

## ABSTRACT

Ferritic stainless steel is the family of stainless steel. Ferritic stainless steel has many applications such as in structure or as components in exhaust system of vehicle. One of material from the family of ferritic stainless steel that has oxidation and corrosion resistance is ferritic stainless steel type JFE429EX. As a component this material can be fabricated by using welding process. Welding process as we know that will affect the material such as its fatigue behaviour. It is important to investigate the effect of welding process to fatigue behaviour of this material because it is not tested, yet.

Fatigue testing is conducted by using servo hydraulic fatigue testing machine, with the axial load is applied. The load variations are 350, 280, 260, and 240 Mpa. In this test, the result will be how long cyclic to failure from each of the load and at the end, it will be plotted on stress and number of cycle diagram. Another testing that is residual stress measurement. Those testing are used to observe welding effect in welded Ferritic Stainless Steel JFE429EX to the fatigue behaviour.

Result from this testing is showed the increasing of fatigue limit. The increasing is caused by residual stresses that compressive residual stresses has the role to increase fatigue limit.

*Keywords: Ferritic Stainless Steel JFE429EX, Welding Process, Residual Stresses*