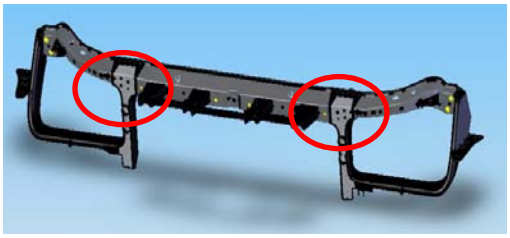
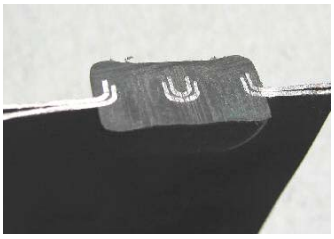
In Mold Assembly (IMA) Technology
Case Study



Picture 1: Typical IMA Application



Picture 2: IMA Attachment Joint

Picture 3: Typical Spot Welding Joint

Materials Used: DURETHAN® BKV 30 and DURETHAN® BKV 50

The joining of multiple metal stampings together is typically done by welding (spot or MIG) in most automotive body structure applications. While this is a proven and robust solution, it does cause problems to dimensional consistency and repeatability, since a certain level of variation inherently occurs during the welding process. There are also significant costs associated with the welding process including fixturing and welding equipment, as well as the time required to do the work. In search of a method that would reduce such costs, and also provide equivalent if not better functionality, LANXESS has developed an innovative technology called In Mold Assembly (IMA) technology which is an alternative to traditional welding/joining. This process is an insert-molding technique in which injection molded plastic is used to permanently join at least two metal members together. Though originally developed to be an enabling technology for Plastic/Metal Hybrid applications, IMA technology can be used in virtually any application where the joining of multiple metal stampings is required.

IMA brings value compared to traditional welding techniques through cost savings, which can be in excess of 20% due to the elimination of fixturing and through time savings associated with the welding process. Therefore, cost savings are largely dependant upon the number of spot welds required. Though there are no significant weight advantages, there is the potential for functionality benefits. IMA offers weld strength which is equivalent or better than spot welding, as well as improved dimensional consistency and repeatability without the need for fixturing.

Advantages:

- Potential cost reduction of up to 20% compared to traditional welding.
- Potential increase in weld strength as well as improved dimensional consistency and repeatability compared to traditional welding.

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