

# Copper-Based Casting Technology Applications Program on High-Speed Copper Motors



## PROBLEM/OBJECTIVE

This program is a continuation and expansion of the copper-based casting technology program for lightweight, robust, high-efficiency electric motors and fluid handling components for the defense community. The technical challenges involve developing semi-solid metal components and materials.

Electric motors with copper die-cast rotors will be evaluated for high speed applications, such as aircraft generator test stands used to verify the performance of generators during their design, development and manufacture. High speed motors would replace conventional motors which must be linked to gear boxes to attain the required speed.

The Copper-Based Casting Technology Applications Program will:

- Improve variable speed electric induction motor efficiency and service life,
- Upgrade quality and robustness of fluid handling components and systems.

## DoD BENEFITS

- Reduce total ownership costs for motors used at U.S. military bases, depots, and shipyards,
- Improve variable speed electric induction motor efficiency and service life,
- Assist the Department of Defense Energy Security Act (DoDESA) of 2010 to move non-tactical DoD vehicles to hybrid or electric power by 2015.

## IMPLEMENTATION & TECHNOLOGY TRANSFER

It is anticipated that this program will lead to the development of product and component designs, tests and evaluations leading to improved parts availability, strengthened capabilities of the U.S. supply chain; and reduced life cycle costs of motor/system combinations and other copper-based components with potential applications within the defense community.

## TIMELINE/MILESTONE

Start Date: October 2010

End Date: September 2011

## FUNDING

DLA ManTech \$1,094,688

## PARTICIPANTS

- U.S. Army Research Laboratory (ARL)
- Baldor Electric Company
- Vforge, Inc.
- Copper Development Association, Inc.
- Advanced Technology International (ATI)