

# Green Manufacturing for Fabricating Environmentally Friendly Products

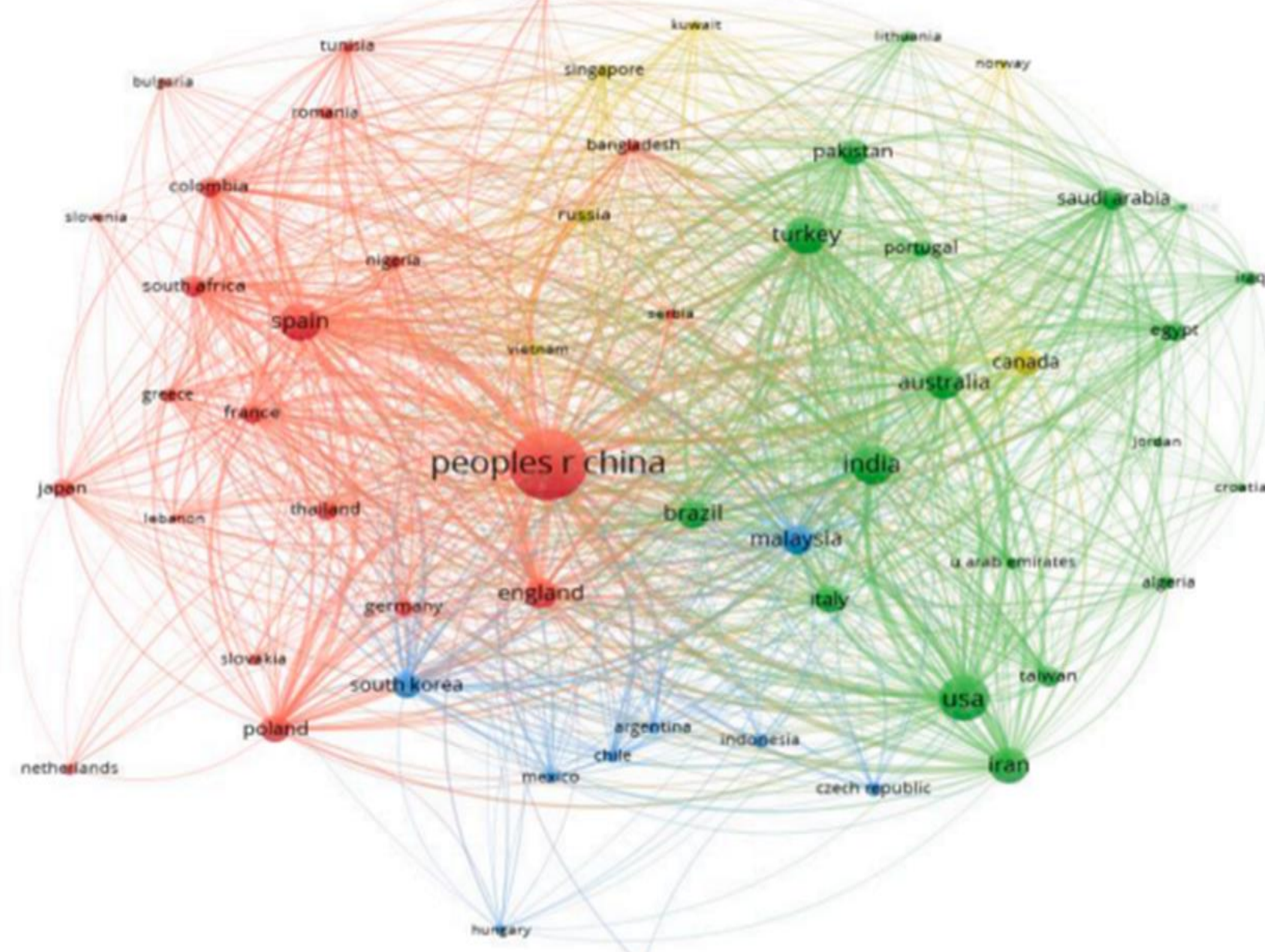
**Students: Abdulhadi Baskran, Rayan Al-Zuayr.**

**Supervisors: Dr. Ali Abd El-Aty, Dr. Bandar Alzahrani, Dr. Mohamed Zaky.**

**2<sup>st</sup> Semester 1445 / 2023-2024 GP 2**

## Abstract

Our project focuses on green manufacturing practices by designing and fabricating a mold to produce green parts made from recycled materials. By utilizing recycled resources, we aim to reduce the environmental impact and minimize the use of natural resources such as metals and nonmetals in production. Figure 1 shows the need of recycling activates in Saudi Arabia.



