Automation Features and Optimization with Paragon™

Application Note

In automated bond testing, optimization of the setup process is critical to increase efficiency and provide return on investment. Nordson's Paragon™ software is an intuitive and highly configurable environment, helping streamline the process of automation pattern set up, whilst ensuring tests perform at the highest speed. In this application note we highlight some features to help operators set up the most robust automated bond testing routines.

Time Saving Bookmarks

When programming on a large sample with many interconnects, often operators will need to return to a prominent feature, which involves maneuvering and refocusing of the cameras over large distances. Using bookmarks, you can move between saved locations and avoid manual navigation times. The feature provides users with the functionality to record the X, Y, Z, and theta axis positions. Focus heights and important locations such as fiducials & calibration targets can be set as bookmarks to increase programming efficiency, allowing swift return to a location with sharp focus. The graphic in figure 1 shows the Alignment camera returning to a location saved via the Image Capture camera.

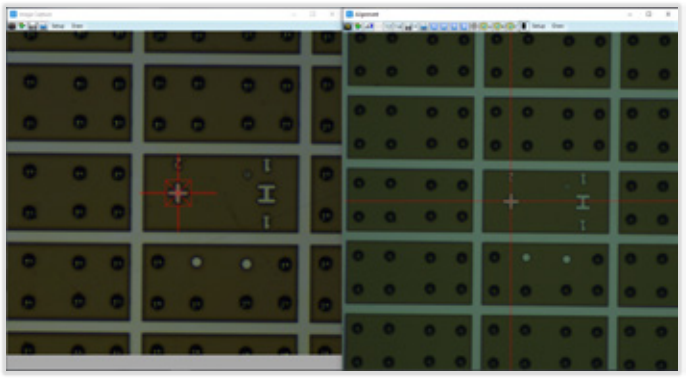

Figure 1. Feature can be navigated to interchangeably between cameras that are fitted

