

MOTORCYCLE ON WASTE

How to convert a motorcycle on waste and water at a very low cost.

WWW.DRIVEONWASTE.COM



This is the first day that I drove my bike on waste and water: 06/29/2024
I speed up to 44 miles/h. Look how the sky celebrated this historical day!!

Also **SEE** and **SHARE**:

The videos of the **Youtube**: <https://www.youtube.com/@DriveOnWaste>

Facebook: <https://www.facebook.com/driveonwaste>

Website: WWW.DRIVEONWASTE.COM

Eddy Ramos. Set 2024. **Version #1**. Pending patent. For the Glory of God.

PROLOGUE. This is a free service for human kind.

All information can be downloaded (still) free at the website WWW.DRIVEONWASTE.COM
The "chargas" is different from methane gas that is product of the decomposition of wet organic waste inside of a biodigester. "Chargas" is basically carbon monoxide (CO) that is a combustible gas, the product of incomplete combustion of carbonized dry organic waste plus hydrogen by the thermolysis of a few drops of water. Has an energy of almost 1.500 BTU/cu Feet.

FIRST in 2019 was the **drive on waste pickup**. A Ford Falcon Ranchero that, in the year 2022, toured Argentina from end to end, 3,000 miles without gasoline only on the waste that was found on the way. It reaches up to 72 miles/hour. Needs 30Pounds of waste to travel 60miles at 50Miles/h. With almost cero contamination and a contribution of 20.76% of oxygen to environment. The "DRIVEONWASTE" manual is born for free

FOLLOWED the **FREE ELECTRICITY** or Generator on waste in 2024, being able to generate 1KW-H with 5 Pounds of waste. The **"generating guide on waste or free electricity"** appears to be download for free. Also, the **"Heating and gas cooking on waste"** guide.

HERE on this **"Motorcycle on waste"** manual (still) free, is all the information and plans to convert a 4 Strokes carburetor or injection gasoline motorbike into a bike on waste at a very low cost. The motorcycle can also be used with gasoline only. Obviously, the start with gasoline is immediate instead with "chargas" may take 4 minutes to turn on and the final speed is lower, but the fuel is free. In 2T engines when using gas as combustible with no oil, it has to enter lubrication in the carburetor. For electric vehicles, see the "Free electricity" guide or "Generator on waste" to recharge the batteries for free. With almost cero contamination and a contribution of 24.5% of oxygen to the environment. Download (still) free the manual: "Drive on waste", also the "Free electricity" guide at the website WWW.DRIVEONWASTE.COM and watch the didactic videos of the YouTube channel: <https://www.youtube.com/@DriveOnWaste>

VERY IMPORTANT WARNING: "Chargas" is basically carbon monoxide, which is a fuel but very **TOXIC GAS**. Never operate this system in closed spaces as garage, etc. Just operate outside or in very well-ventilated spaces.