VOS diagram

## Methodology

Figure 2 show the most common process for recycling . In our project we used rubber powder (less than 1 mm) and coarse size (1-5 mm).

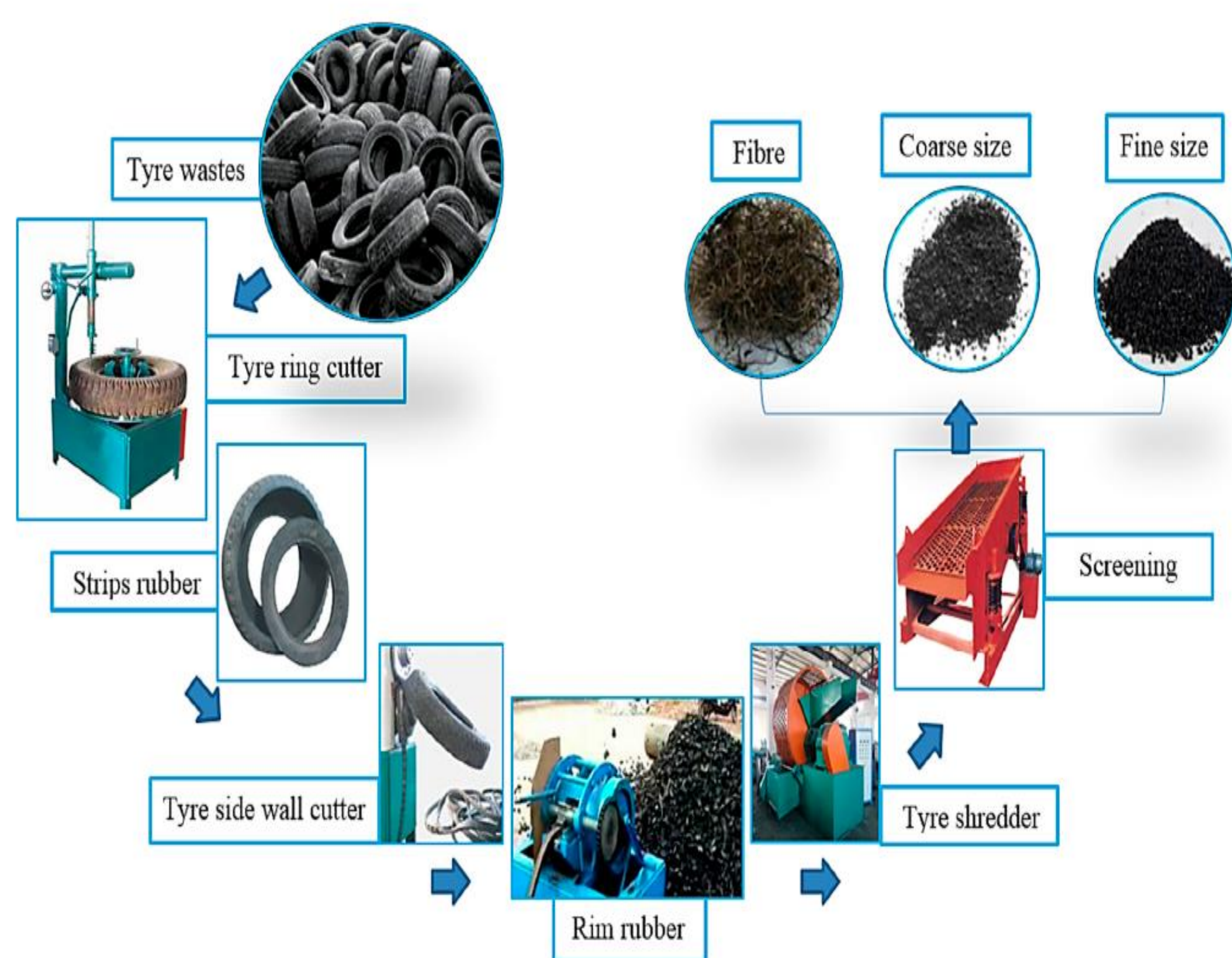


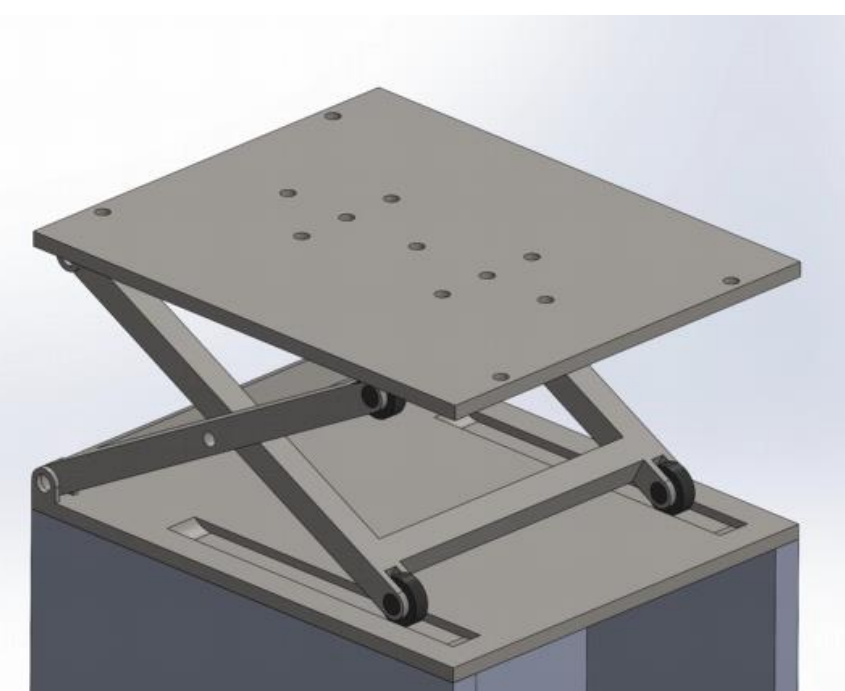
Figure 2 :Flow chart of ambient process

