

Exhaust Cooker

An Eco-friendly Technology



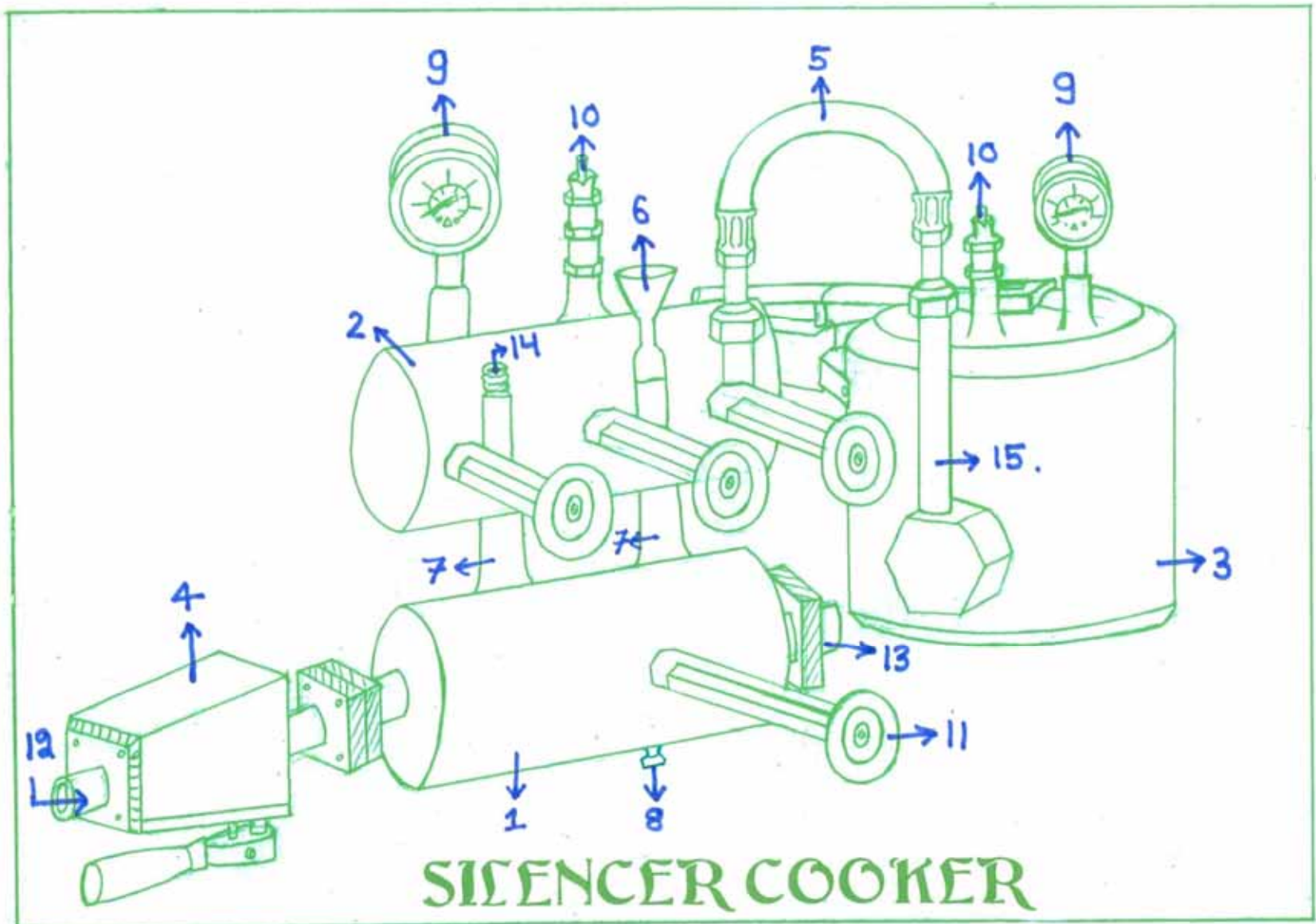
What is this ?

- This invention relates to an exhaust cooker for preparing food using **exhaust flue gases** from engine of vehicle or generator.
- In this, **the waste heat of emitted flue gases of awakened engine is used for purpose of cooking food.** This heat converts raw-water into steam energy.
- It comprises :-
 1. Flue Gas Controller
 2. Heat exchanger/Boiler (for open cooking)
 3. Steam Pressure Cooker (for pressurized cooking)
 4. Silicon rubber tube (Portable, Non-Toxic & Food gradable)

Machine installed on my Scooter



I installed prototype of exhaust cooker on 150cc Bajaj Legend Scooter.



