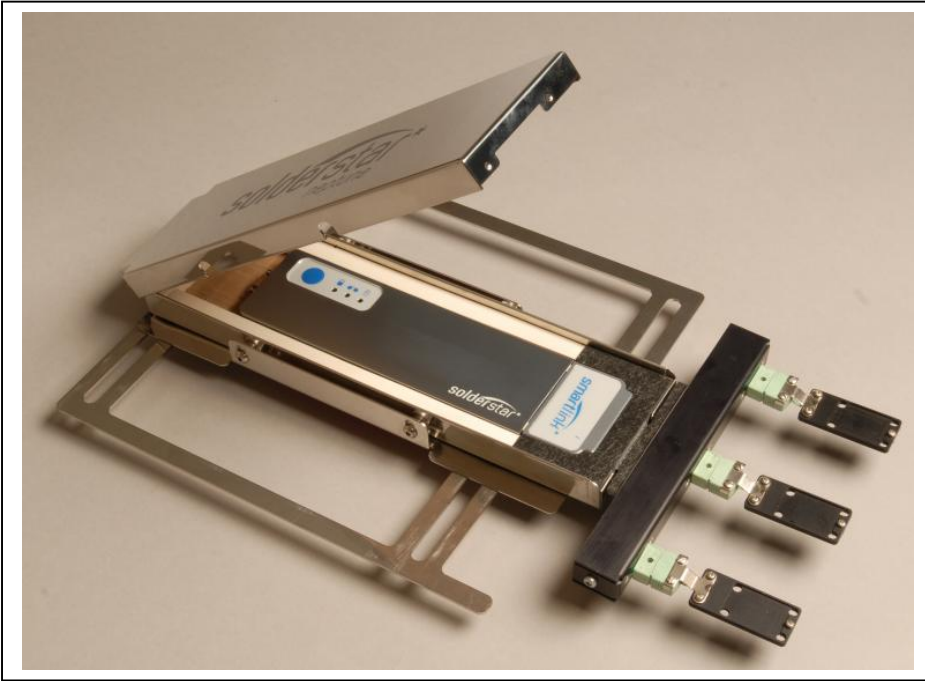


AN8

Using the DeltaProbe Tolerance Features



Application Note

Using the DeltaProbe Tolerance Features

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Product Registration

Please register your product using the online registration facility at www.solderstar.com

This entitles you to free technical support, software updates and other training and support resources.

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Using the DeltaProbe Tolerance Features

Introduction

The SolderStar DeltaProbe is a reflow soldering accessory that works in conjunction with the SolderStar Pro temperature profiling system. It effectively removes the need to use fragile test boards for periodic profiling required for ongoing control of the reflow process.

With fixed sensors and no test card or long trailing wires, the SolderStar DeltaProbe is a fixed, robust and convenient platform for generating highly repeatable results.

Although process setup requires a temperature profile captured from a real test PCB, ongoing process monitoring can be achieved by measuring the difference from an established process baseline.

Periodically the SolderStar DeltaProbe is passed through the process to allow rapid checks against the baseline profile and SPC data to be captured.

Process change, due to variations in convection levels, conveyor speed or zone setpoints, is instantly and accurately detected and the operator is notified visually.

Advanced SPC tools allow the operator to produce process control charts for ongoing process control measurement, evaluation and corrective action.

A 'golden profile' for each process is established in 3 easy steps:

