

OPTIMIZATION AND MODELLING OF EQUILIZING FLOW GLOBE VALVE FOR STRUCTURAL INTEGRITY AGAINST FLUIDIC LOADS,

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ABSTRACT

Its main functional is to provide the basic structure to the globe valve precised to turbulent fluidic loading and how it maintain its part structure mainly the ring area where the structure optimization to low stress value is a important factor otherwise it may lead to the leakage of fluid through the obstructer and the corresponding contact area.

OBJECTIVE

- To provide structural supports for a stable design.
- To provide a new design for better deformation results.
- To compare new disc with old one and its benefits

KEYWORDS: Supports, Valve

INTRODUCTION

Valve Operating Applications Aims at Two Basic Objectives:

- To increase the load capacity of the valve.
- To modify the overall strength of valve.

Its main functional is to provide the basic structure to the globe valve percised to turbulent fluidic loading and how it maintain its part structure mainly the ring area where the structure optimization to low stress value is a important factor otherwise it may lead to the leakage of fluid through the obstructer and the corresponding contact area to save cost of the company and industries it is necessary to take help of such analysis so that some accurate results for modification could be achieved in order to prevent product losses and failure to the company products. It also effect on durability of the product and life of the product so that some kind of future prediction should be done in order to know about sustainability criteria and their travelling costs.

PROBLEM FORMULATION

The major problem in old design was found as the design area deforms as the load applied near the disc region as shown below

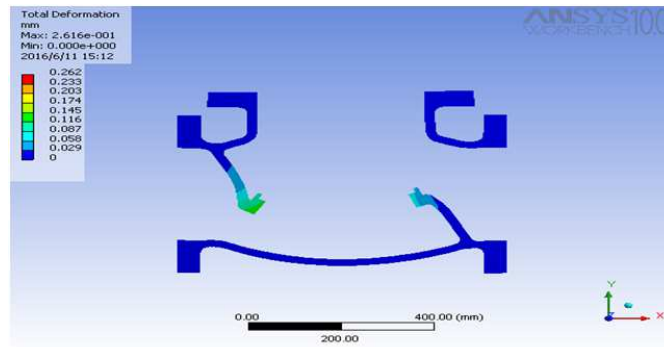


Figure 1

New Design with Supports

Following are the results being obtained purely in accurate readings being taken from industrial problem being faced and the different tables show the different terms being found on important in consideration and its requirement in the whole research work is very important accordingly to the concept required to be studied and such results produced are very much accurate and used to further research work accordingly with experts advice and their interface.

Valve design are enhanced by new disc design as follow

Supports are Inserted in New Design there in Total Four Supports Added to Design for Better Stability