Part Description

Part No.	Description
1	Lower Drum
2	Upper Drum
3	Pressure Cooker
4	Exhaust Controller
5	Silicon Rubber Tube
6	Funnel for Inlet of Water
7	Inter-connection Tubes
8	Outlet for Water
9	Steam Pressure Gauge
10	Safety Valve
11	Discharge Knob for water
12	Inlet for Exhaust flue gases
13	Outlet for Exhaust
14	Outlet of Steam
15	Steam Channel



Working of Exhaust Cooker

1. Water is poured through funnel into lower drum of two-drum boiler.
2. When engine is switched on, Exhaust flue gases passes through pipes which are submerged in water in the lower drum. Heat of flue gases converts water into steam. **This steam collects into upper drum.**
3. When sufficient pressure (**~35 psi**) is reached, the Steam energy produced can be used both for open cooking (tea, coffee, soup etc) or pressurized cooking (rices, pulses, meat etc)
4. **Open cooking** can be performed by simply assembling stem-channel to steam outlet of upper drum on one side and immersing its jet-tip in raw food.

Pressurized cooking can be performed using portable silicon rubber tube, **This tube connects steam outlet of upper-drum to inlet of specially desinged exhaust cooker.**



Exhaust Flue Gases enter from left side of the lower drum of the boiler, and leaves from right side, through conduit pipe.

Steam collected in upper drum is utilized for cooking. It passes from steam outlet of upper drum, through silicon tube to inlet of steam channel of cooker.



Open Cooking



Pressure gauge shows 30 psi, and steam is being utilized to make coffee.

Pressurized Cooking



Pressure gauge shows 30 psi, and steam is being utilized to make rice.

Exhaust cooker is shown in open mode and lid is closed while cooking



Untapped Potential of Exhaust Flue Gases



As shown in video, **140cc scooter produces ~38 psi steam pressure in mere 8 Km of run.**

Sufficient for cooking 1 kg Rice / 1.5 L Soup, tea, coffee + 1 L of hot sterilized water. I wonder of its benefit in more powerful engines !

Why Exhaust Cooker?

- **Conservation of energy** : Recovery of waste heat.
- **Eco-friendly device** : Recycling of exhaust flue gases and Clean technology
- **Zero-cost technique** : Self-dependent and tension free system of cooking for vehicle drivers.
- **Highly Efficient** : Sufficient steam is generated in short time. (150cc engine produces ~38psi steam in 8 km run)
- **Advantageous** for long tour buses, Trucks, Military Vehicles, Ambulances, trains.
- Relief by **anytime availability of food** to Drivers/ occupants of vehicle in inclement weather conditions (Road blockage during snow-fall, land slides etc)
- It will generate **Employment opportunities**.
- It is suitable for **Technology Transfer**.



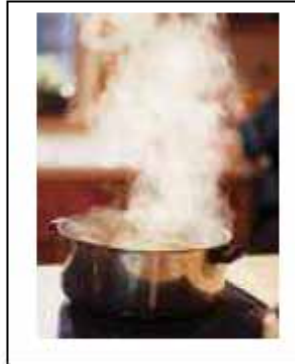
Potential Area of Application

- It can be used in all types of generator sets e.g. generators fitted in trains, ships & Airplanes.
- Tea/Coffee maker in motor cars.
- To fulfill need of tea/ food on long routes of driving (e.g. truck & trains)
- In Luxury/ tourist buses of long (non-stop) run.
- Sterilization purposes in mobile Ambulance.
- Availability of Hot Water in cold areas.
- Preservation of food in steam chest even after switching off the engine.
- Since no naked flame is used , military personnel can use it with great ease at the border areas, especially at night.
- Use by farmers by installation of device in their Tractors/ irrigation Pump-sets.

Fields of Application



Tea/Coffee heating



Water heating



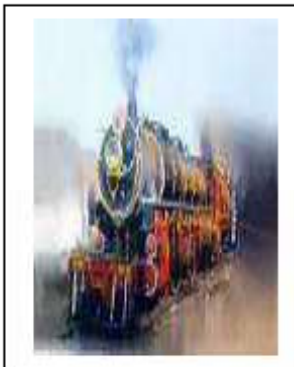
Distilled water



Tractor



Long distance buses



Railway



Cooker



Generator



Car in cold region



Ambulance



Green Advantage

Exhaust Cooker – An Energy Efficient Project

Clean Development Mechanism

- Company gets CDM benefits if it installs waste heat recovery boiler that saves energy. (because reduced fuel use reduces the amount of carbon dioxide emitted) source – IREDA News Vol.4 No. 2 April/June 2007

Reduces Carbon Footprint

- Carbon Footprint is total set of Green House Gas (GHG) emissions caused directly & indirectly by individual/ organization. As equivalent quantity of fossil fuel is saved by using waste heat recovery boilers (exhaust cooker), it reduces carbon footprint.

Emission Trading

- Emissions trading (also known as cap and trade) is an administrative approach used to control pollution by providing economic incentives for achieving reductions in the emissions of pollutants.

Eco-Friendly Technology

- Exhaust Cooker saves the equivalent amount of fossil fuel, that would have been otherwise, used for cooking same quantity of food.
- Due to limited reserves of conventional energy sources. This is one effort to explore an easy waste heat recovery technique.
- It is one time investment & is quick, easy & healthy way of cooking while on a ride.



More on Exhaust Cooker



Video Demonstration of Exhaust Cooker

http://www.youtube.com/profile?user=exhaustcooker#p/u/3/kd7A_ufLJA