## Objectives

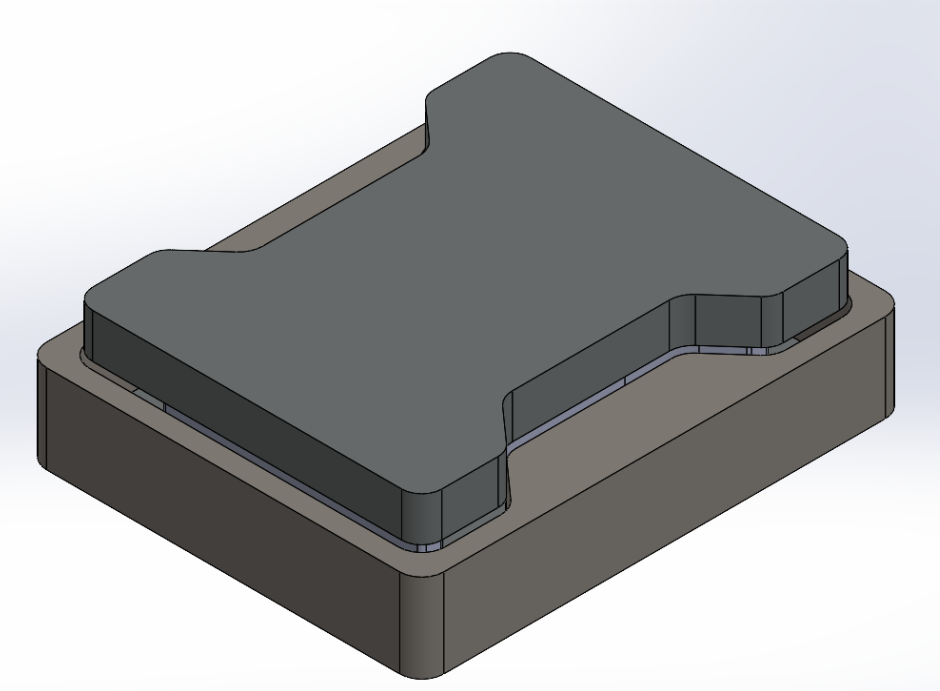
- Implantation of Green Manufacturing to fabricate environment-friendly products from recycled tires.
- Propose a detailed design of the mold used to fabricate environment-friendly Tiles.
- Determine the optimum process parameters to manufacture the environment-friendly Tiles.

