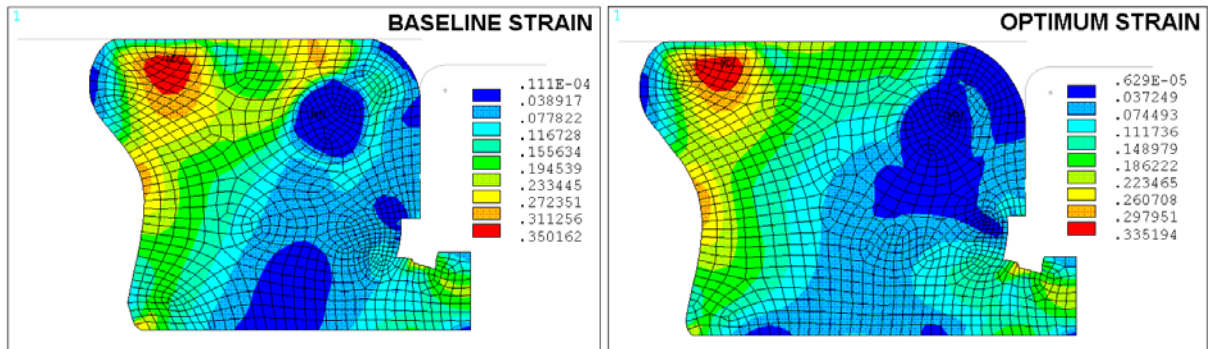
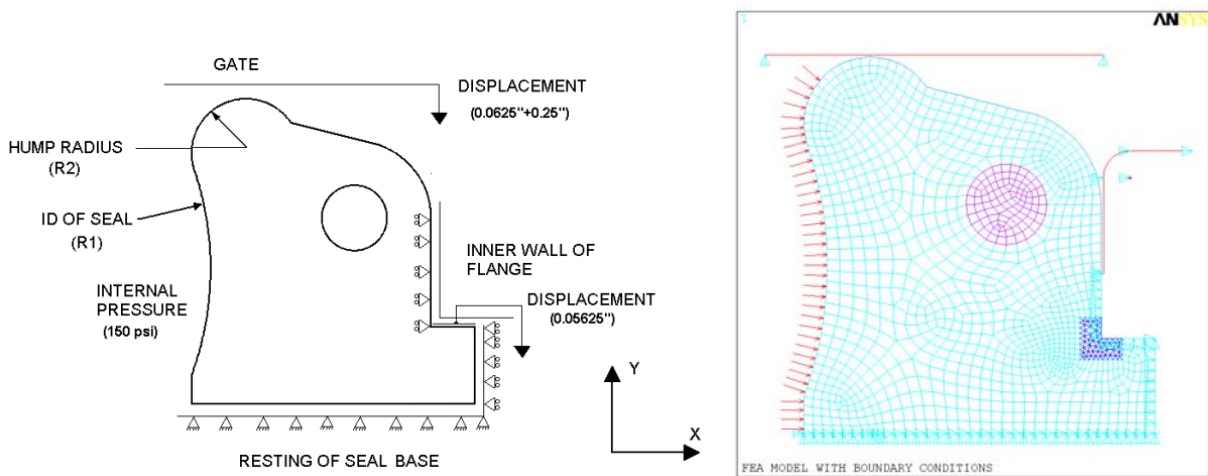


CONSTRAINED FACTORIAL OPTIMIZATION OF A RUBBER SEAL DESIGN

PURPOSE: Determine the predominant geometric variable, and optimize a rubber seal under stress, strain and sealing pressure constraints.

The objective of this work was to achieve an optimum geometric design configuration of the selected dimensional parameters using the Finite Element Analysis technique. The design optimization has to be achieved while maintaining the constraint conditions on the contact pressure between the seal surfaces and not to exceed the maximum principal strain in the baseline design value. An optimization algorithm in ANSYS was used for this analysis. The three design variables (R1, R2 and W3) were changed in finite steps, one at a time between the allowed minimum and maximum values by keeping the other two variables constant. Also a factorial optimization was subsequently performed. An analysis of the results thus obtained show the variable and its value that has the predominant effect on the design considerations.



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