1 The optimum oven settings are first established by product profile capture and simulation

2 The DeltaProbe is then passed through the reflow oven to capture a 'golden process profile'

3 Tolerance limits can now be set around temperature traces and process parameters

Using the DeltaProbe Tolerance Features

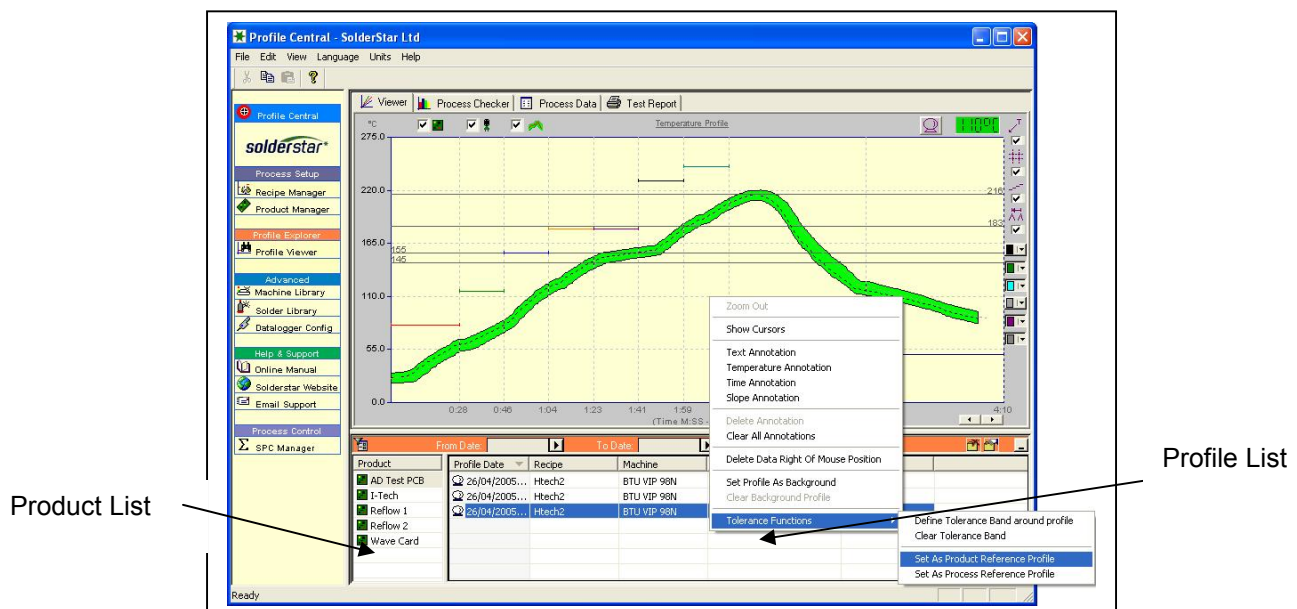
The Product Reference Profile

The Product reference profile is the qualified thermal profile captured from an actual product PCB. Thermocouple sensors are attached to a populated PCB and profiles captured and analysed with the SolderStar software tools. The process is then optimised within the available limits, full details of how to use the SolderStar system to capture product profiles is given in the main user guide supplied with your temperature profiling system.

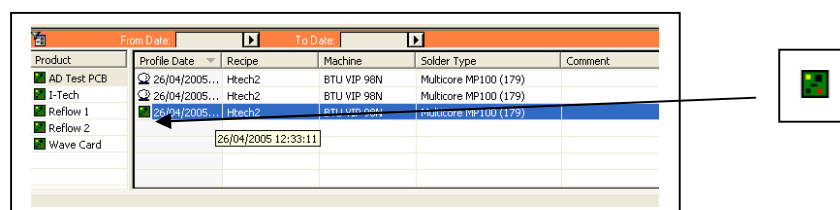
Once the profile has been established we have some addition features available specifically for use with the DeltaProbe.

