

# Trends in Mechanical Engineering & Technology

[HOME](#)   [ABOUT](#)   [LOGIN](#)   [REGISTER](#)   [SEARCH](#)   [CURRENT](#)  
[ARCHIVES](#)   [ANNOUNCEMENTS](#)   [AUTHOR GUIDELINES](#)  
[REFERENCING PATTERN](#)   [SAMPLE RESEARCH PAPER](#)   [PUBLICATION](#)  
[MANAGEMENT TEAM](#)   [STM HOME PAGE](#)   [OLD ARCHIVES](#)   [EDITORIAL](#)  
[BOARD MEMBER](#)

Home > Vol 12, No 1 (2022) > **PARMAR**

 Open Access    Subscription or Fee Access

## FAILURE ANALYSES OF 16MM THICK SA 516 GR 70 AUTO CLAVE

HARSHKUMAR KIRITBHAI PARMAR, GHANSHYAM DEVKINANDAN ACHARYA, SHIVANG SHIRISHBHAI JANI

### Abstract

With the acceleration of global industrialization, there is a demand for high- or low-pressure storage of liquids or gases. Because of the complicated operating conditions that will inevitably encounter a possible hazard, pressure vessel design is a critical responsibility. Previous failure studies have revealed that the presence of local loads and discontinuities increases pressure vessel fracture. As a result, a detailed examination of pressure vessel steel from the standpoint of fracture is essential. Internal, surface, semi-elliptical cracks in pressure vessels and pipelines are occasionally discovered during service or manufacturing. The fracture may exist within a component as a result of a manufacturing flaw such as slag inclusion, cracks in a weldment, or heat impacted zones caused by uneven cooling and the presence of foreign particles. Fatigue and fracture, as a result, Such crack investigations necessitate the estimation of stress intensity factors for a wide range of crack forms and sizes encountered. We are developing a pressure vessel utilizing ASME section VIII and Division 2 to find the required thickness of the shell, head, nozzle, and leg support in this project. The entire vessel has a uniform thickness. Pro-e 2.0 was used to model the pressure vessel, was used to mesh it. The meshing is done with a 2D Quad element, and the analysis is done with ANSYS Software 11 for two separate instances, working pressure and maximum operating pressure, with a fatigue study, and the result is 106. Finally, the complete model is theoretically validated, and the results are within the acceptable range. The pressure is higher than the surrounding atmosphere, making it harmful and, in some cases, lethal. A few pressure vessel instances Pressure vessels hold a considerable amount of energy; the higher the working pressure - and the larger the vessel - the more energy released, resulting in a greater magnitude of damage, disaster, or danger in the case of a rupture.

### Full Text:

[PDF](#) 

DOI: <https://doi.org/10.37591/tmet.v12i1.6140>

### Refbacs

- There are currently no rebfacs.

### SUBSCRIPTION

Login to verify subscription

### USER

Username

Password

Remember me

### NOTIFICATIONS

- [View](#)
- [Subscribe](#)

### JOURNAL CONTENT

Search

Search Scope

All

Browse

- [By Issue](#)
- [By Author](#)
- [By Title](#)
- [Other Journals](#)

### FONT SIZE

### INFORMATION

- [For Readers](#)
- [For Authors](#)
- [For Librarians](#)