a license certificate (*.TkLic) can be selected at the bottom of this tab. It allows to activate a license offline, but the license won't be floating anymore. If you need one, contact us at https://www.tomkod.com/contact/

Toolbar

The toolbars for Rhino are always included in your plugins installation directory, or can be downloaded here.

You just have to drag/drop the file "Tomkod.rui" to a rhino window to install them.

Generalities

Definitions

Nodes

Nodes are custom points with translations and rotation constraints defined on x, y & z axis. Every node in the model is identified by a unique number.

Beams

Beams are oriented lines located between two nodes ⁶⁾. They are represented as an arrow, and have an optionnal angle option. Every beam in the model is identified by a unique number.

Sets

A set is a group of beams. It is mainly used to easily select beams together.

Interface

Panel

Rhino Beam Tools comes with a user panel to interact with your Beams, Nodes and Sets. The panel display is refreshed in real time. If you select a beam or a node in the model, the panel is automatically displayed.

Nodes Beams Sets Display	Nodes Beams Sets Display	Nodes Beams Sets Display	Nodes Beams Sets Display
Selected Nodes list: 60, 50 DOFs Trans. /y - free Trans. /y - free Trans. /z - free Rot. /x - various Rot. /y - various Rot. /z - various	Selected Beams list: 23 Definition First Node 61 Second Node 50 Angle	Set: of Beams Test1 Test2	Beams display Enable oriented preview Enable local axes display Nodes display Schable annotations Show Nodes Labels
O Fixed ● Free 0.000 € O Spring O Forced	Value: 90 Z Locel Vector: 0;-9;18 Reverse Beams	Create Set Rename Set Add beams to Set	Show node constraints Text height 11.000 Text offset -16
		Remove Beams from Set Remove Set	Fixed nodes Rotation-fixed nodes Translation-fixed nodes Free nodes Other nodes Other nodes

Annotations

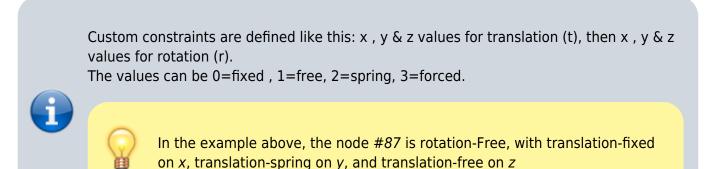
Rhino Beam Tools offer the possibility to display annotations in the model with the every node's settings:



The size, offset and color of these annotations can be edited. The annotations give the following information:

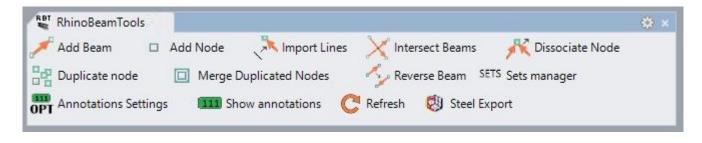
```
#{Node number} ({Constraints})
```

Constraints can be "Free", "TranslationFixed", "RotationFixed", or Custom.



Toolbar

A toolbar is included in Tomkod's toolbar group, with buttons available for most commands:



Commands

RBT_About

This command can be used only from the command line prompt. It displays the plugin's current revision and license status.

RhinoBeamToolsRH6 - v1.0.6.0			
Commercial Name: Rhino Beam Tools 1.x Update Status: Rhino Beam Tools 1.x: Your current version (1.0.6.0) Editor: TomKod Copyright: Copyright ©Ship-ST 2020) is an early release candic	late. Latest stable vi	ersion: 1.0.6
License status: License status unknown (Not implemented yet.) Computer ID:			
computerio.			
CHANGELOG:			
The second s			
v1.0.6 (14-10-2020)			
Fixed: When a model contains Rhino Beams or nodes, any item sel	ected would bring to from	t the RBT_Panel	
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Fixed: When a model contains Rhino Beams or nodes, any item sel 	ected would bring to from	t the RBT_Panel	
v1.0.6 (14-10-2020) Fixed: When a model contains Rhino Beams or nodes, any item sel 15 available commands: TK_SetLicenseMode RBT_About RBT_About RBT_AddBeam	ected would bring to fron	t the RBT_Panel	
Fixed: When a model contains Rhino Beams or nodes, any item sel 	ected would bring to from	t the RBT_Panel	

RBT_License

This command can be used only from the command line prompt. It displays the plugin's activation form.