To record a profile as the Product reference profile we perform the following steps,

1. Select the Profile Viewer menu option from the left hand navigator bar
2. Select the Product of interest from the Product List
3. Load the product profile into the viewer you wish to se as the reference profile
4. Click the right mouse button in the graph window
5. Select Tolerance Functions→Set As Product Reference Profile



Once select as the product profile the icon will change on the profile entry to



Using the DeltaProbe Tolerance Features

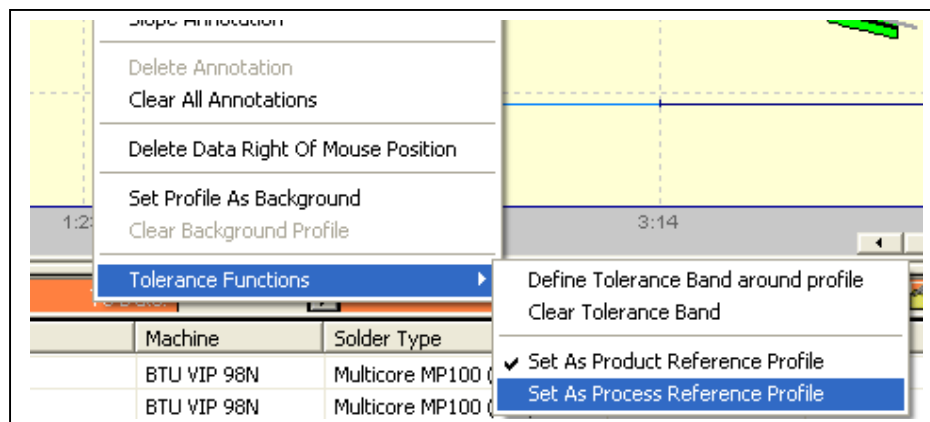
The Process Reference Profile

Once the product profile is established we can use the DeltaProbe fixture to capture a 'baseline' or reference profile for the Process, this is known as the Process Reference profile.

Once this reference is captured, the DeltaProbe systems offer a much more repeatable measurement platform for repeatability testing of the process.

To record a profile as the Process reference profile we perform the following steps,

1. Select the Profile Viewer menu option from the left hand navigator bar
2. Select the Product of interest from the Product List
3. Load the product profile into the viewer you wish to see as the reference profile
4. Click the right mouse button in the graph window
5. Select Tolerance Functions→Set As Process Reference Profile



Profile Date	Recipe	Machine	S
26/04/2005...	Htech2	BTU VIP 98N	M
26/04/2005...	Htech2	BTU VIP 98N	M
26/04/2005...	Htech2	BTU VIP 98N	M

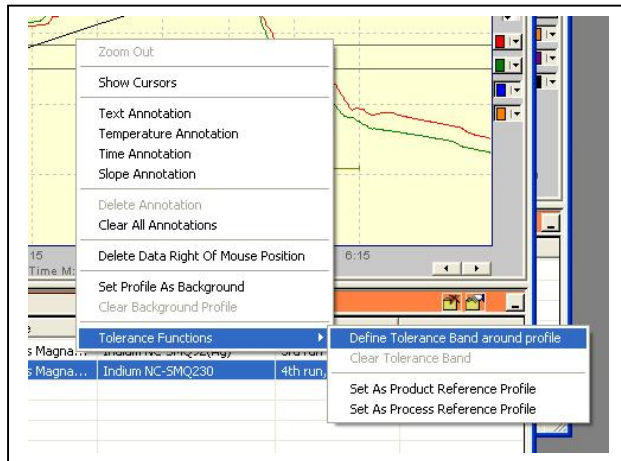
Using the DeltaProbe Tolerance Features

Defining a Tolerance Band

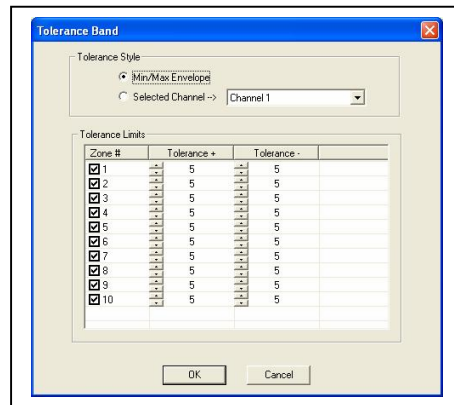
We now have the ability to set a tolerance curve around a qualified profile per product. This is usually the Product reference profile captured by the Deltaprobe sensor.