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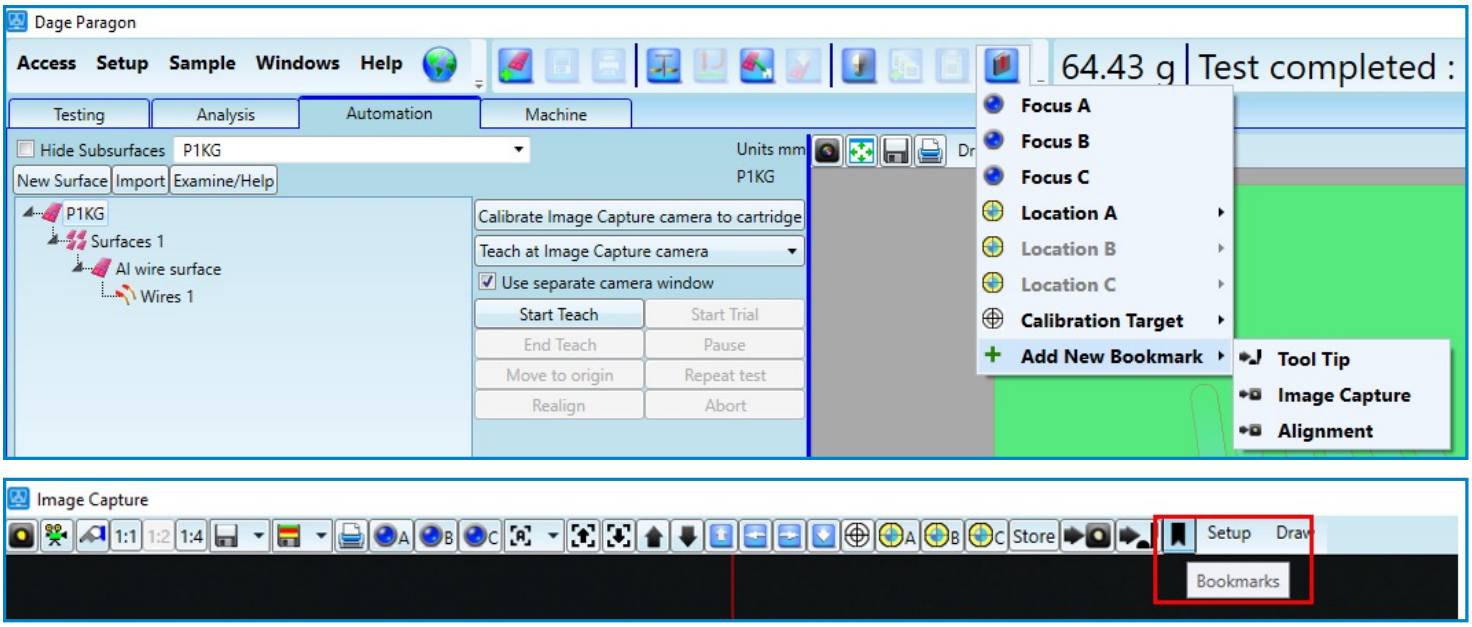
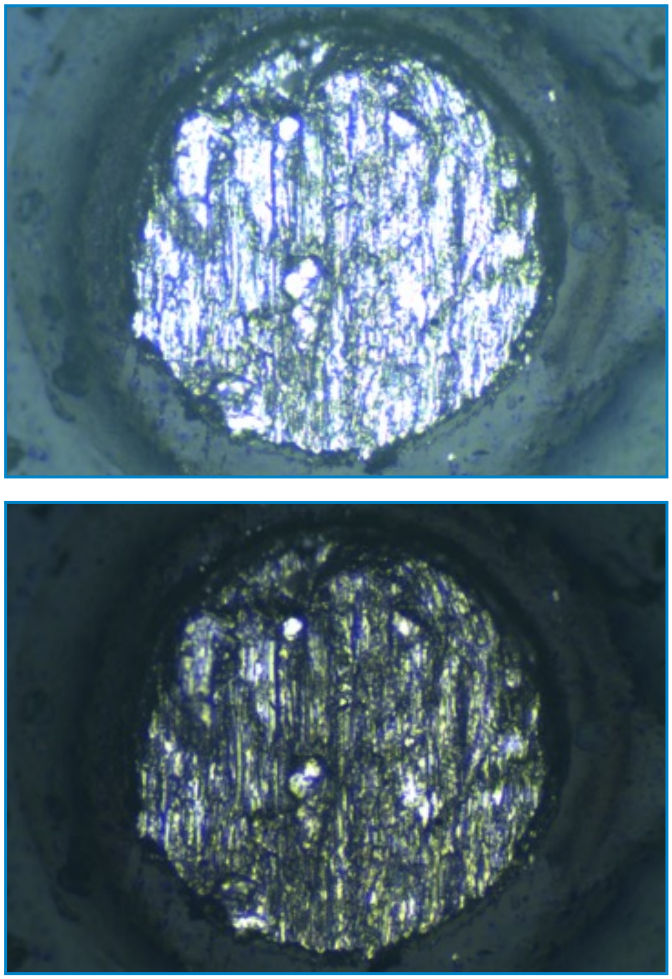


Figure 2. The bookmarks menu can be accessed from the icons at the top of the main Paragon™ screen or camera windows



To add a custom bookmark, use the icons found at the top of the Paragon™ window or the shortcut buttons located at the top of any camera window (Figure 2). Select the device to teach location with and this will open the bookmark window. Custom bookmarks will appear within the bookmarks drop-down once saved to provide quick & easy access during automation programming.

Camera Lighting Memory

The Image Capture camera provides high resolution images and optimal lighting conditions vary device-to-device for post-test failure mode images. The ideal failure mode image with optimum lighting must have minimal bright spots caused by the illumination and reflectivity of the sample (Figure 3). Adjustments to camera properties prior to each automation test is not an efficient process, so Paragon™ gives users the ability to store lighting settings within the test group for each sample.

