# Mining Truck's Cabin Air Monitoring System

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## Problem Statement:

Typically truck drivers operate for long hours and at times in highly polluted environments like mines. Driver health and alertness while driving is key to avoid accidents at work site. Sometimes air quality deteriorates inside the cabin, and this could lead to driver fatigue. So come up with a solution that can detect air quality level inside the cabin, and at the same time alerting the driver as well as fleet management.

## Objectives:

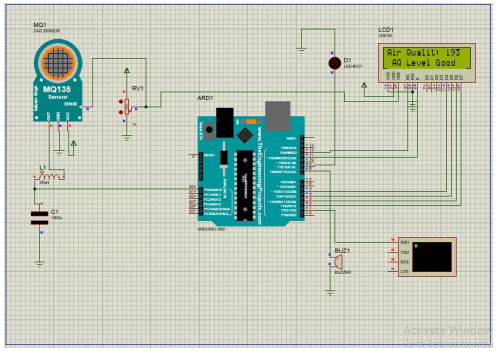
- By monitoring the amount of contaminants in the air, determine the air quality inside the truck cabin.
- interpret the results in a readable form and alert the driver and the fleet management when air quality deteriorates.

## Contributions:

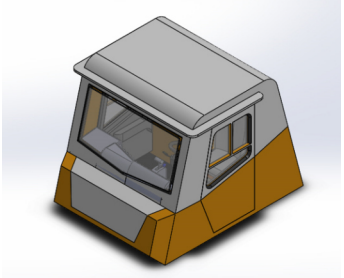
- Identification of pollutants to be measured
- Mechatronics approach for pollutants measurment
- Appropriate location for measuring

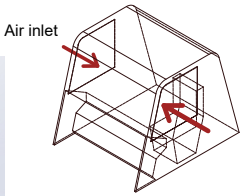
## Methodology:

Electrical circuit :




Truck Cabin :

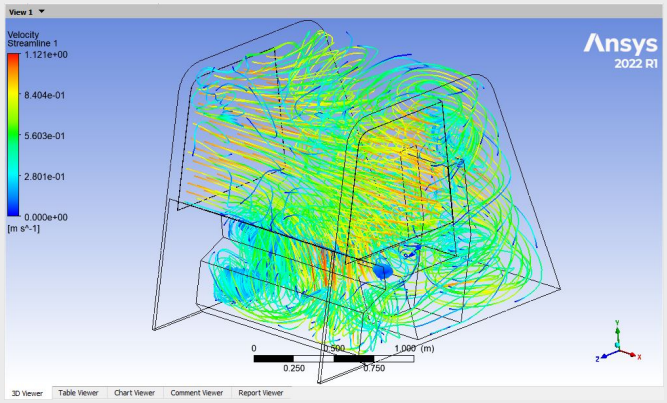


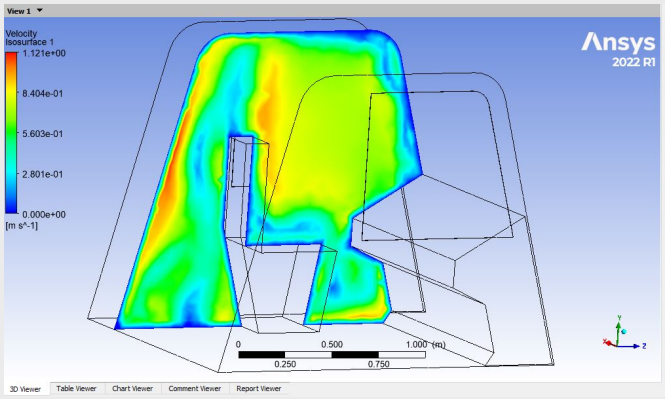



Flow domain

Fluid flow Simulation was carried out on ANSYS to study the air flow pattern inside the cabin to determine the optimal location for placing the sensors to measure the pollutants.

## Results:




## Conclusion:

The simulated airflow of the truck cabin shows that as the inlet velocity increases so does the air velocity inside the cabin. This shows the regions where air has optimal velocity suitable for measuring the pollutants.