Design and Analysis of Disc in Clutch Plate By Replacing the Coventional Material

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***Abstract* - In our day to day life we were using transportation to migrate from one place to another place (main transportation is through bus).Facing lots of traffic signals during traveling. At that time clutches has been often engaged and disengaged by the driver. Due to this activity friction occurs between the clutch disc and clutch pedal after some periods of usage. The size of clutch disc reduces its size due to friction. Mechanical engineers research's those problems and they decide to equalize the size of clutch disc by using the materials like asbestos. The plate which is at the center was cast iron which has been coated by asbestos in up and down. Because, the cost of disc is so high, it's tough enough to replace the whole clutch disc. Instead we use the conventional materials. Here we have found some drawbacks of using asbestos, Manufacturing of asbestos lead to cancer. And it is tough to make for our required sizes. We analysis all these problems and we decided to use glass fiber instead of asbestos. When compared to asbestos its weight is low, it can withstand high temperature nearly 1200^{0}C. Also the cost factors are also low when compared to asbestos. Here we used glass fiber upon the clutch disc which has been getting attached with the disc by applying resin on it. Due to this replacement of conventional material, the cost factor will be low; the durability will be high and also has high gripness than asbestos.**

PROBLEM IDENTIFICATION

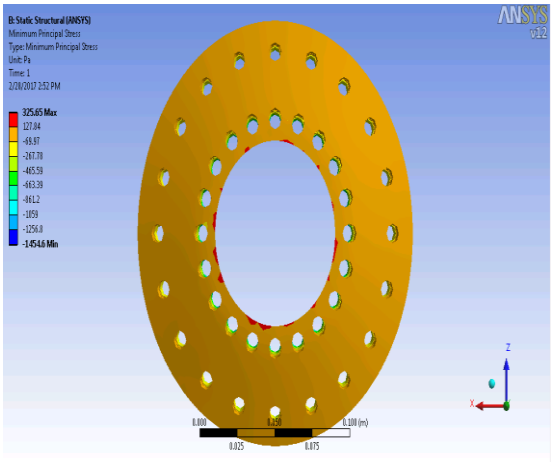
- Cost factor of asbestos will be high.
- Manufacturing the asbestos leads to cancer.
- While manufacturing the outlet of smoke from the chimney will cause problems for the intakers.

- All types of asbestos fibers are known to cause serious health hazards in humans.
- Exposure to asbestos in the form of fibers is always considered dangerous.
- Working with, or exposure to, material that is friable, or materials or works that could cause release of loose asbestos fibers, is considered high risk.
- However, in general, people who become ill from inhaling asbestos have been regularly exposed in a job where they worked directly with the material.

ANALYSIS

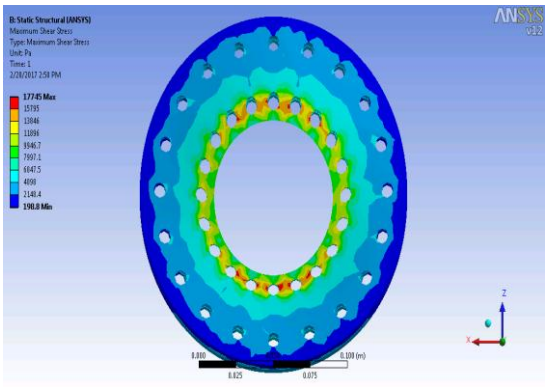
FORCE (FRICTION) ANALYSIS:

ASBESTOS:



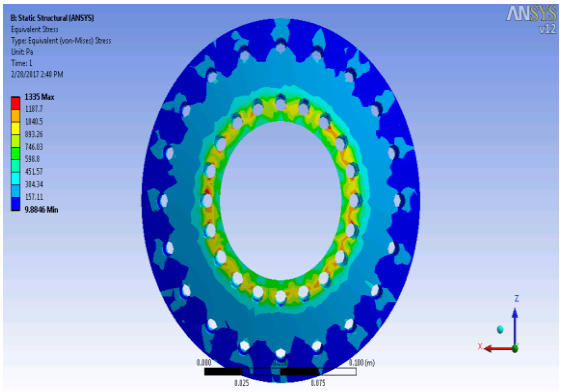
FORCE (FRICTION) ANALYSIS:

FIBER GLASS:



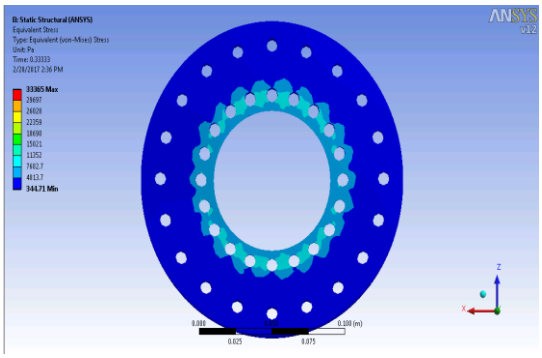
PRESSURE ANALYSIS

ASBESTOS:



PRESSURE ANALYSIS

GLASS FIBER:



CONCLUSION

We make this project entirely different from other project. We used innovative ideas in this concept. From this project by replacing the conventional material of glass fiber the cost factor has been reduced and the durability of life has been increased. And also manufacturing of asbestos leads to cancer and many other diseases. This Project is analysis in CAE software i.e. ANSYS based on the values of Equivalent stresses for material loading conditions it is clearly seen that these are less than the allowable stresses for that particular material under applied conditions the part not going to yield and hence the design is safe. The result occurred are quiet favourable which was expected. The stresses as well as deformation clear the idea about what parameter should have been taken into account while defining the single plate friction clutch

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