

Manufacturing of High Strength Steel and Aluminum for a Mixed Material Body in White

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Abstract. Sophisticated materials like high strength steel or even multi phase steel as well as aluminum require more efforts within the manufacturing process than conventional steel sheets as they have been used in the body in white recently. The manufacturing process itself as well as engineering of the parts, material of the forming tools as well as cold and warm joining technologies must be regarded separately. For forming tools coated steel inserts or sometimes even cooling is essential in terms of high-volume car series production. In mixed material solutions using steel in combination with aluminum, the common used resistance spot welding process does not work any more. To maintain high process stability of cold joining technologies combined with adhesive bonding a new process must have been developed. Other items for weight and cost savings are tailored rolled blanks or sophisticated joining technologies. Regarding the manufacturing costs, a cost effective combination of the mentioned high-sophisticated alloys with conventional material should be achieved. Developing a design concept due to crash, stiffness and driving performance, basic requirements have to be considered. This aims to check the high potential of cost intensive materials wherever high functional benefit is necessary under commercial aspects.