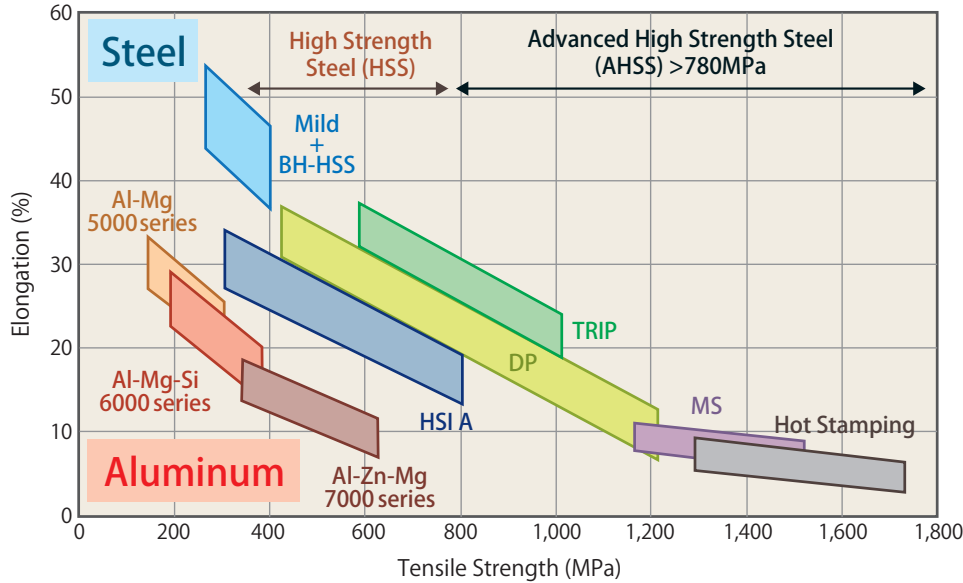
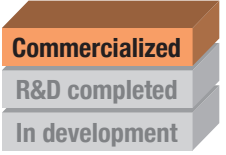


# Aluminum sheets & coils for automotive panel and Parts

## Contributions

- To reduce weight with utilizing aluminum alloy sheets of various applications for appropriate parts.
- To propose materials depending on your requirements.



**Non-heat-treatable aluminum alloys**  
(1000, 3000, 5000 series)

- Relatively good formability
- Various strengths depending on alloys

**Heat-treatable aluminum alloys**  
(2000, 6000, 7000 series)

- High strength by age hardening

	AA/EA Alloy	KOBELCO Available	Application	Temper	Mechanical properties (Typical)				Other properties		
					TS MPa	YS MPa	EL %	YS AB MPa	Formability	Bake Hardening	Corrosion Resistance
Al-Mg-Si Alloys (6000 series)	6022	○	Panel/OTR	T4	220	125	28	205*	+	++	++
	6016	○	Panel/OTR	T4	210	105	27	220**	+	+	++
	6014	○	Panel/OTR	T4	205	105	25	215**	+	+	++
	6111	○	Panel/OTR	T4	240	120	29	205*	++	++	+
	6061	○	Structure	T6	305	280	14	N/A	-	N/A	+
Al-Mg Alloys (5000 series)	5182	○	Panel/INR	O	275	125	29	N/A	+++	N/A	+
	5022	○	Panel/OTR	O	280	135	31	N/A	+++	N/A	+
	5154, 5754	○	Structure	O	225	100	26	N/A	+	N/A	++

AA; The Aluminum Association

\* 2%st+170°Cx20min, Typical value at 1.0mm  
\*\* 2%st+185°Cx20min, Typical value at 1.0mm

N/A; not applicable



# Design solutions by CAE simulation

## Contributions

To make it possible to reduce weight and problem solution with utilizing performances of aluminum materials with CAE technologies.

Commercialized

R&D completed

In development

## Points

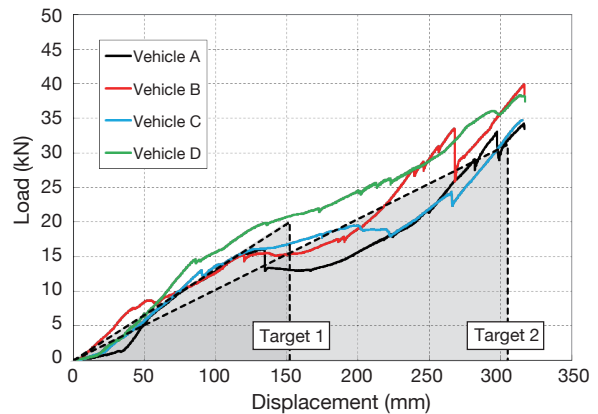
- Design proposal for pedestrian protection aluminum hood
- Proposal of thermal deformation suppression structure for automobile parts
- Anti-collision evaluation of side door (FMVSS 214)



【Test results】

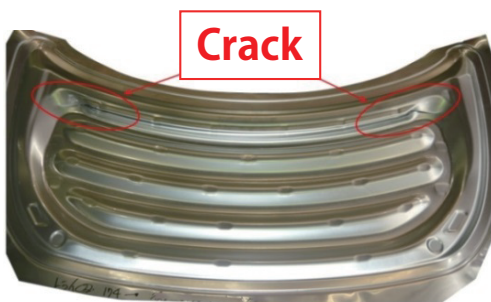


【CAE Simulation results】

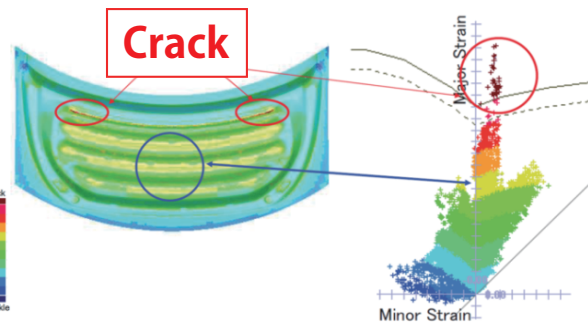


【Comparison of strength test results】

## Formability evaluation



【Prototype results】



【CAE Simulation results】

e.g. Correlation evaluation (Hood inner panel of aluminum)

Reference: 2016 JSAE Annual Congress ( Spring ), No.20165288

▶ <https://www.kobelco.co.jp/products/automotive-engineering/movie.html>  
(Video of CAE simulations)