



Finite Element Analysis

Comparing CAD for real life.

The beauty of Red Bull's approach to this model is that it is quite easy to match up with a real test and compare results. The model itself has been refined over a few seasons and developed, based on subsequent testing of real tubs. This means the model can be used with confidence. Any improvements in torsional stiffness that it predicts are likely to be real. The test that we actually carry out in the FE is representative of what we try and do on the car each season to verify its overall stiffness and whilst this component isn't ever tested in isolation in this manner, we know by measuring at different sections along its length how accurate the model is and if this kind of model basically with the assumptions we've made, doesn't come out within about 5% of the tested value then we'd probably flag it up as some kind of problem and then re-investigate it after that.

It's interesting that Red Bull have carried out detailed measurements of real test chassis tubs at various positions along the length. The best form of verification.

Interesting also that they are disappointed if the measured values and computed results are not within 5 % of each other. That is a very satisfactory result, particularly with such a complicated part and with the non isotropic material properties. Clearly FEA is a very powerful simulation tool.