QUICK REFERENCE GUIDE

Optimizing Your
Machine, **A**ssembly, and **P**rocess

What is MAP?

M Machine is the Reflow Oven.

A Assembly is the Printed Circuit Board.

P Process is the thermal "profile" specified by the Solder Paste manufacturer for proper reflow.

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Collecting M.O.L.E. Data

> This procedure uses the "**Fresh Start**" wizard for a typical data run process.
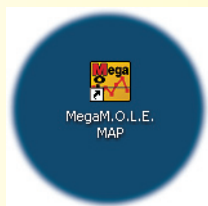
This procedure guides you through a typical collection process. If you need additional detail, consult the online Users Help Guide.

The M.O.L.E. Profiler depends on the MAP (Machine-Assembly-Process) software to control how it collects and interprets data. Several kinds of data runs may need to be performed to achieve desired information, or the same data run may be performed repeatedly over time to monitor one process. Either way, each data run must be set up at least once.

The MAP software includes wizards that help you get started quickly, even if you are a beginner or infrequent user. With settings for the three likely reflow work flows, you can get up and running in no time. This Guide documents the process used with the **Fresh Start** workflow wizard.
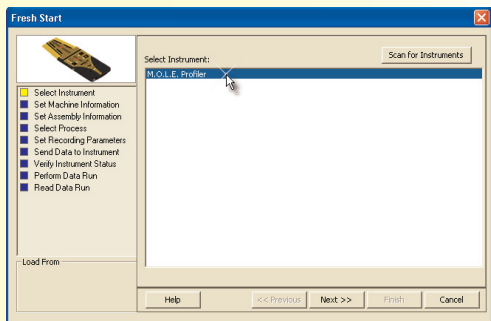
Part 1: Set MAP Information

1) Double-click the MegaM.O.L.E. MAP application icon to start the software.

2) Plug in the M.O.L.E. Profiler.

3) Make sure the M.O.L.E. Power Pack battery is fully charged. When a M.O.L.E. Profiler is selected, the software status bar displays the current battery voltage.

4) On the **File** menu, click **New/Start.** A message box appears with the three workflow wizard options.

5) On the **Start** dialog box, click the **Fresh Start** command button.

The step list on the left of the Wizard is color keyed to indicate step status:

Current ☐   Complete ☐   Remaining ☐

6) Select your desired instrument from the list box. If there are none listed, click **Scan for Instruments**.

7) Click the **Next** command button.

8) Select a machine from the drop-down list. If the desired machine does not appear in the list, click the **New** command button to create a new machine.

The software includes features to save and load machine recipe setting files. These files help you to quickly recall machine information and ensure consistency.

9) Set the machine recipe settings such as Conveyor Speed, Zone Temperatures and Temperature units in this window.
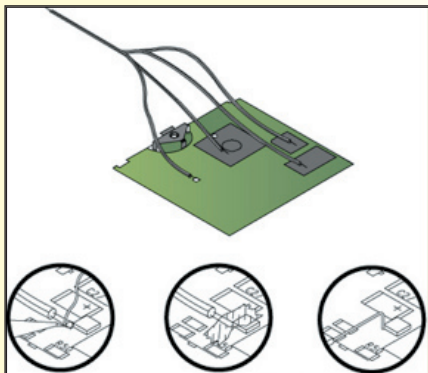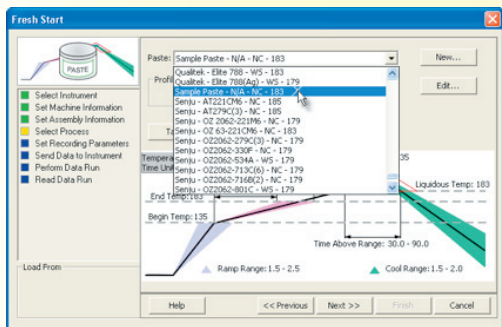
10) Click the **Next** command button.

11) Enter the assembly information such as part number, board size, sensor locations and a product image.
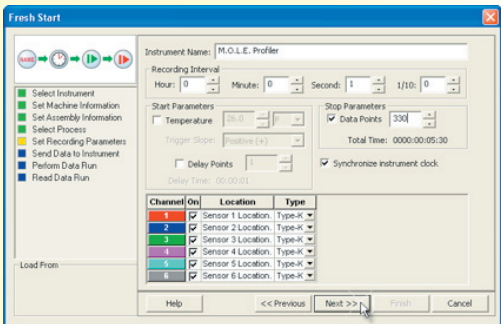
12) Click the **Next** command button.

13) Attach sensors to a test assembly, as shown.

14) Unwind the sensor leads and attach the connectors to the M.O.L.E. Profiler. Make sure to connect the leads to the same channel(s) that were configured in the wizard workflow.

