

## L. Truck-to-Auto Technology Transfer for Lightweight Materials

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### **Objectives**

- Determine the degree to which DOE technology development for heavy trucks is transferred through the supplier base to the automotive industry.
- Determine if this process is applicable to the lightweight materials programs being funded by DOE.

### **Approach**

- Identify suppliers in the DOE lightweight materials program who serve both truck and auto industries.
- Identify individuals at the decision-making level.
- Develop an interview script.
- Conduct five supplier interviews.
- Conduct five interviews with truck and auto original equipment manufacturers (OEMs) and industry groups.
- Summarize findings.

### **Accomplishments**

- Conducted interviews with materials decision-makers in the truck and auto industries to solicit their opinions on the potential for transfer of lightweight materials technologies between trucks and automobiles.

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### **Introduction**

Interviews were conducted with key materials decision-makers from the auto and truck industries. The purpose of these interviews was to better understand the potential for the transfer of lightweight

materials technology from the truck to the auto industry.

Comments from the interviewees indicated that some technology transfer between the truck and auto industries will occur spontaneously, but it will be limited. Regarding lightweight materials, there is the potential for significant truck-to-auto technology

transfer with external stimulation of the process. Technologies that require significant change in legacy materials, processing, or auto assembly will require considerably longer for transfer than drop-in materials substitutions.

The following findings represent the input provided by the interviewees.

### **Key Findings**

The technology transfer process is controlled by the advanced engineering groups at the truck and auto OEMs and by the first tier suppliers who serve both industries.

Incentives for technology transfer for both the truck and auto industries stem from improvements in buyer economics or manufacturer's costs. Transfer is hindered by the fact that the truck and auto industries have different production volumes, part sizes, buyer payback calculations, and long-term materials data requirements.

Interviewees cited examples of technology transfer that has occurred previously in both directions. They feel that future technology transfer between the truck and auto industry is possible. Truck-to-automotive technology transfer is likely to involve advanced materials for weight reduction, non-reinforced dicyclopentadiene for body panels and bumpers, adaptive cruise control, and electromagnetic retarder brake systems.

For drop-in materials substitutions, it may take 2–4 years for a product to be commercialized on the second vehicle platform. If the technology requires a change to current forming, joining, or finishing processes, commercialization may require up to 10 years.

The interviewees thought that DOE could catalyze technology transfer between the truck and auto industries by providing leadership, networking opportunities for gatekeepers, and project funding to support data collection for both industries.

Interviewees thought DOE could play a key role in stimulating technology transfer to the auto industry. It would be important to involve the automotive gatekeepers in DOE's lightweight materials truck projects. Projects should be structured to develop economic justification for both truck and auto applications. Long-term performance data should be generated to meet the concerns of both industries. A venue that provides neutral ground where auto and truck gatekeepers can routinely exchange information about new technologies would provide additional stimulus for the technology transfer process.

### **Conclusions**

DOE actions that were seen as particularly helpful in catalyzing technology transfer include these:

- Support of dual-use (truck and auto) programs and forums on neutral ground
- Development of economic justifications for both truck and auto applications
- Investment in the demonstration of technologies at first tier suppliers serving both industries
- Involvement of both truck and auto OEMs in those programs
- Generation of long-term performance data under conditions appropriate for both trucks and autos
- Involvement of industry crossover organizations, such as the U.S. Council for Automotive Research

DOE staff have been briefed on these results and are considering how DOE might best facilitate technology transfer of lightweight materials between the truck and auto industries.