

Driving India's Future: Smart Tech Safeguards Your Ride!

What 'newspaper headline' would you give to your Idea?

"AI-Powered Guardian- That Watches Over Your Car's Heart"

Subsequently our idea will help to decrease the number of news headlines related with catalytic converter theft

Which problem/business need do you want to address?

We aim to address two critical needs:

- **Vehicle Safety and Maintenance:** Our system monitors and detects exhaust system issues, ensuring safer and more efficient vehicle operation.
- **Catalytic Converter Theft Prevention:** Theft attempts to steal costly yet easy-to-steal component of your vehicle: The Catalytic Converter can be reduced.

Why do you think your idea will address the problem/business need?

- We will continuously **monitor** your Exhaust System and provide real-time alerts for any issues, which will help reduce harmful emissions.
- This *early detection system* is especially valuable in developing countries like India, where we can catch problems before they escalate.
- By harnessing **AI**, we can create personalized maintenance schedules for drivers, enhancing vehicle **efficiency** and **simplifying ownership**.
- **AR-based Training modules** to analyze the condition of Catalytic Converter and teaching concerned workers the right way to clean it.

Who is the primary contact person for this one-pager?

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What would happen if we didn't address the problem/business need?

Neglecting the vital **Catalytic Converter** in your vehicle has far-reaching consequences. It exposes your vehicle to **theft**, **compromises fuel efficiency and performance**, and **harms the environment**. If this issue isn't addressed effectively, it could lead to a surge in thefts, with converters fetching *high prices* in the **black market**. Alternatively, without proper care, these components will deteriorate, affecting both *vehicle operation* and *environmental well-being*.

Who are the key stakeholders regarding the problem/business need?

Potential Stakeholder identified are:

- Vehicle Manufacturer
- Individual who owns the vehicle
- Insurance Companies
- Police Departments
- Car Mechanics

One Pager for Idea details

1. Our project centers around addressing two significant challenges in the **automotive industry**. We aim to provide a solution that actively monitors the health of a vehicle's exhaust system to prevent potential issues, such as **clogging or congestion**, thereby *enhancing vehicle safety and minimizing environmental harm*.
2. Catalytic converter is an essential component of each and every vehicle running on the road and what makes it costly is the materials used in it: **Palladium, Rhodium and Platinum**.
3. Additionally, we focus on catalytic converter theft prevention, a growing issue globally, by integrating **theft detection mechanisms and GPS tracking** to safeguard vehicles.
4. Many local car mechanics replaces the insides of catalytic converter/break it in order to clean it, which makes the vehicle perform good for **very short term**, which incurs a huge **loss** to the owner of the vehicle, who is not *well-aware*.
5. **Engraving chassis number** (which is unique to a vehicle) on the Catalytic Converter can also be an additional preventive measure to ensure no Catalytic Converters are sold in the **black market**.
6. Identifying the Authenticity of the Catalytic Converter while purchasing them. There are a lot of **duplicate/ineffective** Catalytic converters which are available at low costs and are used to scam the owner.

1. The high-level technical solution involves deploying a sensor network within the exhaust system and around the catalytic converter to collect data on *temperature, pressure, gas composition, and motion* i.e. **NDIR**.
2. This data is securely transmitted to a central processing unit.
3. AI algorithms are developed for **real-time anomaly detection, recognizing clogs, congestion, and theft attempts, triggering immediate alerts** to vehicle owners through a mobile app or messaging.
4. Theft will be monitored using **NRF2401L** (in a range of 100m), in case the catalytic converter is stolen from the vehicle. (*Exception case: car mechanics*)
5. A user-friendly interface, in the form of a dashboard or mobile app, offers real-time status updates and maintenance scheduling.
6. Additionally, data analytics is performed on aggregated data to gain **insights into vehicle's health and security**.
7. We will also be providing inexperienced workers at servicing agencies a proper **AR module** to help understand the correct way of cleaning such congested pipes.