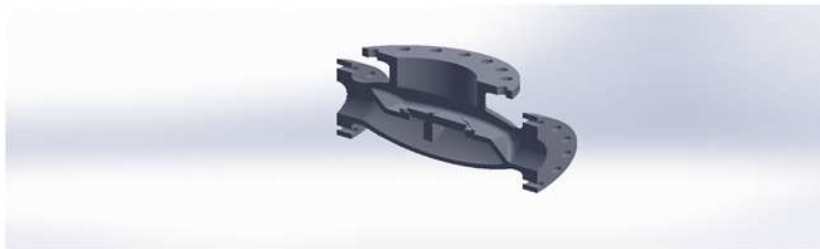


Figure 2: Support Provided on Both Base Points Being Shown with Section View

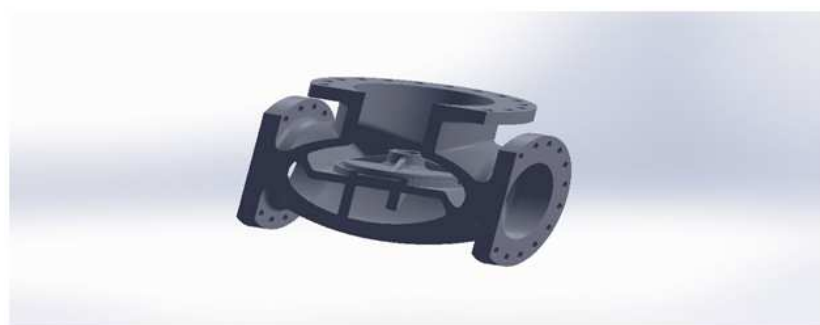


Figure 3: Supports Being Shown From Different Section View

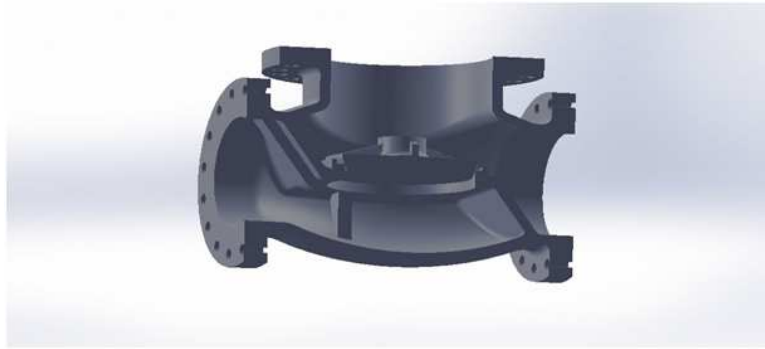


Figure 4: Section View Showing Supports

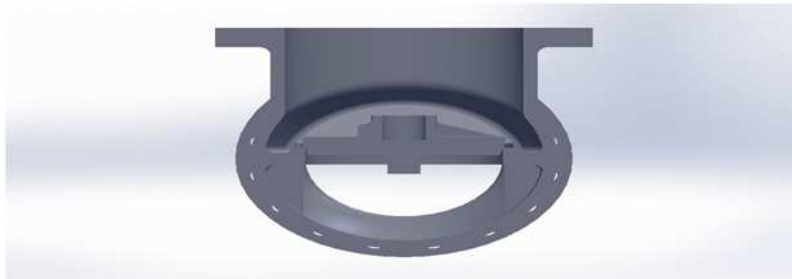


Figure 5: Right Side Section View Showing Supports below Disc at Extreme Ends

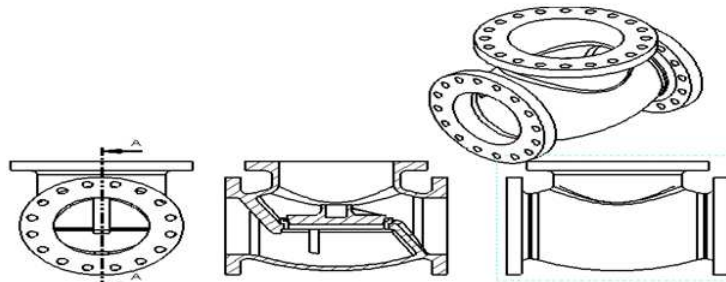


Figure 6: Drawing View of New Design

Analysis on new design of disc

When the new model of globe valve shown above was imported into Ansys software following results was appeared.

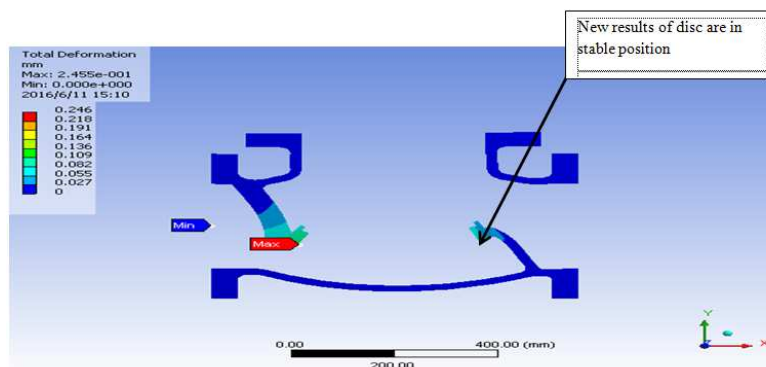


Figure 7

Comparing the Results of New Disc Design with the Old One

As we can see from above result the new design has more deformation capabilities than old design

Structural Results of Old Design

Analysis Type	Region	Least	Larger	Least Occurs On	Larger Occurs on	Sign of Danger
"Total Deformation"	All Bodies In "Model"	NIL	0.26 mm	Part 1	Part 3	None

Structural Results of New Design

Analysis Type	Region	Least	Larger	Least Occurs on	Larger Occurs on	Sign of Danger
"Total Deformation"	All Bodies In "Model"	NIL	0.25 mm	Part 1	Part 3	None

As we can see that deformation in new disc design is much lesser than old disc design.

CONCLUSIONS

- The FEA method is found to be effective for study of effect different loads.
- The new design with supports can bear more load than old design.
- The reduction in deformation provides stability and longer life of valve.

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