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NEMI Statement of Work Environmentally Conscious Electronics (ECE) TIG Lead-Free Wave Soldering Project

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Purpose:

Assemble surface mount devices and through hole components utilizing wave soldering as the primary means of soldering these components. Evaluate the impact lead free alloys exert on the wave soldering process as well as lead-free solder joint reliability.

Background and Motivation:

The transition to the use of Pb-free solder alloys introduces concerns regarding process changes and solder joint reliability. The implementation of a lead free wave soldering process is one assembly step that is directly affected by this transition. Previous NEMI projects have focused on lead free joints soldered by the use of forced convection reflow ovens. There remains little information on the impacts that lead free implementation will have on the wave soldering process as well as the reliability of lead free wave soldered joints and component survivability.

Scope of Work:*Need to Develop & Update*

This project will start by building upon the foundation of the current Lead-Free Assembly and Rework Project. This project identified critical issues with the wave soldering process and evaluated two alloys for lead free wave soldering.

- The group's goal is to evaluate the through hole portions of the Payette Test Vehicle which were assembled utilizing a lead free selective soldering process. This will enable the group to report pertinent results quickly and reach consensus for the next stage of the initiative.
- Select an appropriate Test Vehicle that allows for the investigation of how lead free implementation will impact the wave soldering process, material selection, board design, and pallette design.
- Perform comprehensive failure analysis on the Test Vehicle's lead free joints.

Schedule:*Need to Develop – Example follows:*

- *Initial project enrollment - close date*
- *Define strategies -*
- *Collect data –*
- *Document and summarize –*
- *Project completion -*

Specifications and Standards:

TBD

Resources Required from Participants:

TBD