



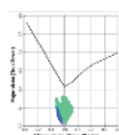
ArcelorMittal

Advanced High Strength Steel Solutions for Appliances

A study was conducted to determine if advanced high strength steels (AHSS) could be beneficial for appliance applications. Our R&D team analyzed the demonstration washer developed by our own researchers in conjunction with the Paris School of Art & Design to showcase our products. Proposed AHSS grades were evaluated for stamping feasibility and then each component was tested virtually via finite element analysis against four different performance criteria. Once all solutions were validated, weight savings and cost were calculated to determine the overall value created with this AHSS solution.

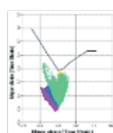


AHSS for outer panels

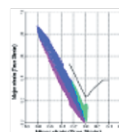
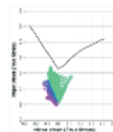


Side Panel
Ref: CSB 0.80 mm
New: DP500 0.60 mm

Back upper
Ref: EDDS 1.50 mm
New: IF260 1.30 mm

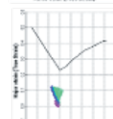


Back lower
Ref: EDDS 1.00 mm
New: BH300 0.80 mm

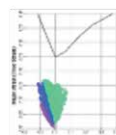


Front Panel
Ref: EDDS 0.85 mm
New: IF300 0.70 mm

Back traverse
Ref: EDDS 1.00 mm
New: BH300 0.80 mm

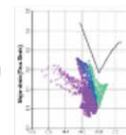


AHSS for inner parts



Top frame
Ref: CSB 1.30 mm
New: HSLA420 1.00 mm

Transport beam
Ref: CSB 1.00 mm
New: HSLA420 0.80 mm

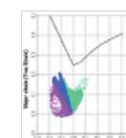


Control frame
Ref: CSB 1.00 mm
New: HSLA420 0.90 mm

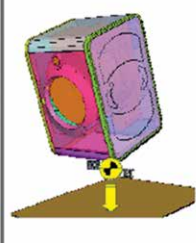
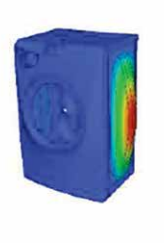
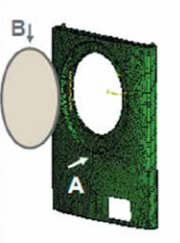
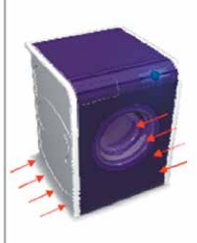


Front bracket
Ref: CSB 1.00 mm
New: DP780 0.70 mm

Base bracket
Ref: DDS 1.20 mm
New: TRIP780 0.80 mm



FEA Validation Testing

Drop test	Modal analysis	Oil canning	Clamping test
To simulate accidental release of appliance during manipulation by fork lifts	To predict the natural frequencies of assembly	To predict the deflection of the steel panel under load	To simulate handling in warehouses and loading/unloading of trucks and railcars
			

Value of switching to AHSS

- 20 percent weight reduction
- 14 percent material cost savings

Contact us to learn more about this case study.



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