

Smart Cycle

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Abstract—**“Smart Tri-Cycle for Rag Pickers”**

- In this entrepreneurship model, We are developing this product which will lead to business model.
 - We will research on all the related management things and the material required. In this part we will develop the product.
 - The product development where we will generate the solar electric tri-cycle with the garbage detection laser. Confirming this, The AI will be use for detection of garbage.
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I. BUSINESS DESCRIPTION

Research
Product Development
Testing and validation
Finalization
Ready for use

II. EXECUTIVE SUMMARY

Idea of smart TRI-CYCLE for rag pickers:

We are focusing on the rag pickers, their livelihood, their work, their threats, and opportunities. Meanwhile they play the major role in our country, for the cleanliness of the country but unfortunately they get the less, very less though they deserve to be awarded the best.

The IOT will be effective as well as significant wonder of this innovative idea where by the use of IOT and sensor. It will lead to major success of this idea.

Keeping in mind I had observed many rag pickers. The harsh reality came at front end. So, To overcome this issue my team came up with an innovative idea.

As India lies in the tropical region where we have the large potential of solar energy. We are using this never ending source in our idea.

III. OBJECTIVE

TO DEVELOP A SMART TRI-CYCLE FOR RAG PICKERS

IV. PROPOSAL

We will make a solar tri-cycle for the local special sensor will detect that rag whether it is recyclable or not by the amount of humidity, smell and state of garbage that will

help the rag pickers to find the waste in identical way.

V. USE OF ARTIFICIAL INTELLIGENCE IN THE SMART TRI-CYCLE

- AI will be used in identifying agent of the garbage.
- By fixing the AI parameters of the garbage such as smell, plastic qualities, polythene qualities and some identifying agents.
- In this, the sensor will sense the garbage in 40 meters of range which will further use AI for the identification.

VI. DESCRIPTION

(1) **Solar Cells** - solar panels absorb sunlight as a source of energy to generate electricity.

1. Our development consists of 2 solar panels each of 12 v.
2. Solar module : 300 Wp
3. Dimension: 2000*1000*45 mm
4. PID (potential induced degradation)resistant and having anti -reflecting quantity.
5. Size: 300 Wp-330 Wp
6. By usage of solar panels, the efficiency of the vehicle is increased up to 10-15% in mileage with the life cycle of 10 yrs.

recyclable can be handover to the municipal corporation by the helpline number. After detection it will be convenient way to distinguish the waste which will be the major rag pickers. We will fix solar cells on the tri-cycle that tri-cycle which will be pollution free and will be environment beneficial. It will also have a rag detection sensors that 7. It requires 8 hours to fully charged the e-rickshaw and it can run upto 100 km on a day with 30-40 km/hr.

2) **Battery dc supply**- It is a hybrid concept so we are using both solar power as well as electric power . the battery is of 100 Ah and with quantity of 4 (100 Ah*4) motor: 48V

and with 5.7 kw power.

Electricity /charge consumption: 5-6 units

Battery will supply to the engine and it will also supply to the detection sensor and camera

after engine supply the fan of engine and automation of rickshaw will be started if we talk

about detection sensor it will flow directly to laser detection where we will setup the range

and Directly include to the rag identification so that rag get scanned and collect.

(3)Detection sensor– The advance technology and the light weight IR sensor which is a

light weight and cost feasible and small in size that detects the presence of an object. It is

used as a proximity sensor here we are using one of its types i.e. TRANSMISSIVE

TYPE SENSOR, it is basically consist of IR Transitter (usually an IR LED) and the IR

DETECTOR (usually a photo diode) are positioned facing each other so that when an

object passes between them ,the sensor detect the object.

(4)Rag identification– After reaching to the location we will use machine learning and IOT based applications to identify the rag without touching the rag whether it is recyclable or not. IOT is a network physical device and other embedded with electronics , sensors, actuators and connectivity which enables object to exchange and connect data.

IOT module - ESP8226 (wireless network)

It requires 3.3 v supply only.

(5)Collection– After identification, the rag pickers can collect the waste easily which can be recyclable and the non recyclable can be handover to the municipal corporation by the helpline number. After detection it will be convenient way to distinguish the waste.