This is achieved as follows,

1. Select the profile which is the basis for the tolerance band
2. Right click the mouse in the Profile Viewer screen
3. 'Select Define Tolerance band around profile' menu option



The following screen will appear.



You have two styles,

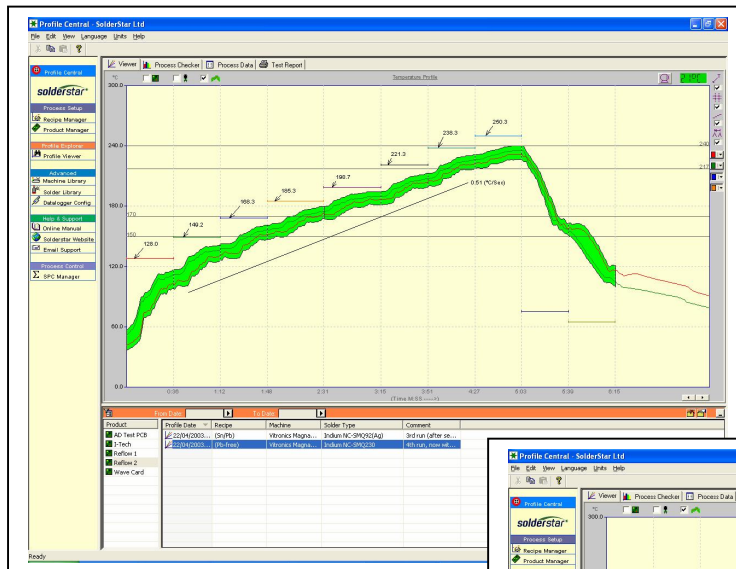
- (i) Min/Max Envelope :- This will add +/- tolerance band around overall channel profiles
- (ii) Selected Channel :- This will add +/- tolerance band around the channel profile you select

A specific tolerance can be defined on a zone by zone basis. Zones can be enabled or disabled by tick or untick feature. Once OK is selected tolerance is generated as below.

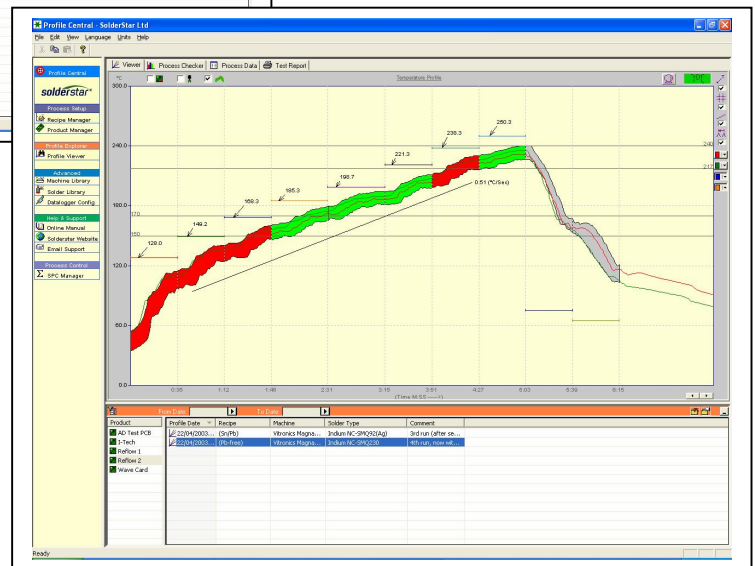
Using the DeltaProbe Tolerance Features

Tolerance band testing

Any profile for this product when selected will now be tested as in or out of tolerance.



- Red indicates FAIL
- Green indicates PASS
- Grey is disabled



This can also be seen on the Process Checker screen for a 100% check of Good or Bad.



Using the DeltaProbe Tolerance Features

Controlling Visibility of Deltaprobe features

Visibility of the Product reference, Process Reference and Tolerance is controlled by the following header bar features.

