theory, or Maxwell-Huber-Hencky-von Mises theory, is often used to estimate the yield of ductile materials. Von mises stress is used as a criterion in a determining the onset of failure in ductile materials.

H. Plate at (900 rpm/63mm/min)>> Load: - 3.6 KN

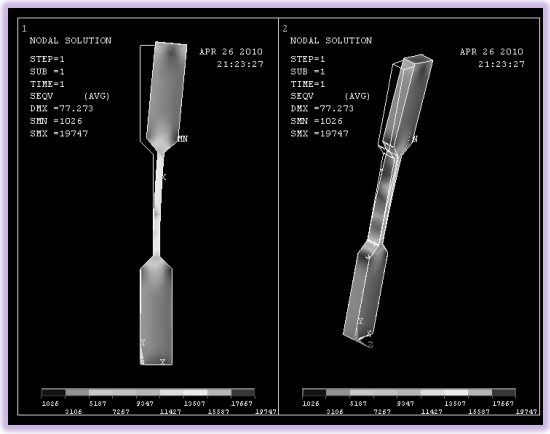

Fig. 16: Von Mises Image for (Load 3.6kn)

I. Plate at (1200 rpm/50mm/min)>> Load: - 3.2 KN

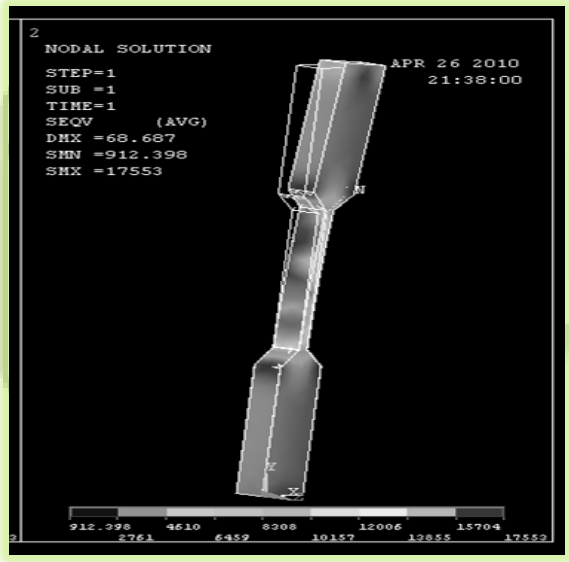

Fig. 17: Von Mises Image for (Load 3.2kn)

Plate at (1200 rpm/63mm/min)>> Load :-3.0 KN

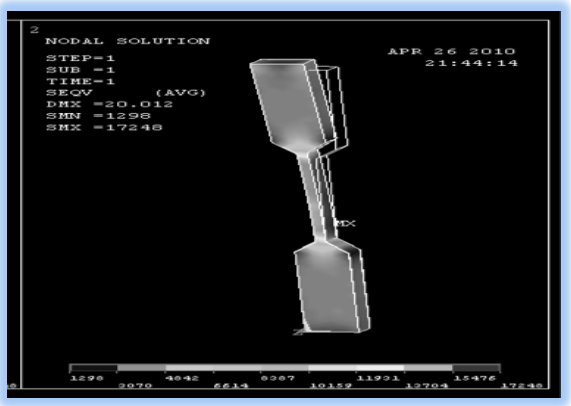

Fig. 18: Von Mises Image for (Load 3.0kn)

V. CONCLUSION FROM ANALYSIS OF FSW PLATE

A. RESULTS & DISCUSSION FOR FSW PLATE

VON MISES STRESS (ANSYS-RESULTS)				
Load Applied (N)	Min. stress (N/mm^2)	Max. stress (N/mm^2)	Node No. Max.	Min.
3800	1889.7	21846	535	357
3100	1240.1	15670	630	297
3600	1315.9	19537	132	572
3200	963.95	17366	630	572
3000	1491.9	17247	535	357

After performing von mises stress analysis the above table according to the outcome results. These results show the maximum and minimum stresses that are developed on nodes after applying the load and then after comparing the results, we find it to be same as experimental one. The above listed table shows the different load applied at different welding parameters; here the values which are listed are obtained experimentally. The above values shown are the UTS point which are obtained experimentally.

Here there is no need of considering the minimum stress as there will be no failure due to minimum stress.

Now here consider the maximum stress as it indicates the possibility of failure. Theoretically we know that the base plate withstand maximum stress as compare to a welded plate, the same result is observed through analysis. Now after analyzing the plates welded using different welding parameters we get different values of maximum stress that can be withstander by them. Now comparing these results we find that the plate welded at (900rpm \ 63 mm/min) gives the maximum stress value as compare to others and moreover the value obtained is nearly the same as base plate, and thus preferable. so we can conclude that at proper rotating & welding speed we can get more reliable joints.

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