VII. WEAKNESS

Weakness is negative factors that detract from your strength. These are things that you might need to improve on to be competitive.

Due to varying weather conditions, solar cells won't be able to produce electricity for battery usage.

Batteries would have to be changed every year.

VIII. OPPORTUNITIES

Opportunities are external factors in your organization environment that are likely to contribute to your success.

It basically helps to maintain health and preventing disease, especially through cleanliness by our project.

Due to the health issue in our country in rural areas, we can improve the rate of sickness by our project.

Solid waste has become one of the biggest problems in our country. So by this innovating idea , land wastage can be reduced to the maximum extent.

The workload on municipal corporation workers can be decreased.

The involvement of the family members of the rag pickers in rag picking is minimized.

Small scale industries are the major contributors to the waste products, so by smart tri-motorcycle we can overcome this problem.

Our innovation can be tie up by the largest cleanliness drive govern by the government "SWACHH BHARAT ABHIYAAN".

IX. THREATS

Threats are the external factors that you have no control over. you may want to consider putting in place contingency plans for dealing with them if they occur.

As the SOLAR PANEL is the main element of our idea which can be overshadowed by the weather issues. At the time of uncertain weather, solar cells will stop working in an efficient manner.

special sensor will detect that rag whether it is recyclable or not by the amount of humidity, smell and state of garbage that will help the rag pickers to find the waste in identical way.

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XI. COST EFFICENCY

- Solar panel 300 watt for 12v : ₹6,800 ×2= ₹13,600(approx)
- IR sensors : ₹1,019×3=₹ 3,057
- Camera (FPV Camera) : ₹ 1,690
- Basic cost of E-rickshaw : ₹42,400 (approx)
 - wheel rim :₹300×3= ₹900
 - Indicator : ₹200×2=₹400
 - ii) Head light : ₹90
 - Tyres : ₹650×3= ₹1950
 - Rear shocker set : ₹550
 - Battery :₹ 5,000
 - T handle set : ₹ 650
 - Accelerator :₹ 200×2 =₹ 400
 - Body :₹ 21,000
 - Motor :₹ 2,700
 - vi)Chassis :₹ 6,200
 - xvi)Differential :₹3,800
 - vii) speedometer : ₹250
 - xvii) Controller:₹2,150
 - viii) Balanced Rod :₹ 200
 - xviii) Drum brake: ₹210
 - ix) Windshield :₹ 1,400
 - x) Gearbox :₹ 1,200
 - Total estimate :₹60,747

XII. SWOT

A study was undertaken by an organization to identify its internal strengths and weaknesses, as well as its external opportunities and threats.

XIII. STRENGTHS

Strength is internal, positive attributes of an organization. These are things that are within your control.

By this project, we can provide a better lifestyle, livelihood to rag pickers.

The amount can be spent in an economically and efficient way.

Due to the usage of solar panels, the amount of expenditure on electricity can be reduced.

One of the major features is to provide a faster cleanliness

and pollution free environment.

It is for the “TO THE PEOPLE, BY THE PEOPLE, FOR THE PEOPLE”.

XIV. KEY BENEFITS

- Pollution free.
- Opportunities.
- Environmental beneficial.
- Decrease in health issues.
- Better livelihood.
- Cost effective.
- Time saving.
- Swachh Bharat.
- FUTURE SCOPE

This cycle will bring the change in the advancement in this generation that will help the rag pickers to provide the better livelihood better work and the future of their Children that will decrease the sickness rate in a good portion .

Bio-degradable garbage can be further use for generation of power.

This will bring a new revolution in their lives.

REFERENCES

1. https://www.google.com/search?q=ragpicker+quotes&safe=off&sxsrf=ACYBGNRrVsJ9gUd8ooSLi0giWqxQfPD4TA:1570522801703&source=lnms&tbm=isch&sa=X&ved=0ahUKEwjy59OtnYzIAhUBs48KHTyQAxYQ_AUIESgB&biw=1366&bih=654#imgrc=EbMFWeBtGV7s2M:
2. <https://www.elprocus.com/infrared-ir-sensor-circuit-and-working/>
3. <https://www.bosch-connectivity.com/use-cases/erickshaw-the-auto-rickshaw-with-electric-motor/>