

## SUMMARY

**Reza Tri Anggara**, Department of Mechanical Engineering, Faculty of Engineering Brawijaya University. November 2013, *Analisa Tegangan Sisa Pada daerah Hasil Cold Expansion Hole Dengan Pemberian Beban Single Overload*, Advisers Lecture : Moch. Agus Choiron and Khairul Anam

Cyclic loading on a structure often occurs on a fluctuating, as does having excess loading (overload) which can lead to the occurrence of cracks. One solution to inhibit the onset of crack is a Cold Hole Expansion Technique. For that required an observation such an analysis of stress because after getting excess loading (overload), it is very important to knowing the type and magnitude of the residual stress which occurs.

This research was conducted as a simulation on the basic concept of the Finite Element Methode. This form of simulation modeling of the specimens without Cold Expansion Hole and specimens with Cold Expansion Hole, once it is given the loading of single overload of 60kN on each specimen. To validate the modelling of the research, performed comparisons of stress distribution graph of results with V. Nigrelli and Pasta research.

The results showed that the giving of a single overload of 60 kN in the specimens without Cold Expansion Hole tensile residual stresses enlarge 183.17 MPa while in specimens with Cold Expansion Hole of 228 MPa (increased 78%). In the cycle after the overload, the specimen without Cold Expansion Hole produces a stress drop remains of 120 MPa while in specimens with Cold Expansion Hole tensile residual stresses of 89.43 MPa (decreased 73%).

**Keywords : Residual Stress, Stress Analysis , Cold Expansion Hole, Single Overload**