See license_activation.

RBT_AddNode

Add Node This command adds a node to the model.

Walkthrough

- 1. Pick a location
- 2. The node is created without constraints (Free)
- 3. === Options ===

No option available.

RBT_AddBeam

Add Beam This command adds a beam to the model.

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Walkthrough

- 1. Pick two nodes
- 2. The beam is created from the first node to the second node.

Preselection

Preselection is allowed, but the nodes order will be random. If more than two nodes where preselected, the beam will randomly be created between two nodes.

Options

No option available.

RBT_DissociateNode

This command allows to separate two beams with a common node by duplicating the node.

Walkthrough

- 1. Select the beam that should be dissociated (The one that will be linked to a new node)
- 2. Select which node should be dissociated: StartNode or EndNode
- 3. Choose if the node constraints should be duplicated ⁷). If *No* is selected, the new node will be unconstrained (Free).
- 4. Pick the new node location

Preselection

Preselection is allowed if only one beam is preselected

Options

- *StartNode* or *EndNode*
- Duplicate the node constraints

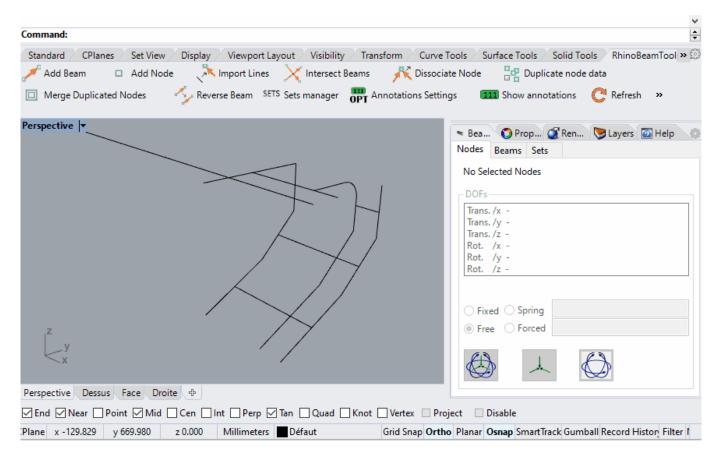
RBT_ImportLines

Import Lines

This command can convert lines and curves into beams and nodes.

Walkthrough

- 1. Select the line and curves that should be imported
- 2. Choose if the original lines should be removed
- 3. For each non linear curve, a segment count option is shown to split the curve in several lines. The current view is zoomed in and the current curve is highlighted.
- 4. Every beams and nodes are created, duplicated nodes are removed and intersecting beams are splitted.



Preselection

Preselection is allowed.

Options

• *Delete original lines* : Select wether or not the original curves should be removed from the model upon completion.

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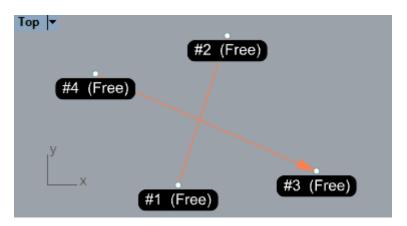
Last update: 2021/02/08 start:plugins:rhinobeamtools:rbt-usermanual https://wiki.tomkod.com/doku.php?id=start:plugins:rhinobeamtools:rbt-usermanual&rev=1612792490 14:54

RBT_IntersectBeams

Intersect Beams This commands check the whole model and adds node at beams intersections.

Walkthrough

Launch the command and that's it!



Options

No option available.

RBT_MergeDuplicateNodes

Merge Duplicated Nodes This command merge node with the same location.

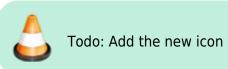
Walkthrough

- 1. Set the tolerance (Default 0.001)
- 2. Every duplicated nodes are merged in the model

Options

• *Tolerance* : in model unit, maximum distance to consider two nodes duplicated.

