

load emerges at the last lap of the casing thread. Study on the last lap threads of casing, the load distribution shown in Figure 5. This figure sets the x direction as 0° . From 0° along with clockwise direction to 360° , represent the last lap position of the thread. The length of center to the curve indicates the size of this position's stress. As it can be seen from Figure 5:

One side of casing threads bear tension, while others bear pressure. The pressed side area is slightly smaller than the pulled side. The loads of interface between tension and compression are much smaller than the same relative ring. The rest of the thread load distribution of the lap is substantially similar, and its corresponding load is smaller, not repeat them here.

6. Conclusion

(1) Finite element analysis is able to replace a lot of experimental simulation of complex mechanical model, and its result is reliable with low price. The established model should be considered the load boundary, meshing, size of calculation.

(2) This model is established based on API casing thread basic dimensions. The steel grade of casing is P110, the wall thickness is 12.34mm, the elastic modulus, E , is 2.1×10^5 MPa, the Poisson's ratio is 0.3, the yield strength is 758MPa, the tensile strength is 862MPa, the outer diameter of coupling is 153.7mm, the friction coefficient is 0.02.

(3) Casing has a little lead angle, which is almost unaffected on load distribution of casing threads. Simplify it, and apply interference fit to simulate torque.

(4) This paper analyzes the equivalent stress when casing is alone under the axial tension, internal and external pressures, bending moment, provided a reference for the evaluation of the connection strength of casing.

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