

SIMULATION OF FORMING TOOLS MECHANICAL BEHAVIOR FOR HIGH STRENGTH STEEL APLICATIONS

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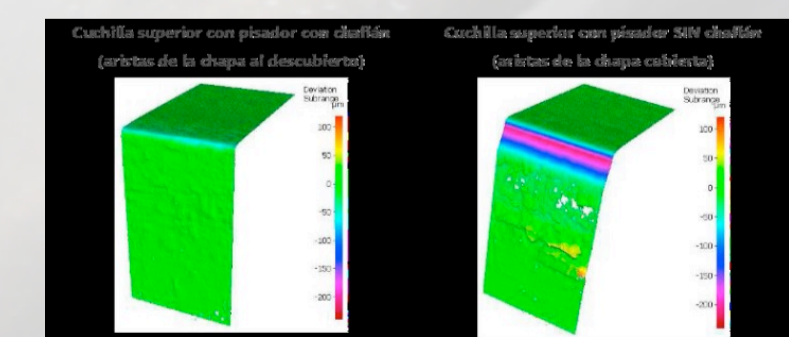
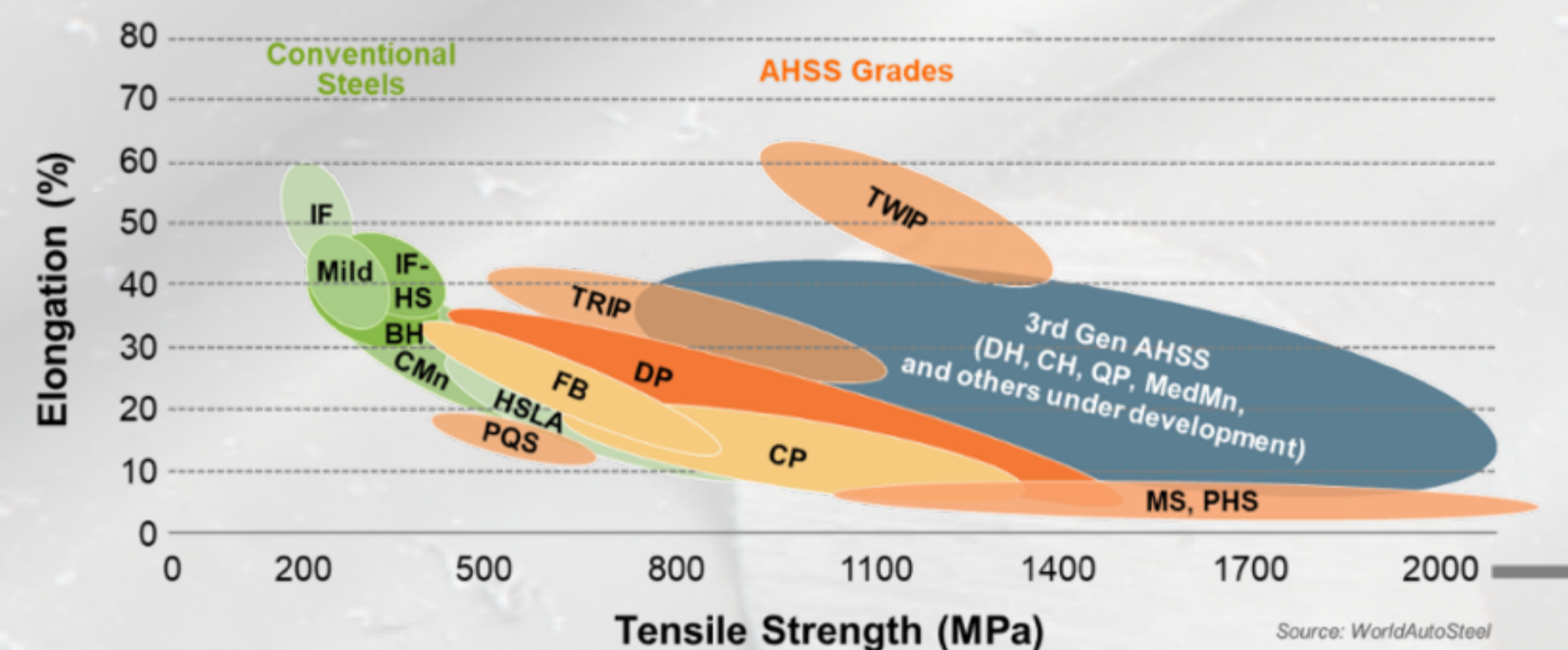
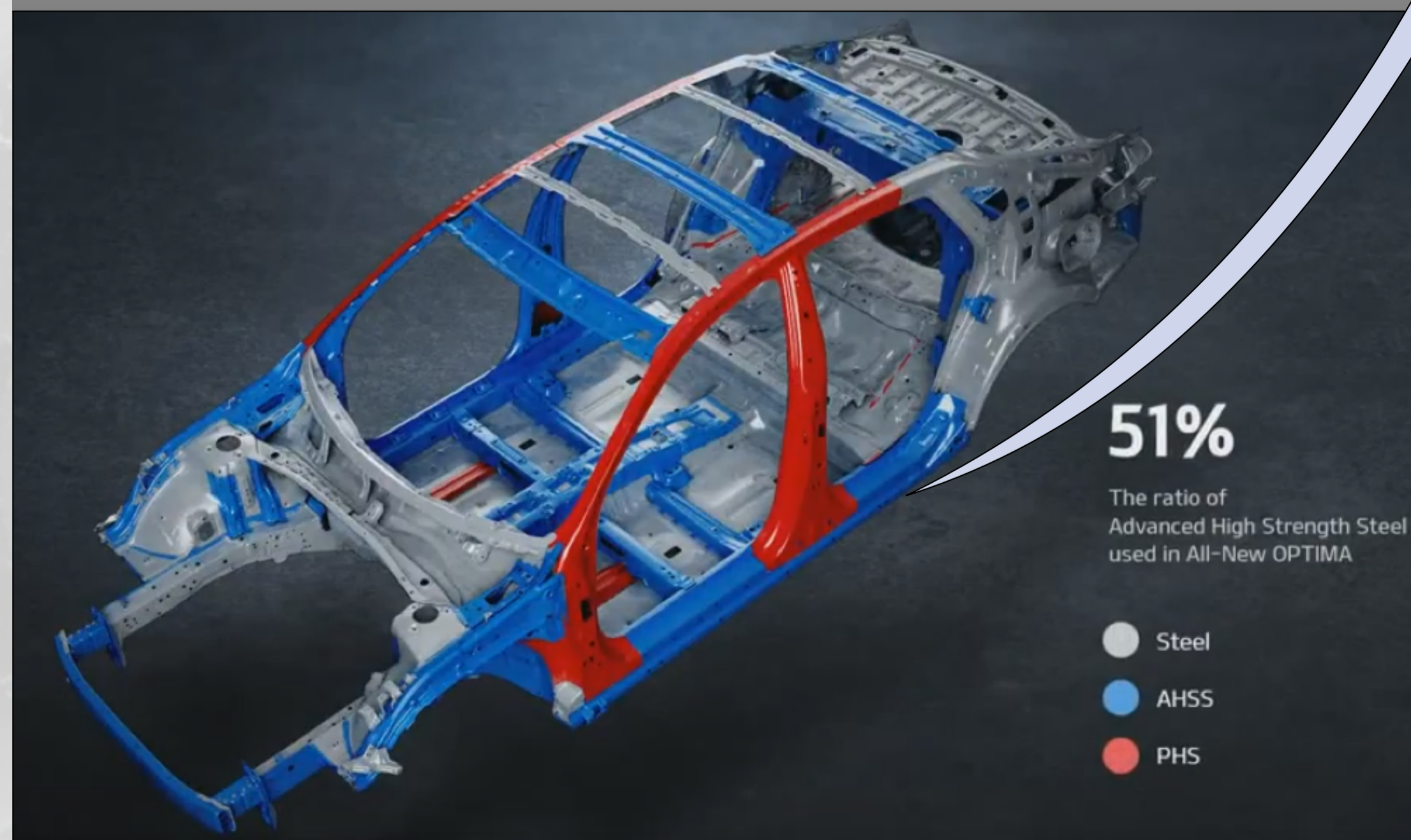
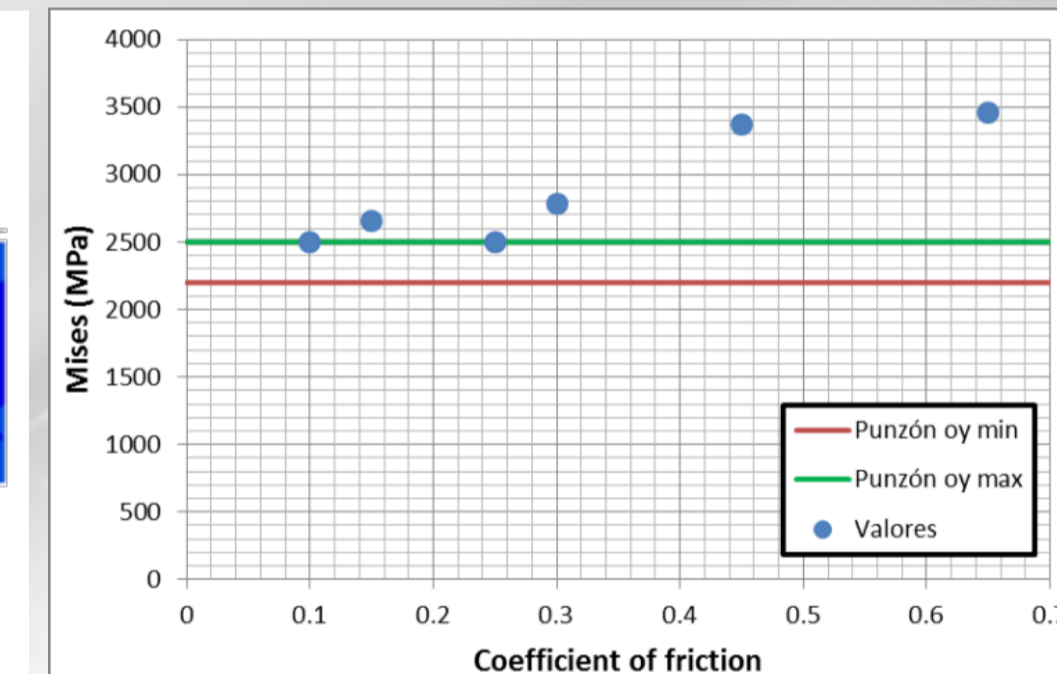
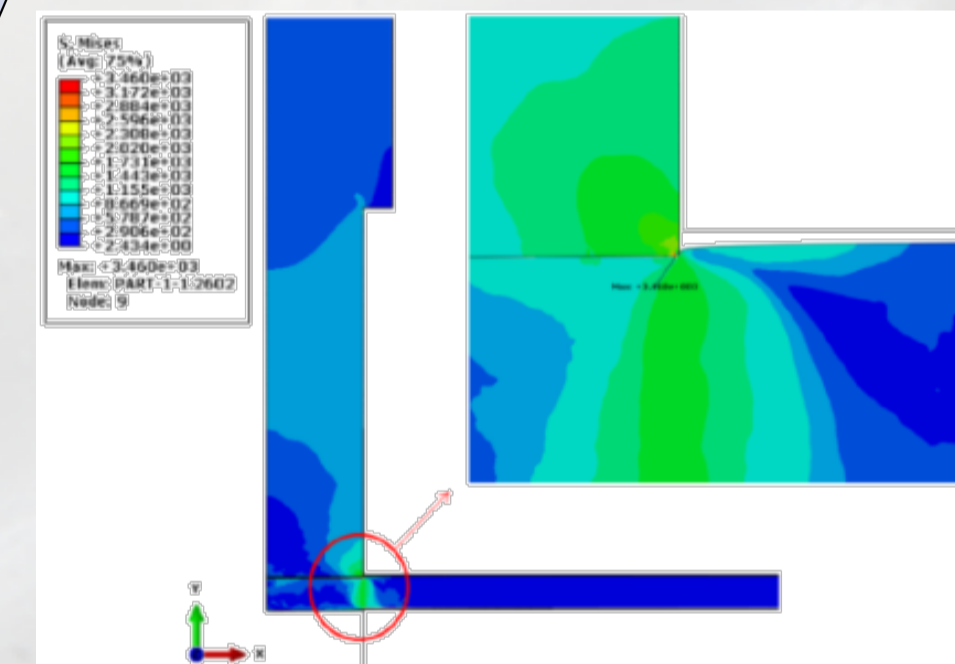
The increasingly widespread use of high-strength steels for the manufacture of components in the automotive industry generates premature failure of forming tools, either due to fractures or wear.

To address this problem, it is essential to know the mechanical behavior, especially the level and distribution of stresses on forming tools.

This knowledge allows for a correct selection of tool materials, as well as optimization of process variables. In addition to allowing steel developers to focus their research on new materials.



In this thesis, the stresses values for cutting blades and circular punches have been determined by FEM simulation. Also, semi-industrial tests were performed to validate the simulations result and for determine the optimal process conditions oriented to increase tool life.



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