

Profile Line Intersect Tool User Manual

1. General introduction

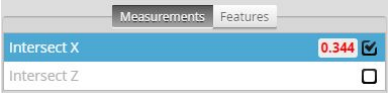
This tool is very handy to calculate the intersection point between a feature line and a profile. Two methods are provided:

- 1) Simple: Using this method, the intersection is simply calculated by intersecting the line with the current profile. If multiple intersections exist, user can select the point with a desired index.
- 2) Hysteresis: This method is often used to automatically detect the side points of an object lying on the flat surface. For example, when measuring the width of an object located on a plane, the left/right side points can both be detected using this tool and the width can be calculated by profile dimension. To detect the side point, a low and a high threshold must be chosen, see Section 2.

A feature line input is a prerequisite. Therefore this tool should be used with tools such as profile line.

2. Parameters and Output

Line	Feature line as input	Line: Profile Line/Line
Intersection Method	Simple	
Region	Region of interest to find the intersection point. Intersections outside of the region are ignored.	
Count Direction	Option: Left to Right / Right to Left.	
Index	If multiple intersections exist, user can select the point with index.	
Intersection Method	Hysteresis	
Count Direction	Option: Left to Right / Right to Left.	
Hysteresis High	When searching for the feature point, the process searches along the profile in the direction of "Count Direction", until it reaches a point with a distance-to-line equal to "Hysteresis High". This threshold ensures that an object above/below the feature input line exist instead of outputting random noise along the profile mistakenly.	
Hysteresis Low	After the search process reaches "Hysteresis high" point, it will search back in the reverse direction of "Count	

	Direction”, until reach a point with distance-to-the line equal to “Hysteresis Low”. This position, which is very close to the feature line, is the final output location.	
Measurements and Features	Intersection X and Z coordinates as measurement output. Intersection point as feature output.	

4. Application Example

Since the simple method is very intuitive. Here provides an application showing the usability of the tool using Hysteresis method.

Following figure shows an electronic product with an element on a plate. The blue line shows the feature input line detected by Profile Line tool. By using hysteresis method with high threshold set to 0.05 and low threshold set to 0.01. The algorithm well detected the two sides of the element, the width of which can be calculated thereafter.

