



SMART INDIA HACKATHON 2022

Basic Details of the Team and Problem Statement

Ministry/Organization Name/Student Innovation:

AUTOMATED IOT AND AI ASSISTED NOVEL COVID-19 MEDICAL WASTE INCINERATOR WITH RECCYLING

PS Code: **RK1126**

Problem Statement Title:

Disposal/Recycle of Covid-19 related items such as Mask, Sanitizer, face cover etc.

Team Name: **TEAM KURKSHETRA**

Team Leader Name: **AITHAGONI ABHISHEK**

Institute Code (AISHE): **C-19760**

Institute Name: **CMR ENGINEERING COLLEGE**

Theme Name: **PROPER DISPOASAL OF MEDIACAL WASTE**

Idea/Approach Details

Problem Identification

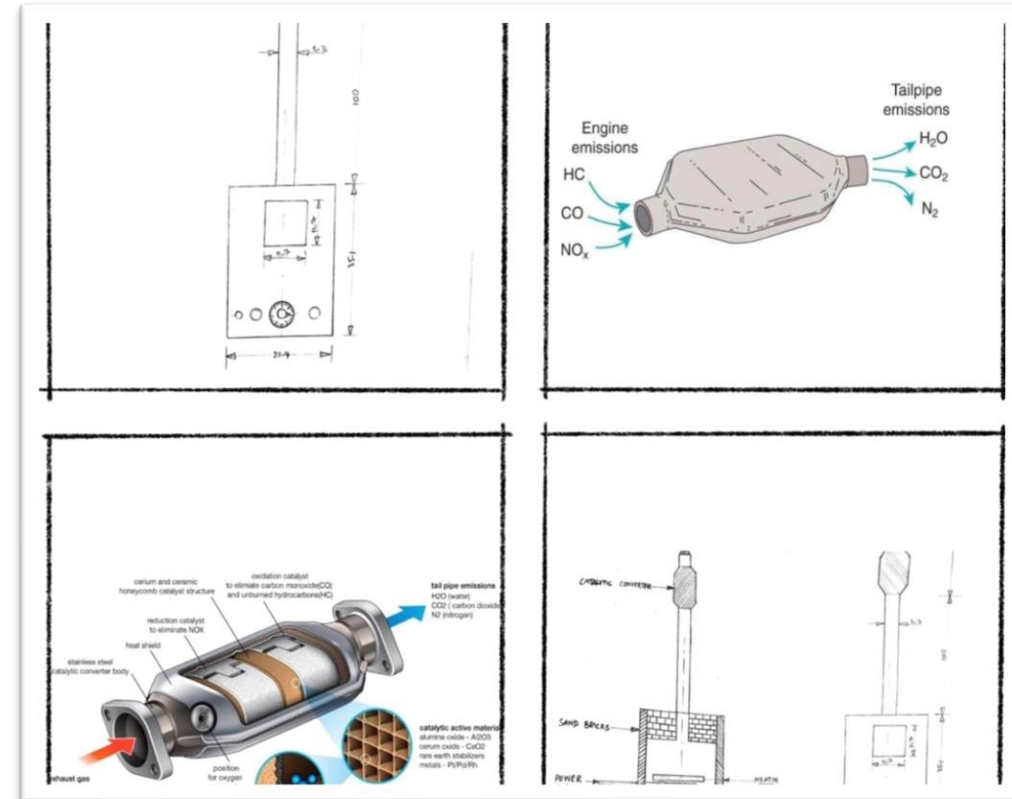
Identification and Justification of Problem : Automated IoT and AI-Assisted Novel COVID-19 Medical Waste Incinerator with Recycling: The isolation wards, institutional quarantine centres, and home quarantine generate a huge amount (nearly ten times more than before) pandemic of biomedical waste worldwide since the outbreak of COVID-19 disease [WHO, 2020]. It includes mainly discarded PPEs and single-use plastics.

Village/ Study area / location : Safe, solid waste management is already a matter of major concern to all countries where safe and sustainable practice is scarce, and healthcare waste has not been adequately regulated [Barcelo, 2020].

Description of problem :

Automated IoT and AI-Assisted Novel COVID-19 Medical Waste Incinerator with Recycling: This pandemic situation, generating a huge amount (nearly ten times more than before the pandemic) of biomedical waste worldwide since the outbreak of novel COVID-19 disease [WHO, 2020]. It includes, mainly discarded PPEs and single-use plastics.

CATALYTIC CONVERTER: Filters toxic gases while recycling



Description of Proposed solution

Stage 1: Chemical disinfection technique

**Stage 2: Disinfection using incineration
and redusing the toxic gases**

Stage 3: Recycling the disposed material

Idea/Approach Details

Expected outcomes/outputs

The on-site solution to medical waste management, with automated IoT and AI technologies.

- The medical waste is sterilized using chemical disinfection techniques and incineration methods, reducing its volume by more than 80% and its weight by 25%.
- Its innovative concept uses to handle all types of biomedical waste effectively.
- Its environmental impact and operating costs are reduced while ensuring the safety of the operator.
- Production of different materials also can be done with the minimum cost without using a new raw material
- Exhaust gases are controlled by a catalytic converter and filters to be eco-friendly

Conclusion

Our technology will definitely handle this problem, with a highly automated environment, which also involved minimum manpower and also helps in production of required materials by recycling technique

Our design is very compact, and its manufacturing cost is very less. It is also easy to operate even by an unskilled operator.

We have developed an incinerator that prioritized, mandatory treatment under a highly automated environment, to handle this problem, which also involved minimum manpower. It involves two stages.

Team Member Details

Team Leader Name: AITHAGONI ABHISHEK

Branch (Btech)

Stream : MECHANICAL

Year : 3

Team Member 1 Name: BEGARI PAVAN

Branch (Btech)

Stream : MECHANICAL

Year : 3

Team Member 2 Name: K.BHASKAR

Branch (Btech)

Stream : MECHANICAL

Year : 3

Team Member 3 Name: PHANINDER GOUD

Branch (Btech)

Stream : MECHANICAL

Year : 3

Team Member 4 Name: B.VINOD YADAV

Branch (Btech)

Stream : MECHANICAL

Year : 3

Team Member 5 Name: MALICHELAM SHIVANI

Branch (Btech)

Stream : MECHANICAL

Year : 2

Team Mentor 1 Name: DR.C.SYAM SUNDAR

Category (Academic)

Expertise : MECHANICAL ENGINEERING

Domain Experience (in years): 10

Team Mentor 2 Name: BHARGAV

Category (Academic)

Expertise : MECHANICAL ENGINEERING

Domain Experience (in years): 6