RBT_Export



Exports your beams, nodes and sets to $\ensuremath{\mathbb{C}}$ Steel⁸⁾ or RDM7.

Walkthrough

- 1. Launch the command
- Select a file path and extension to export the model to ©Steel3 (*.stw*), ©Steel4 (*.stee/*), or RDM6-7 (*.por*)
- 3. The file is created, then RBT attempts to open it with windows default program for this extension.

Scripted mode

No Scripted Mode

Options

No option available.

RBT_SetManager

This command⁹⁾ is a direct link to the Rhino Beam Tools panel's Sets tab

Walkthrough

- 1. Launch the command
- 2. RhinoBeamTools' panel¹⁰ will be openned, with the *Sets* tab selected.

	Beams	Sets	Display
Sets o	f Beams		
Test1			
Test2			
		Crea	te Set
		Rena	me Set
	1.0	Add bea	m <mark>s to Set</mark>
	Ren	nove Bea	ams from Set
		Remo	ove Set

Options

No option available.

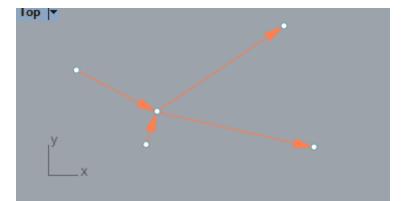
RBT_ReverseBeam

Reverse Beam This command reverses the beam's first and second node.

Walkthrough

- 1. Select the beams
- 2. The beams nodes are swapped. The arrow orientation are refreshed as well as the node infos.

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Preselection

Preselection is allowed, every selected beams will be reversed.

Options

No option available.

Alternative

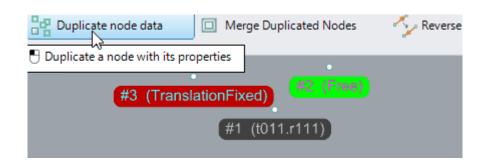
A "*Reverse beam*" button is available on the panel's Beams tab. It does the same thing but does not allow to reverse several beams at the same time.

RBT_DuplicateNodeData

Duplicate node data This command copies a node's constraints to another.

Walkthrough

- 1. Pick the original node to duplicate its constraints
- 2. Pick one or several nodes that need to be changed
- 3. The selected nodes are updated with the original node's constraints



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Preselection

Preselection is enabled if one and anly one node is preselected.

Options

No option available.

RBT_ShowAnnotations

111 Show annotations

Walkthrough

- 1. Launch the command.
- 2. If annotations were visible, they are hidden, if they were hidden they will be shown

OPT Annotations Settings	111 Show annotations C Refresh
	#2 (RotationFixed) #4 (t011.r111
#1 (Free)	#3 (TranslationFixed)

Options

No option available.

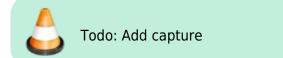
RBT_DisplaySettings



This command¹¹⁾ is a direct link to the panel's *Display* tab

Walkthrough

- 1. Launch the command
- 2. RhinoBeamTools' panel¹²⁾ will be openned, with the *Display* tab selected.



RBT_ImportSteel4File

This command is a beta prototype. It might have unwanted behaviours and we will decline any responsability if it causesdamages to your model. TomKod may or may not publish a proper version at a later date.

Attempts to import a Steel (*.steel) project beams' and nodes' in your Rhino models.

Walkthrough

- 1. Launch the command
- 2. Select the file to import
- 3. Nodes are imported with their contraints
- 4. Beams are imported

RBT_Refresh



This command forces a display update:

- Overlapped nodes are merged
- Beam errors are detected
- Beam positions are fixed
- Rhino views are redrawn

Normally you don't need to use this command.

Options

No option available.

1)

3)

4)

v3 or v4

Rhino 5.12 or later

Rhino 6.15 or later

Tested up to Rhino 7.1

5)

Rhino 6 or later only, with graphic user interface for Rhino7 only $_{\mathrm{6})}$

More specifically, two node definition numbers

default value = true

8)

Bureau Veritas' beam calculation software

9) 11) ,

Formerly named RBT_AnnotationsSettings

See interface

From: https://wiki.tomkod.com/ - TomKod knowledge base

Permanent link:

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