Figure 3. Comparison of reflective solder ball failure where a bright image (top) obscures some of the detail that is seen in the ideal failure mode image (bottom)

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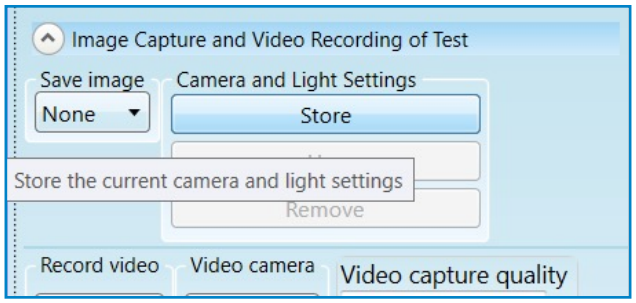

Figure 4. The option to store camera and lighting settings is found within Test Group

The option can be found in the Testing tab of Paragon™ within the "Image Capture and Video Recording of Test" section (Figure 4). Simply click "Store" to save current illumination and camera settings into the test group, so they can be recalled at the appropriate time. In automation you can avoid on-the-fly lighting and camera adjustments.

Hassle-Free Test Points

As bonds are tested in the order of programming, the option to recalculate test points can allow flexibility and save time by preventing the need to laboriously reteach wires chronologically. When wires are added to the automation pattern, a window pops up to aid with the input of dimensions, test offset and test position along the wire. The test points are automatically calculated from the information in this window after the start and end points of the wire are programmed.

The example in Figure 5 shows the wire test point is initially defined as 50% along wire and the on-screen animation (Figure 6) shows that this could cause the hook to contact the die when rotating into the space underneath the wire. After inputting a new "percent along wire" value in the dimensions window, right click on the programmed wire, and select the option to recalculate the wire test point. The option can also be used to recalculate an entire wire group to update hundreds of wires if necessary, saving an enormous amount of time.