## Design of mold and ejection system

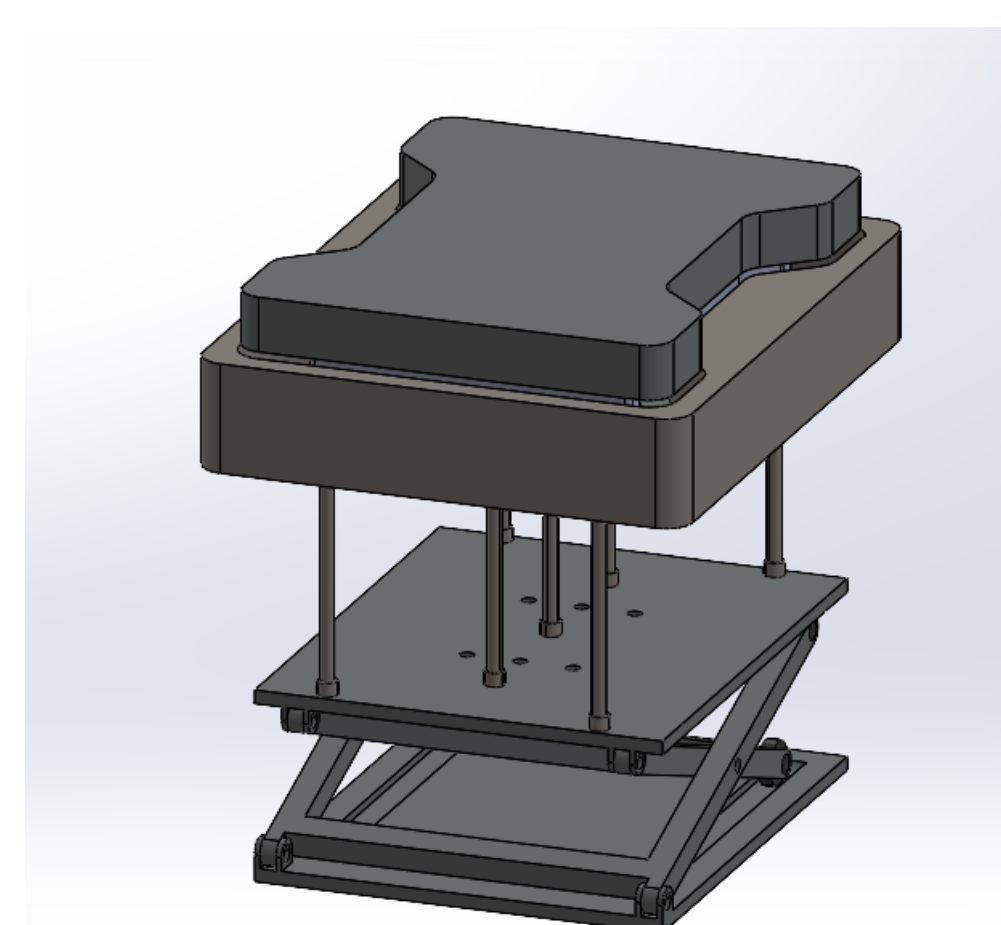
Our design consist form these components shown below :



