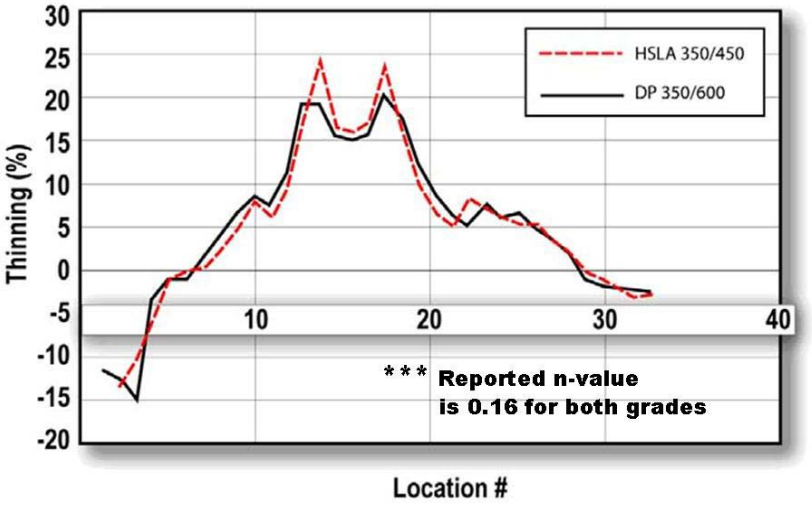
Thinning Strain Distribution Study

As mentioned previously, instantaneous n-value allows the steel to distribute strains uniformly so that the stamping does not thin excessively in any given area. The effect of thinning strain distribution of an equal "terminal" n-value HSLA versus DP steel is shown below. The higher initial n-value found in DP steel tends to restrict the onset of strain localization and the growth of sharp strain gradients. Minimization of sharp gradients reduces the amount of localized sheet metal thinning.

"Substitution of DP 350/600 for HSLA 350/450 (with equal terminal n-value) reduced the maximum thinning from 25% to 20% in this channel."



Thinning strain distribution for a channel produced with DP and HSLA steels with equal reported n-value
Source: IISI AHSS Guidelines Version 3