

The above graph shows that thermal efficiency is increases with the increase in coating thickness. At the zero coating thickness thermal efficiency is 17.46% and at 2.0 mm thickness coating thermal efficiency is 38.58%.

5. CONCLUSION AND FUTURE SCOPE

Some points may be summarized from the functions of mechanical and thermal observation of the piston which is made up of Al alloy and is covered with the ceramic material (YSZ) bonded by NiCrAl. It was also observed that there was no significant correlation of thickness of coating on equivalent stress as changes observed with coating and without coating were insignificant and is almost constant 37.5 Mpa. However the minimum temperature experienced by the substrate (base metal) of piston was inversely related to the coat thickness. Significant temperature drop between the crown and piston land was observed and therefore it can be inferred that with the increase in thickness of the ceramic coating there was significant drop in total deformation. So it can be said that experimenting of different coating materials of varying thickness can generate superior temperature resistance which can reduce the cost of covering the piston by a single material.

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