



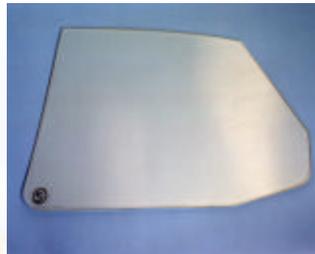
Lightweight Materials Forming and Manufacturing for Improved Efficiency

Metal Matrix Composites



Powertrain components – 40% weight reduction

Lightweight Glazing



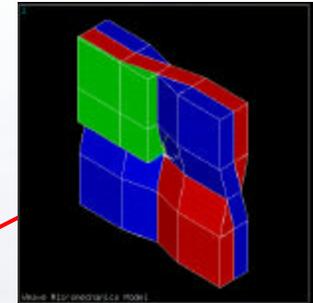
30% weight reduction

Magnesium Alloy



50% weight reduction

Thermoplastic Composites

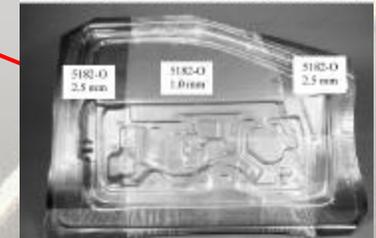


Reduces mass by 60%

Aluminum Tailor Welded Blanks



Photo courtesy of Reynolds Metals Company and Oshkosh America Corp.



35% weight reduction and reduction in part count

Hydroforming



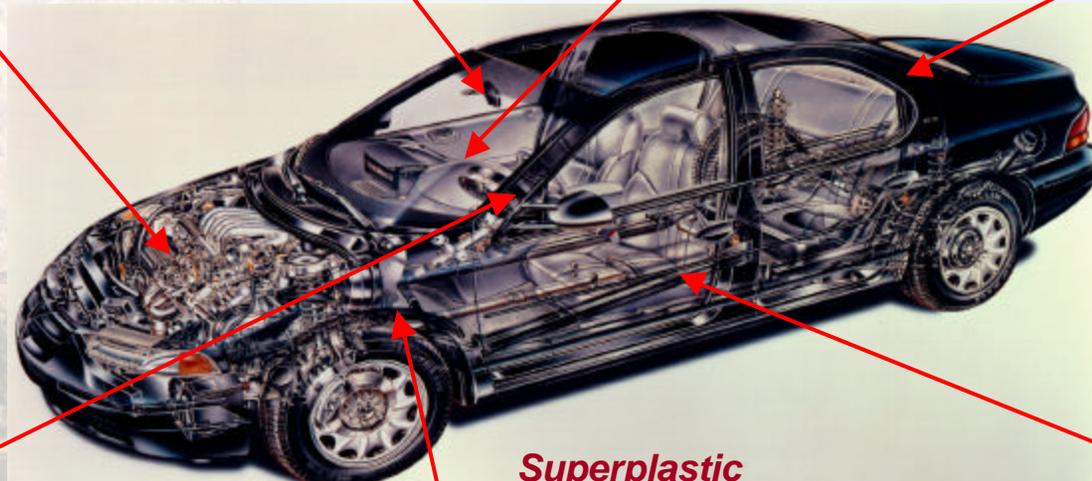
40% weight reduction and 50% reduction in part count

Superplastic Forming



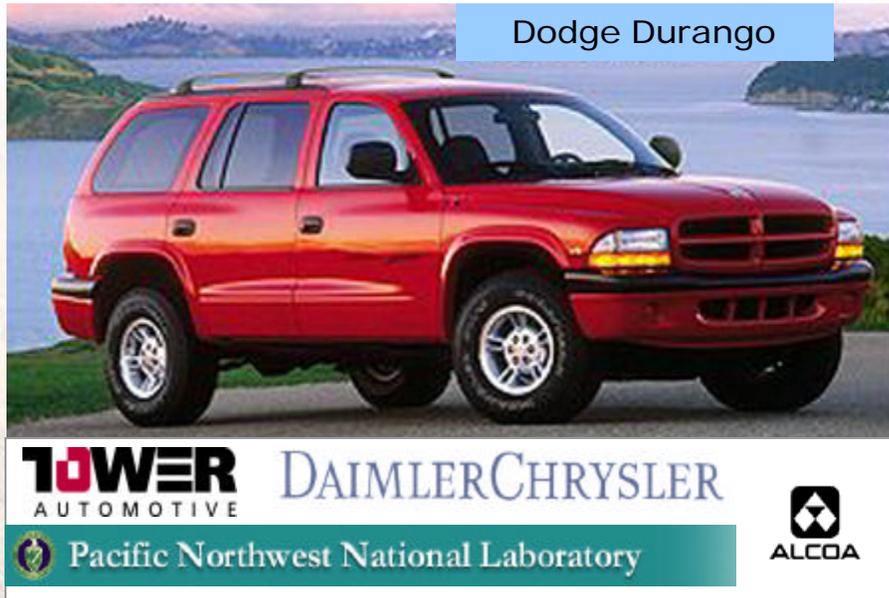
Photo: Courtesy of GKN Aerospace

40% weight reduction and 10 X reduction in part count





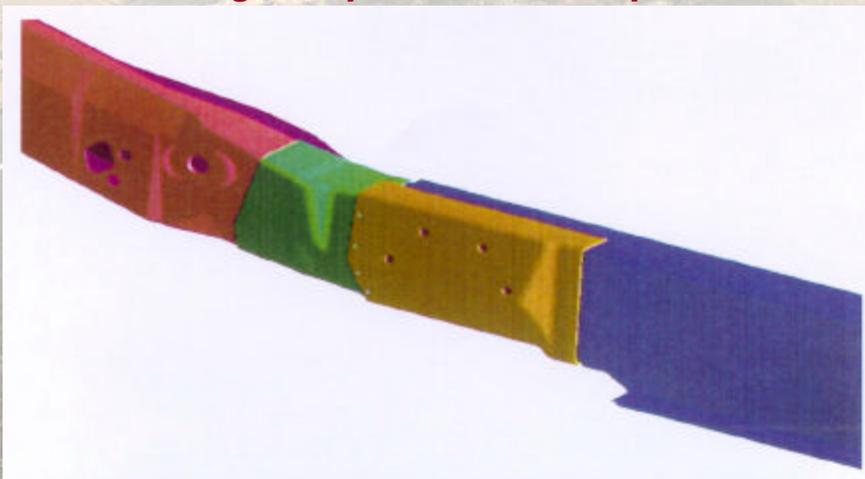
Lightweight Pick-up and Sport Utility Frame Program



Lightweight steel/aluminum frame reduces weight by greater than 35% and improves safety.



Unique steel-to-aluminum joint reduces frame weight while meeting cost performance requirements.



Importance of Our Work

Pickup, sport utility vehicles and vans account for nearly 50% of new vehicle sales. Their increased size and weight result in lower fuel efficiency compared to lighter weight cars. This research applies lightweight materials technology to this popular PU/SUV class of vehicles.

Benefits

With the lightweight PU/SUV Frame Program, there is

- greater than 30% weight reduction
- improved fuel efficiency and lower emissions
- reduced collision impact on smaller vehicles.