# Ultra-high tensile steel for Mazda CX-5

Mazda Motor Corporation, in collaboration with Sumitomo Metal Industries and Aisin Takaoka, has developed vehicle components using 1,800 MPa ultra-high tensile steel. This super-strengt steel will debut in the Mazda CX-5 crossover SUV that will commence its global launch in early 2012.

Mazda's new production technology uses 1,800 MPa ultra-high tensile steel to fabricate bumper beams which fit inside the front and rear bumpers and damage in the event of a collision. The bumper bars are 20 stronger and 4,8kg lighter than previous versions and are a key part of Mazda's next-generation, lightweigh and rigid vehicle architecture. The new body-architecture was developed as part of Mazda's breakthrough Skyactiv Technology program and incorporates a new energy absorbing structure as well as expanded us of high-tensile steel to reduce weight.

## Lighter but stronger

The use of high tensile steel enables vehicle parts to be thinner yet still retain the same degree of high strength. This leads to significant savings in vehicle weight. Reducing the weight of bumper beams is particularly important because, as they are incorporated into the body structure at the farthest point from th vehicle's centre of gravity, their weight has a considerable effect on dynamic performance and responsiveness. They must also be strong to provide sufficient collision protection.

However, stronger materials are less pliant and therefore absorb less energy in a collision. To overcome this, Mazda conducted research into how bumper beams deform in a crash and created a new design that absorbs energy more efficiently. Additionally, in order to ensure the bumpers provide maximum strength ir the CX-5, Mazda collaborated with Futaba Kogyo to optimise the welding techniques and to establish a reliable manufacturing process.