15) Select your paste from the Paste drop down list and the Profile Type (Ramp-Soak-Spike or Ramp-to-Spike). If your paste does not appear in the list, click the **New** command button to create a new paste.
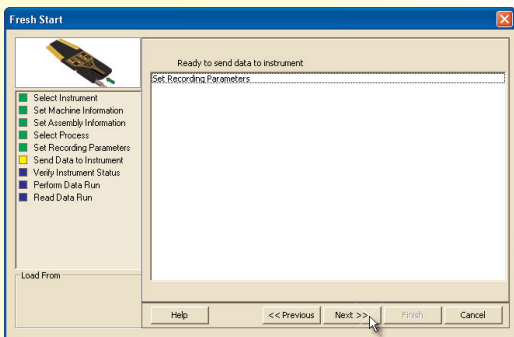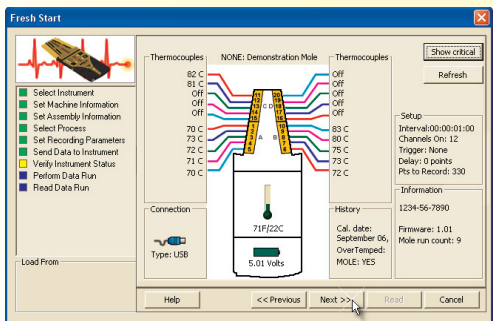

16) Click the **Next** command button.

17) In this window, set recording parameters such as the instrument name, recording interval, and start/stop parameters. You can also turn sensor channels on or off, set the sensor location description and sensor type.
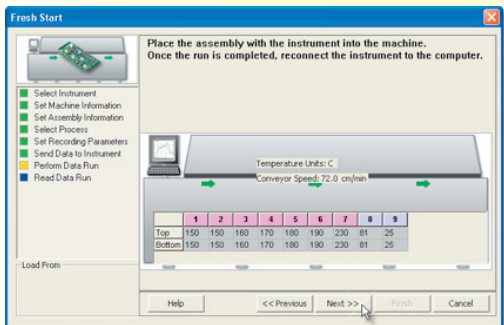
18) Click the **Next** command button when you are ready to send data to your instrument.

19) Click the **Next** command button in this window to send your recording parameters to the instrument. Verify the instrument status. This dialog box displays the health of the M.O.L.E. Profiler such as the battery charge, internal temperature, and thermocouple temperatures.

21) Click the **Next** command button and your M.O.L.E. Profiler is ready for your experiment.

Part 2: Perform Data Run

1) Place the M.O.L.E. Profiler in the appropriate thermal barrier, making sure the thermocouple and/or sensor wires are not damaged.

2) After the oven temperatures stabilize, turn the M.O.L.E. Profiler on and press the **Record** button.

> You must press the **Record** button even if the Trigger Temperature or Points Delay parameters are configured.

3) Pass the thermally protected M.O.L.E. Profiler and test assembly through the machine.

> Never permit the M.O.L.E. Profiler to exceed the absolute maximum warranteed internal temperature, as permanent damage may result.
>
> The instrument warranty will not cover damage caused by exceeding the maximum specified internal temperature.

> ⚠ It is highly recommended that protective gloves are used when retrieving the thermal barrier from the oven and when opening the thermal barrier.

4) As the test assembly and M.O.L.E. Profiler emerge from the machine, carry the test assembly with sensors attached and the M.O.L.E. Profiler in the Thermal barrier to a table or flat surface.
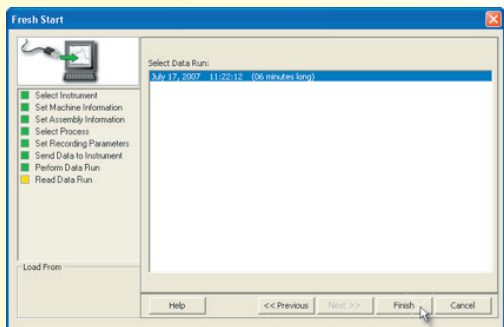
> ℹ If a sensor is removed before the M.O.L.E. Profiler has stopped collecting data, the data for that channel might become distorted.
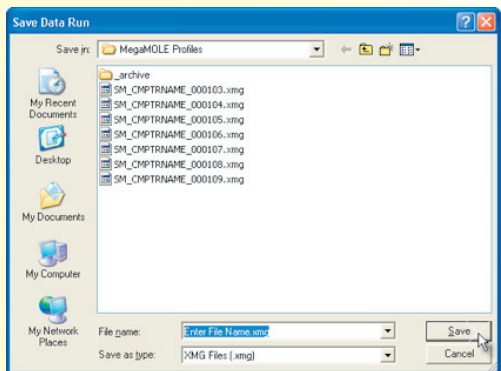
5) Open the thermal barrier and if the Activity LED is still flashing this means the M.O.L.E. Profiler is still recording and it must be stopped.

6) Remove the M.O.L.E. Profiler from the Thermal barrier. Handle it carefully, as the case may still be warm.

7) Disconnect the sensors from the M.O.L.E. Profiler and place it near the computer.

Part 3: Read Data Run

1) Restore the software and click the
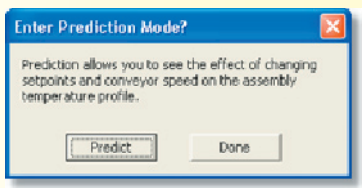   **Finish** command button to read the data
   run from the M.O.L.E. Profiler.

2) Select a file name, and
   click the **Save** command button.

3) The software then prompts you to enter Prediction mode. Entering prediction mode enables you to change zone temperature values or the conveyor speed and predict the outcome of those changes on the data run profile.

Refer to *Prediction* in the online help system for more information.

5) Click the **Predict** command button to enter Prediction mode or the Done button to complete the workflow wizard.

Your data is automatically saved in the run file (.XMG) and you can now analyze your experiment data with the software tools.

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