

## Tennessee Pollution Prevention Partnership Success Story



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### Ignition Coil Soldering Elimination

#### The Member

DENSO Manufacturing Athens Tennessee, Inc. (DMAT) is part of DENSO Corporation's global network of 219 subsidiaries in 32 nations and the largest producer of advanced technology, components and systems for all major automakers. DMAT employs approximately 800 associates. Automotive components and systems produced at DMAT include the following: oxygen sensors, fuel injectors, fuel rails, ignition coils, monolithic carriers and spark plugs.

#### The Story

At DENSO, our substances of concern (SOC) work focuses on the phasing out of four heavy metals – mercury, cadmium, lead and hexavalent chrome as materials or product component. This phase out allows us to comply with multiple manufacturing restrictions from the European Union and other countries of the world. EU regulations include end of life vehicle (ELV) regulations and regulations on chemicals and their safe use that deals with the Registration, Evaluation, Authorization and Restriction of Chemical (REACH) substances.

This strategy is being implemented globally and requires constant communication between different regions and countries. This strategy also requires working across multiple work functions.

DMAT began manufacturing ignition coils in 2000. An ignition coil is an integrated igniter that provides advanced spark-timing control. The ignition coil production process includes the use of lead solder to

attach a terminal to the coil. A lead based solder is used in this process.

In our efforts to promote the use of environmentally friendly production methods, DMAT change our processing method from lead soldering to micro-arc welding. The lead soldering process involved an application of flux, forced hot air drying of the flux, then a lead solder bath. The new micro-arc welding process melts the terminal by a thermal arc of energy. Wire is encapsulated in terminal material.

#### The Success

The focus on this project resulted in the elimination of lead emissions and the elimination of VOC containing solvent on one of the existing ignition coil manufacturing lines. The micro arc welding system has also been incorporated into the newly installed ignition coil manufacturing equipment at the facility. The remaining ignition coil manufacturing equipment will be retrofitted within the next 12 months.

#### The Pollution Prevented

VOC emissions will be reduced by more than 2500 pounds per year. The purchase of solder containing lead was cut in half. We also prevented new emission of VOC since the new equipment is using the improved technology.