

Beginners Guide to PolyWorks

821 Marianne Okal September 4, 2015 [Technical How-To](#) 6913

The document available for download at the bottom of this page is a Beginners' Guide to PolyWorks V10. It describes basic functions in PolyWorks (see table of contents, below).

For information on georeferencing data using PolyWorks, please consult the [KnowledgeBase article](#) describing that procedure.

PolyWorks V10 Beginner's Guide.3

Contents

Introduction	7
Your Beginner's Guide... ..	7
For more information.....	7
Before you start.....	7
Getting the data files	8
Typical PolyWorks Workflow.....	10
PolyWorks Basics	11
1. The PolyWorks/Workspace Manager.....	11
1.1 The Workspace Manager interface	12
1.2 The Wizard window.....	13
1.3 Workspace contents.....	14
1.4 Sharing a PolyWorks workspace.....	14
2. Interface Basics.....	15
2.1 Getting ready.....	15
2.2 Visiting a module interface	15
2.3 Working in the 3D scene	19
2.4 Working with objects	21
2.5 Objects and their elements.....	22
2.6 Additional information.....	24
2.7 End the exercise.....	24
2.8 Close the active PolyWorks workspace	24
2.9 Exit the Workspace Manager	24

Acquiring Data	25
A. Scan the part	26
B. Align the scans	27
IMAlign basics	27
Exercise #1: A typical alignment project.....	28
1. Get ready.....	29
2. Import and align 3D Images one at a time.....	30
3. Optimize the global 3D Image alignment.....	34
4. Analyze the quality of the alignment.....	35
5. Save and exit.....	37
Exercise #2: Auto-align 3D Images.....	38
1. Get ready.....	38
2. Import and automatically align 3D Images one at a time.....	38
 Reverse Engineering	 41
A. Generate a polygonal model	43
IMMerge basics	43
Exercise #1: Generate a polygonal model	44
1. Start IMMerge.....	44
2. Set parameters	44
3. Start the merging process	44

4. Exit IMMerge	44
Additional information.....	45
B. Improve the polygonal model	46
IMEdit basics	46
Exercise #1: A typical editing project.....	48
1. Get ready.....	49
2. Import the polygonal model	49
3. Edit the model.....	50
3.1 Fill holes.....	50
3.2 Smooth vertices.....	54
3.3 Extract sharp edges.....	55
4. Optimize the polygonal mesh	56
4.1 Optimize the mesh.....	564
4.2 Reduce the mesh.....	57
5. Extract the shape of the model.....	58
6. Export the edited polygonal model	59
7. Save the IMEdit editing project.....	59

C. Create NURBS surfaces	60
--------------------------------	----

Exercise #1: Create NURBS surfaces - manual method.....	61
---	----

1. Get ready.....	62
2. Extract feature curves.....	62
3. Complete the curve set.....	66
4. Create the curve network	70
5. Fit NURBS surfaces on the model using the curve network.....	70
6. Export the fitted NURBS surfaces	71
7. Save the IMEdit editing project and exit	71

Exercise #2: Create NURBS surfaces - automatic method.....	72
--	----

1. Get ready.....	72
2. Extract feature curves.....	72
3. Perform the auto-nurbing.....	73
4. Save the IMEdit editing project and exit	74

Inspection	75
-------------------------	----

A. Inspect the digitized part	77
-------------------------------------	----

IMInspect basics.....	77
Exercise #1: A typical inspection project	79

1. Get ready.....	80
2. Define the Reference object	81

2.1 Import the Reference object	81
2.2 Create Features on the Reference object.....	82

3. Acquire the Data object	83
4. Align the Data object to the Reference object	83
4.1 Pre-align using a best-fit alignment	83
4.2 Auto-extract measured Primitives on the Data object..	84
4.3 Align using Features.....	84
5. Measure	85
5.1 Compare using all data points	85
5.2 Compare using Cross-Sections	86
5.3 Take basic measurements.....	89
6. Report results	90
7. Save the inspection project and exit.....	90
Exercise #2: Control Feature Dimensions and GD&T.....	91
1. Get ready.....	91
2. Create the Features.....	92
3. Control dimensions.....	93
4. Perform GD&T controls	94
5. Save and exit.....	95
Exercise #3: Using an automated inspection project	96
1. Get ready.....	96
2. Perform the automatic operations	97
B. Share the results	98
IMView basics	99

Exercise #1: View an inspection project.....	100
1. View the categories of objects and their comparison results..	100
2. Take new measurements	100
3. Create new report items	101
4. Create a new formatted report.....	101
5. Export objects.....	104
6. Exit IMView.....	104

Additional Information..... 105

1. IMAlign – More information and other tools	105
2. IMEdit – Other tools	107
3. IMEdit – IMCompress parameters	111
4. IMInspect – Macro script basics.....	112
5. IMInspect – Other tools	115

Online URL: <https://kb.unavco.org/article/beginners-guide-to-polyworks-821.html>