

A Project Report On

**DESIGN AND ANALYSIS OF AUTOMOTIVE CRASH BOX**

A thesis submitted in the partial fulfillment of the requirement for the award for the degree of

**BACHELOR OF TECHNOLOGY**

**IN**

**MECHANICAL ENGINEERING**

**Submitted by**

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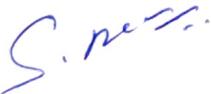
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## DEPARTMENT OF MECHANICAL ENGINEERING

### CERTIFICATE

This is to certify that project report is entitled "**DESIGN AND ANALYSIS OF AUTOMOTIVE CRASH BOX**" was carried out by **YAKA DEVA BHASKAR (18811A0334), KONDRA TRINADH (18811A0314), LALAM SAMPATH KUMAR (18815A0311), PALIPINI APPALRAJU (18811A0321)** in partial fulfillment of requirements for the award of the degree of bachelor of technology in "**MECHANICAL ENGINEERING**" by Jawaharlal Nehru Technological university, Kakinada During the year 2021-2022.

  
PROJECT GUIDE

  
HEAD OF THE DEPARTMENT

EXTERNAL EXAMINER

# ABSTRACT

## DESIGN AND ANALYSIS OF AUTOMOTIVE CRASH BOX

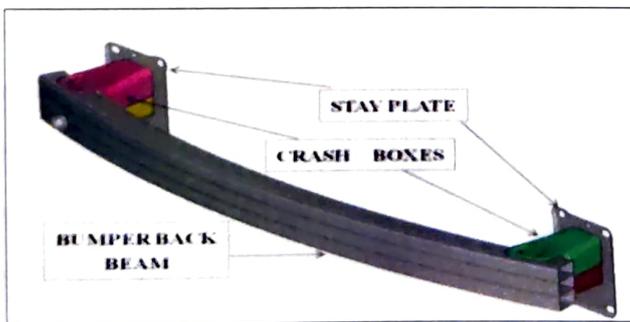
Crash box is an important assembly in protecting the vehicle from serious damage to the expensive-to repair parts like fender, hood, intercooler, and radiator. The intended function of crash box is to absorb kinetic energy during vehicle collision.

Crash box, with which a car is equipped at the front end of its front side frame, is one of the most important automotive parts for crash energy absorption. In case of frontal crash accident, for example, crash box is expected to be collapsed with absorbing crash energy prior to the other body parts so that the damage of the main cabin frame is minimized and passengers are saved their lives.

This Analysis aimed to investigate the most suitable design for crash box at conceptual design stage. Crash boxes are generally made of steel with various compositions.

In this study a comparative study is done considering steel and aluminum honeycomb crash box to meet the impact requirements found in regulations. In addition, weight should be reduced while improving the performance compared to the current systems. The major point in considering new design such as honeycomb is to increase the energy absorbed during crash and at the same time reduction of weight.

In this report, attention is focused upon finding an optimum cross sectional shape of a crash box to ensure high capability for energy absorption



**Crash Box with Bumper Back Bea**