Ejection system



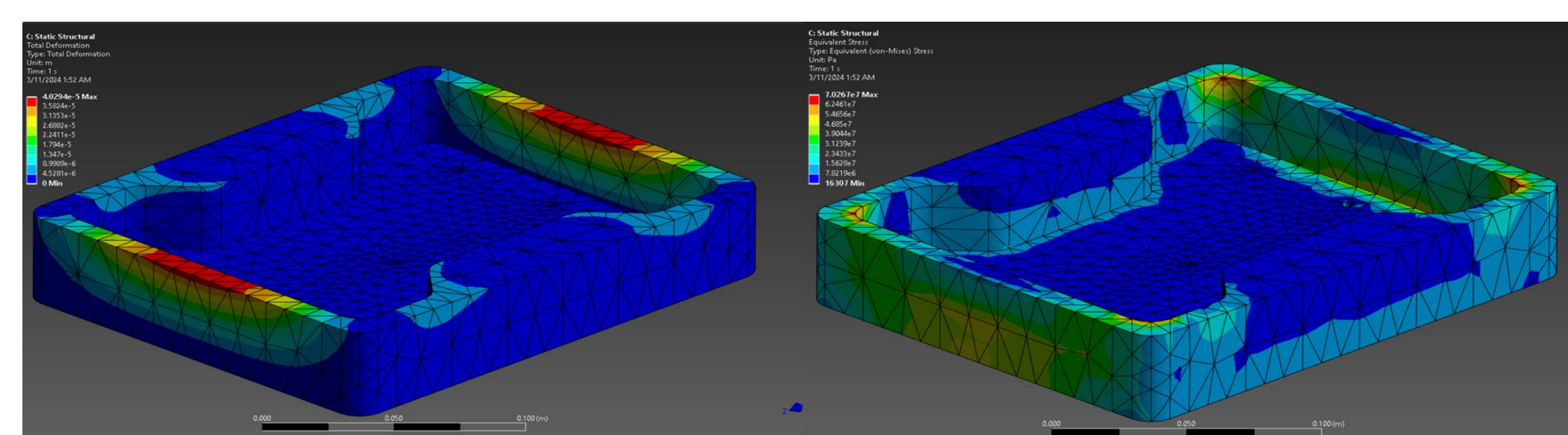
Mold



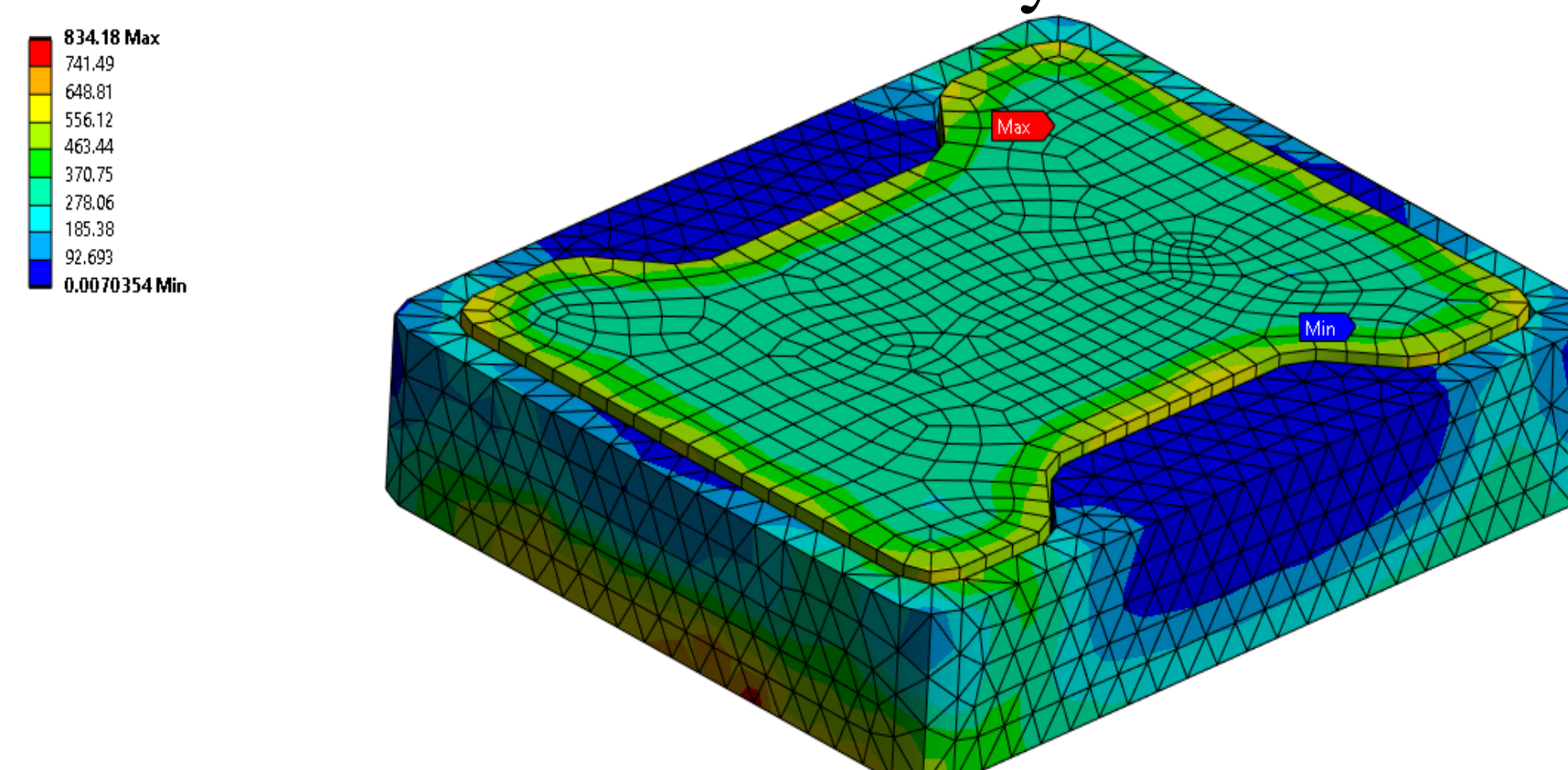
Final assembly

