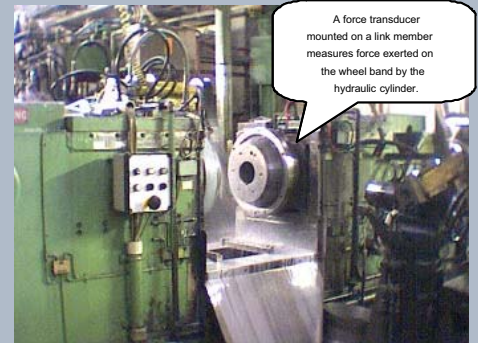


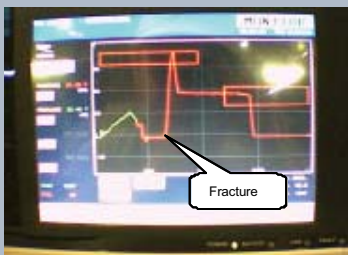
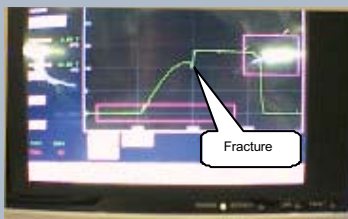


Part of the process of manufacturing steel automotive wheels at Ford is done by the eiserling machine. Coil steel is taken and cut into lengths that are formed and welded to produce a steel band that is then further formed by dies to produce the wheel outer band profile ready to be welded to the inner section.

Various problems either in the welded joint or the steel band can often cause the welded band to split when it is formed by the first die as this process 'stretches' the band with very high forces. As the machine process runs automatically what was needed was a method to detect a split heel band so the machine could then reject it before it got to the next station.



Forming die section of the machine.



260 Unit screen shots showing two force profiles of fractured wheel bands.

A DECADE 260 Series was used to measure the force exerted on the wheel band during forming. During the forming operation the force should climb slowly up to a peak value then drop to zero when completed. But if the wheel band should split the force 'dips' in a negative direction for a brief moment before reaching the peak force value.

Test work carried showed that the rate and depth of the negative 'dip' was roughly proportional to the size of the split in the wheel band. Some bands only split a few inches, some would completely split open, both are rejects.

A DECADE bolt-on strain link was fitted to one of the link members that transmits the force from the main hydraulic cylinder to the forming die. The output from this transducer was then fed into the 260 unit.

The 260 unit was setup to first look for any negative dips in the force profile while it is rising up during forming. Any negative dips greater than a pre-set limit criteria would cause a fault to be detected and the machine PLC informed to reject the wheel band. After the forming process a check on the achieved peak force is made to ensure correct operation of the hydraulics.

In practice this system proves to reliably detect splits in wheel bands down to a few inches in length.



260 Unit mounted on the main control panel.