Fly Ash-Enhanced Aluminum Composites for Automotive Parts
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Report for Program Startup to September 30, 1997
October 15, 1997

Objectives

To produce and evaluate the use of aluminum “ashalloys” – metal matrix composites that incorporate coal fly ash – in the commercial manufacture of cast automotive parts.

The use of fly ash as an additive will help reduce the weight and cost of automotive parts, improve selected material properties, and reduce energy consumption and pollution.

Contract Start Date 4/18/97 Duration 3 years

Highlights

Because of the linkages between tasks in the first year of the project, initial efforts have concentrated on program integration and scheduling. Preparations are underway for the collection and processing of the flyash to begin this quarter. In addition, a three year spending plan has been prepared for the project with a detailed cost and scheduling outline.

The initial meeting of project team participants including representatives from utility companies, foundries and the university providing research on ashalloy processing, was held in May. This meeting defined tasks and responsibilities and set schedules for the three year project.

Progress

In this quarter, work has been done to identify sources for processing of flyash. Techniques have been identified to separate fine size flyash particles from the as collected flyash samples. Contacts have been made with manufacturers of equipment capable of separating ultrafine size fractions of flyash.

Aluminum-cenosphere fly ash composite samples were made by pressure infiltration and the thermal coefficient of expansion was measured. Flyash additions resulted in significant decreases in coefficients of expansion of aluminum alloys.

Milestones

No major milestones were scheduled or completed this reporting period. Upcoming milestones include:
- Collection of fly ash and cenospheres
- Predictions on microstructures and Alloy Composites including type, size, and amount of fly ash for component property requirements
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