## Simulation

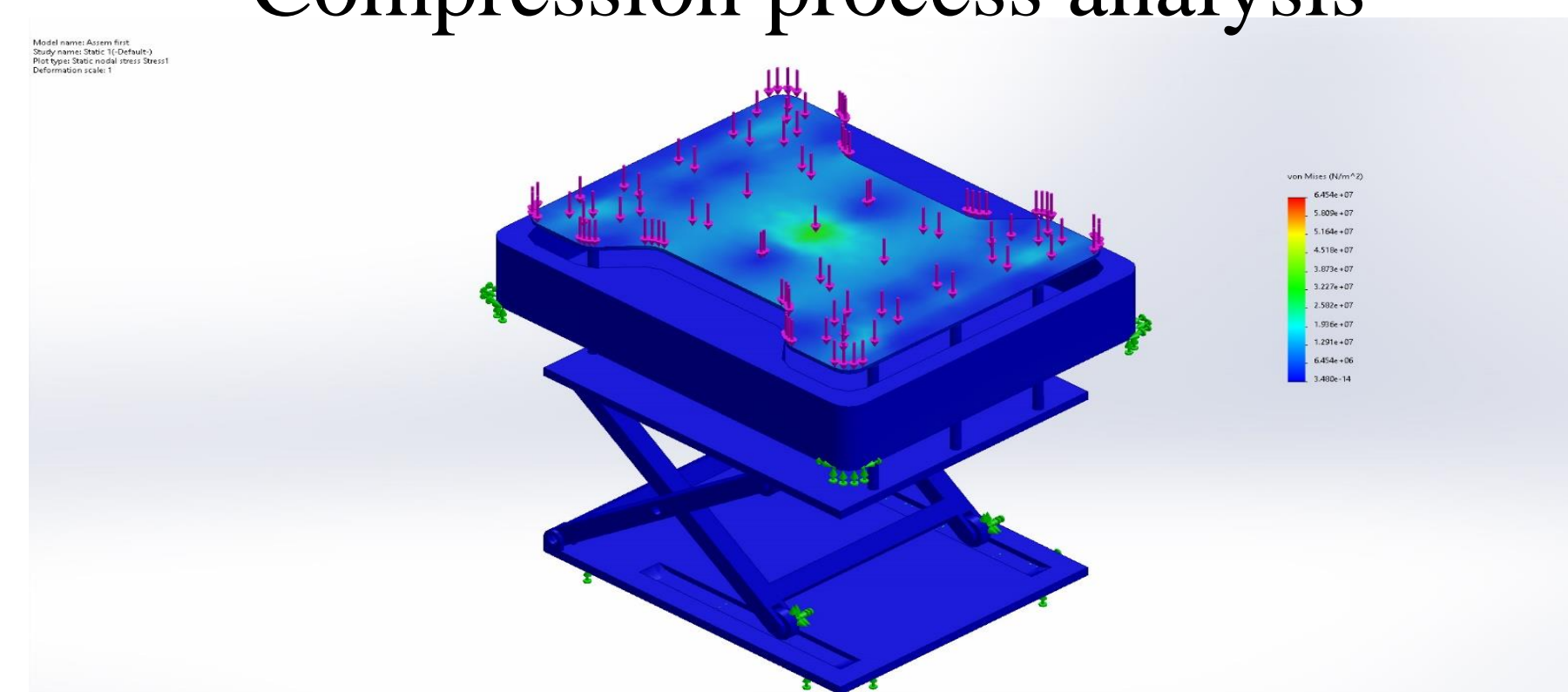
We used finite element software (Ansys and SolidWorks) to analysis our Components