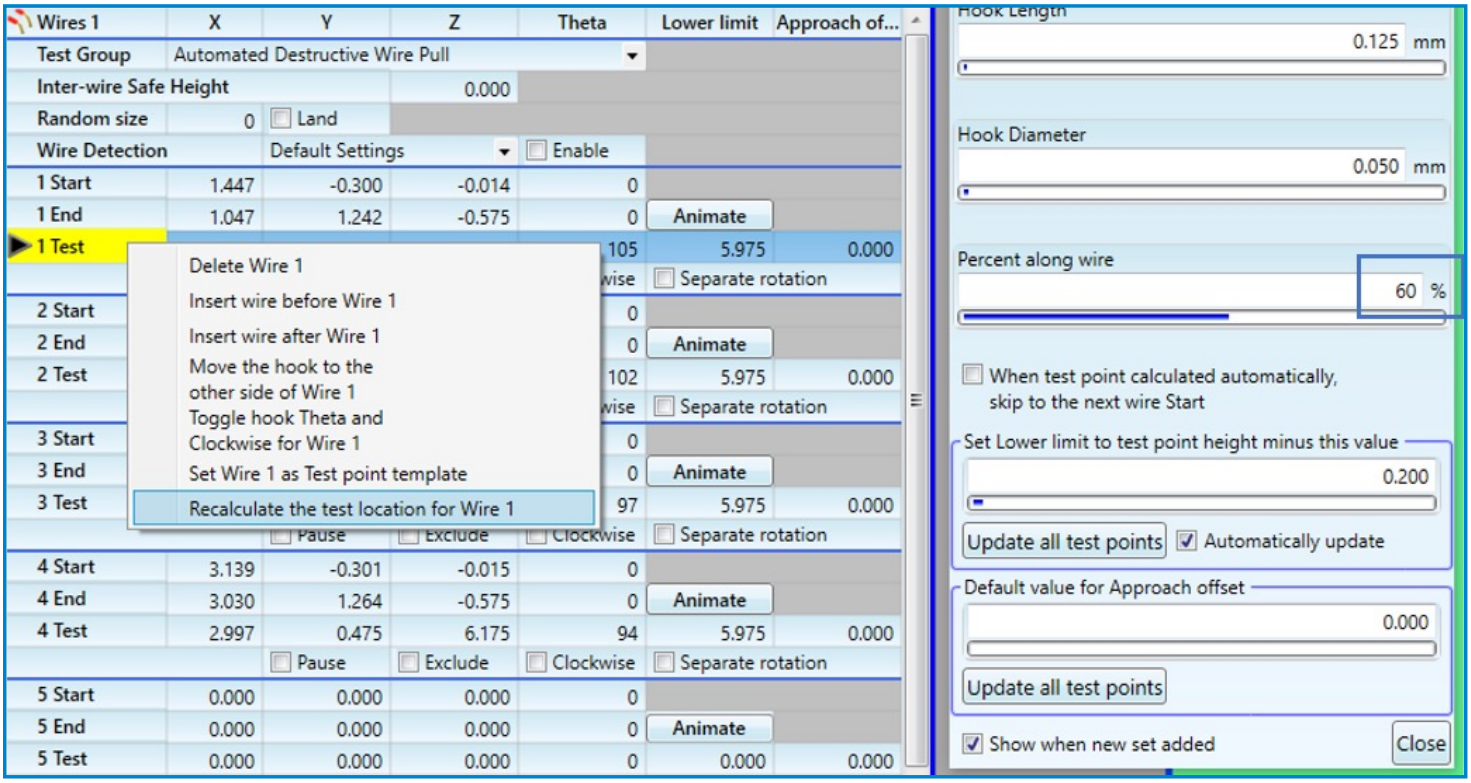

Figure 5. Test points can be recalculated from the menu that appears when you right click on the wire

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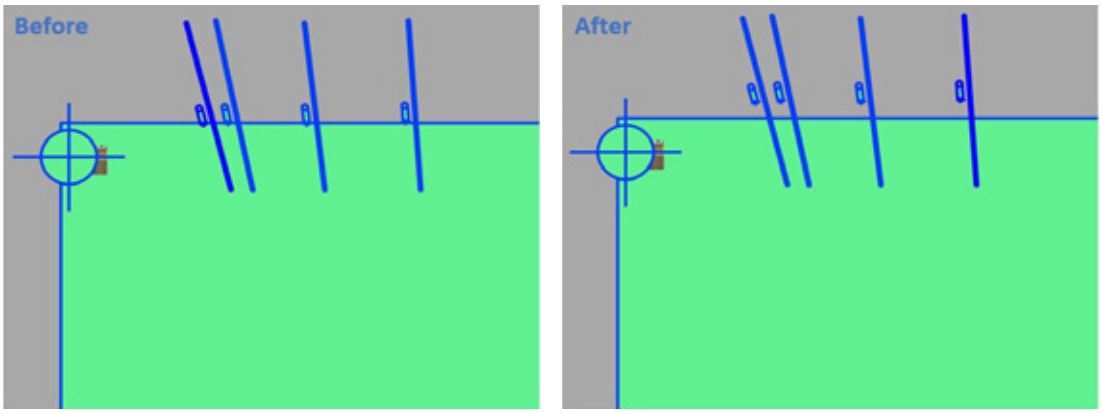

Figure 6. Wire automation test points in the automation window before and after the 'percent along wire' is modified by using test point recalculation

Conclusions

When used effectively, automated bond testing eliminates human error, improves result repeatability and overall test quality. Paragon™ automation does this by enhancing the overall user experience, incorporating assistance features. This gives the operator the utmost confidence in creating a precise and reliable automation test routine.

For more information, speak with your Nordson representative or contact your Nordson regional office

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