Mold thickness analysis



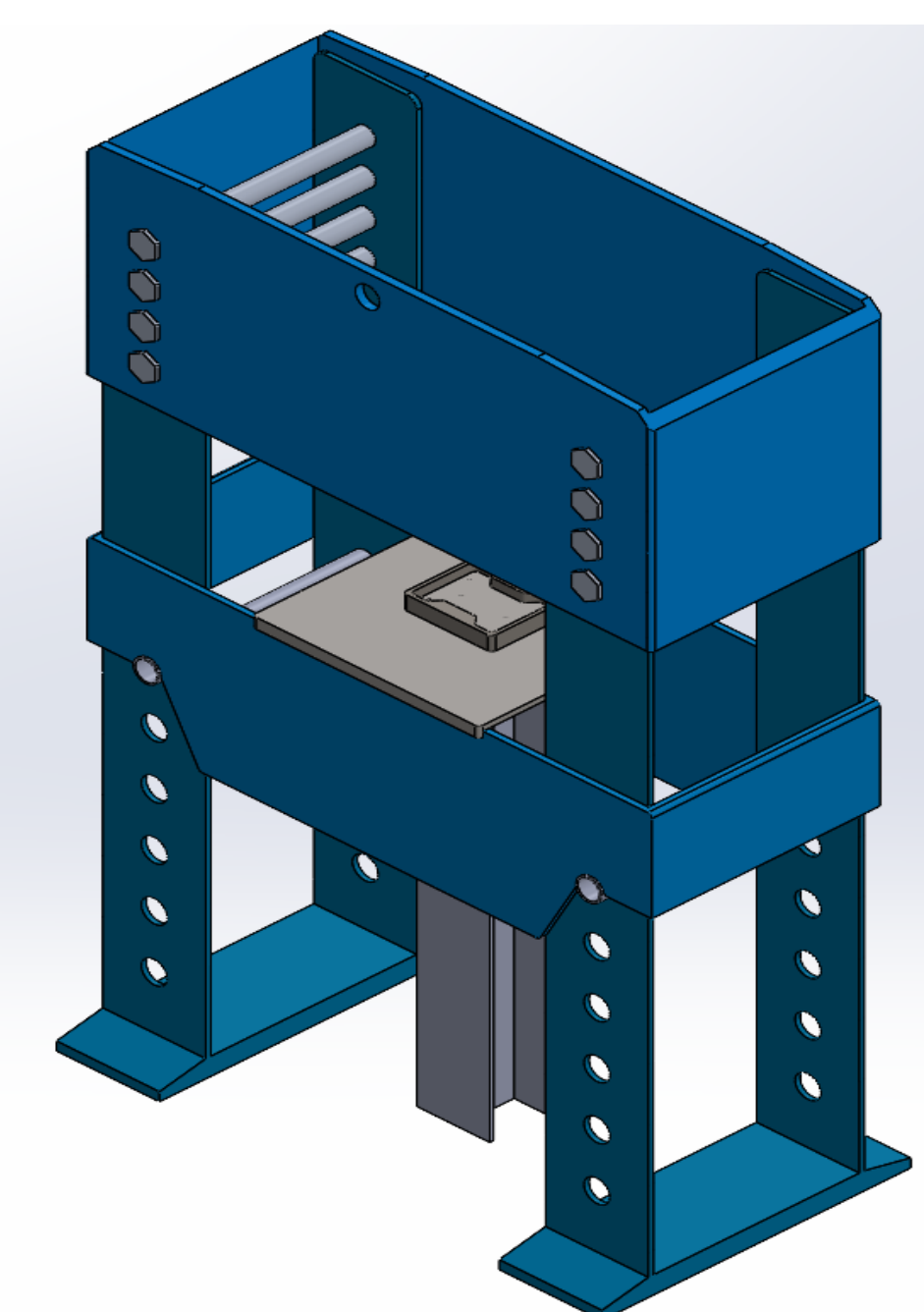
Compression process analysis



Structure analysis for ejection System

## Equipment used

We used the following equipment



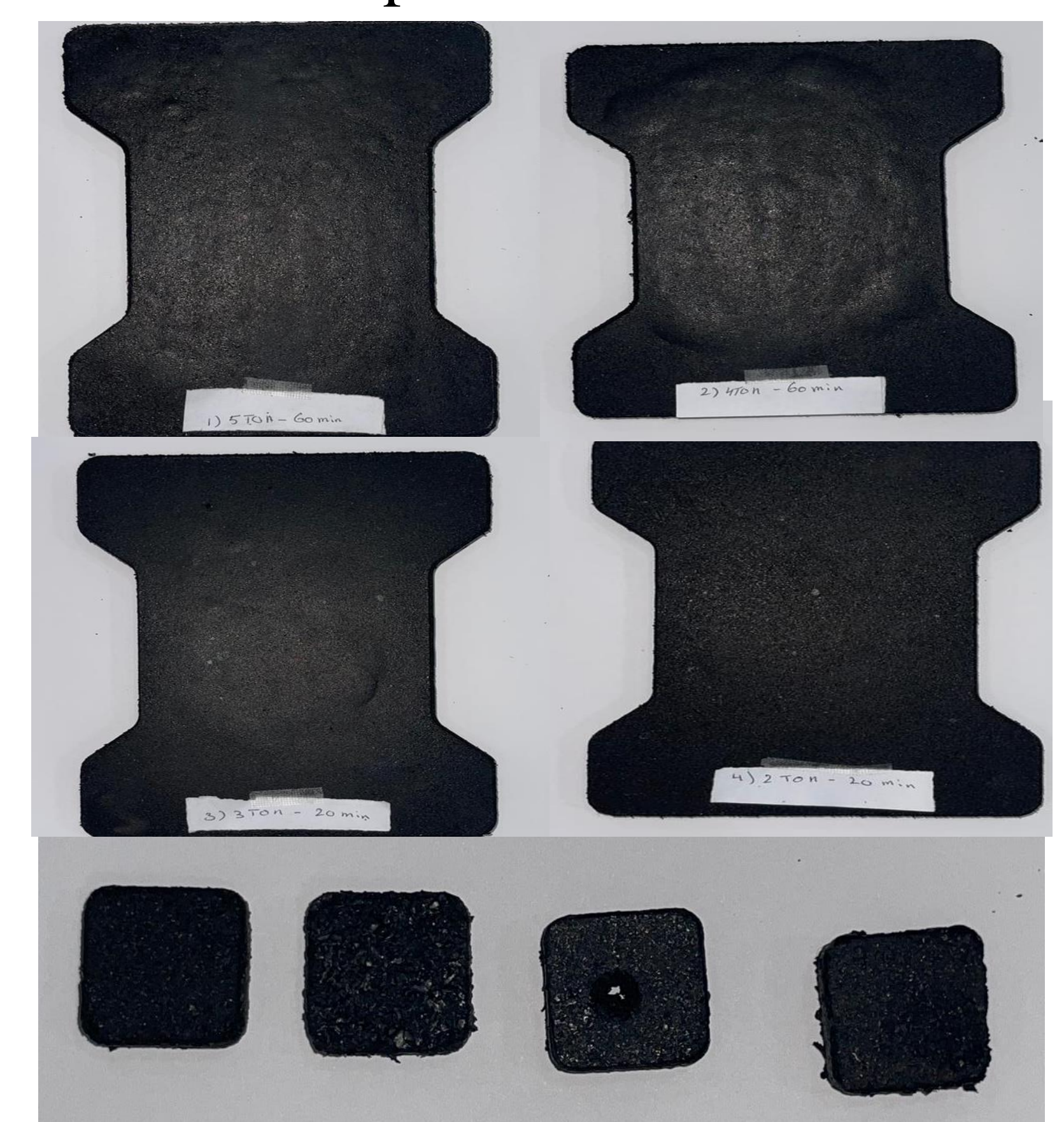
Modify press  
(KWNP 100 HM)



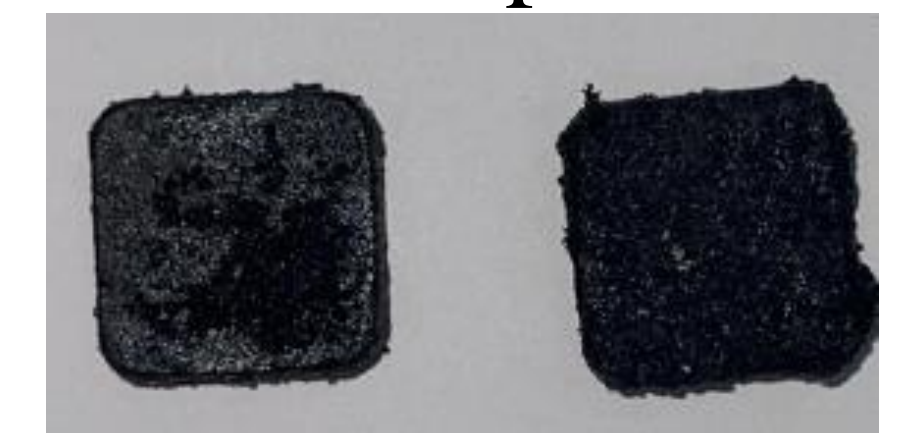
Heated Presses  
(Carver 4122)

## Results

We produce Green Tiles using different parameters



Products produced using temperature and pressure only



Using glue

## Conclusions

We successfully produce environmentally friendly products by applying green technologies in manufacturing, which resulted in the design, analysis, and manufacturing of a mold and an ejection system.