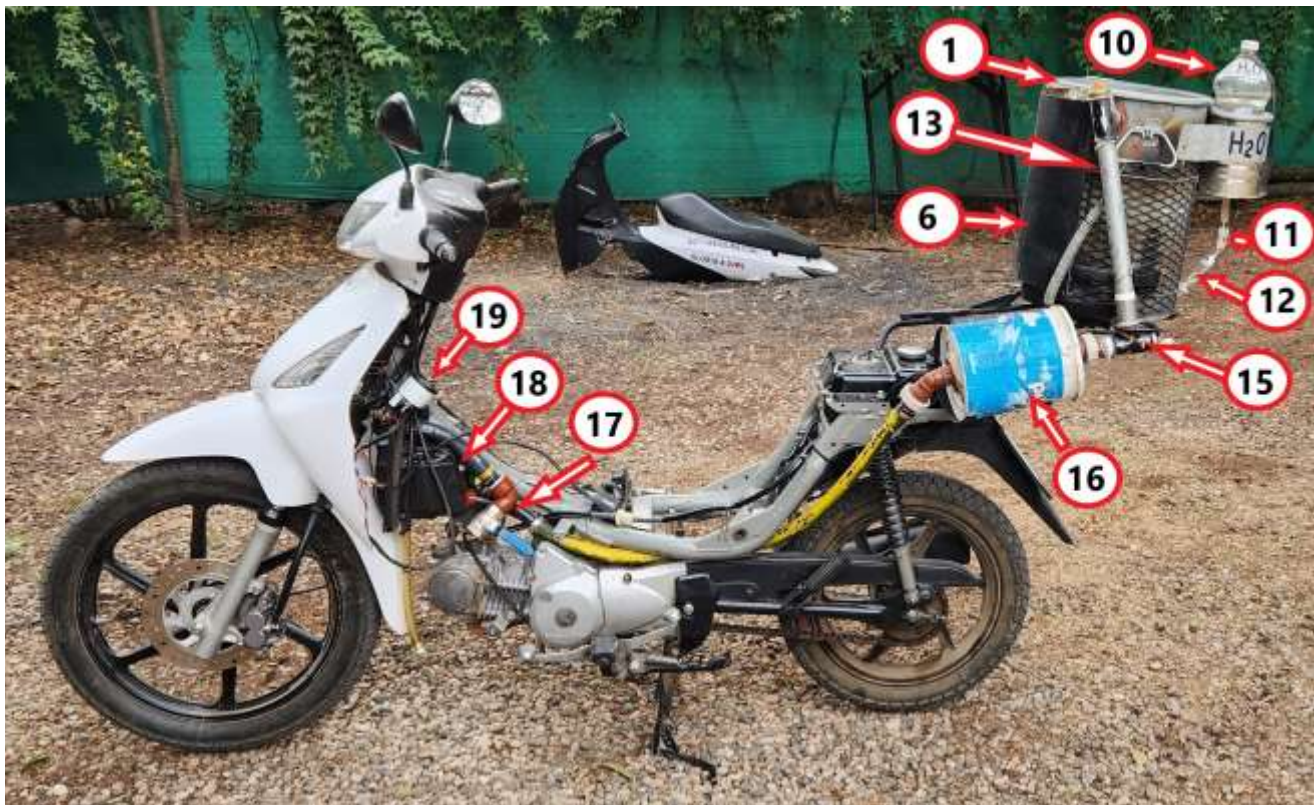
TYPES OF WASTE: It's organic, dry and carbonized waste, sieged to a certain size. Not carbonized or bad waste produce tar that dirty everything. The filter is ONLY for dust and ashes, IT DOES NOT FILTER THE TAR. Examples of organic waste: Charcoal powder (it is already carbonized), shells of: nuts, pistachio, almond, etc.; Pits of: Peach, damascus, plums, olive without salt, etc.; Oak acorns; Pruning remains, tree bark, wood pieces, everything carbonized and sieged to a size between 3mm (1/8") and 20mm (3/4"). **Important:** do not to use pits form pitted olives because it has salt, or coke coal because it has tar. In the "Drive on waste" manual there are two methods to carbonize waste, and there are much more on the Internet.

Advice for beginners: Read the manual several times, see the photos & videos on **YouTube** before converting a motorcycle to "chargas". For the first tests it is advisable to use **vegetable carbon**, even if it must be purchased because coal is very noble, it does not fail, crush and sieged to the recommended size. **The motorcycle of the example** is a 7.6 Cu Inches (125cc), the engine is very worn, would need a rectification. It has a carburetor but it is easier on injection engines. The **CONSUMPTIONS in 62 Miles (100km)** of carbonized waste and 1 drop of water every 6 seconds, depends on speed is approximately 7.7Pounds@37Miles/h = 3.5Kilos@60Km/h. The **DRIVING RANGE** of this sample, depends on several factors, like setup of the system, type of waste, experience, etc. but goes from 12,5 Miles (20 Km) up to 78 Miles(125Km). See Page 7.

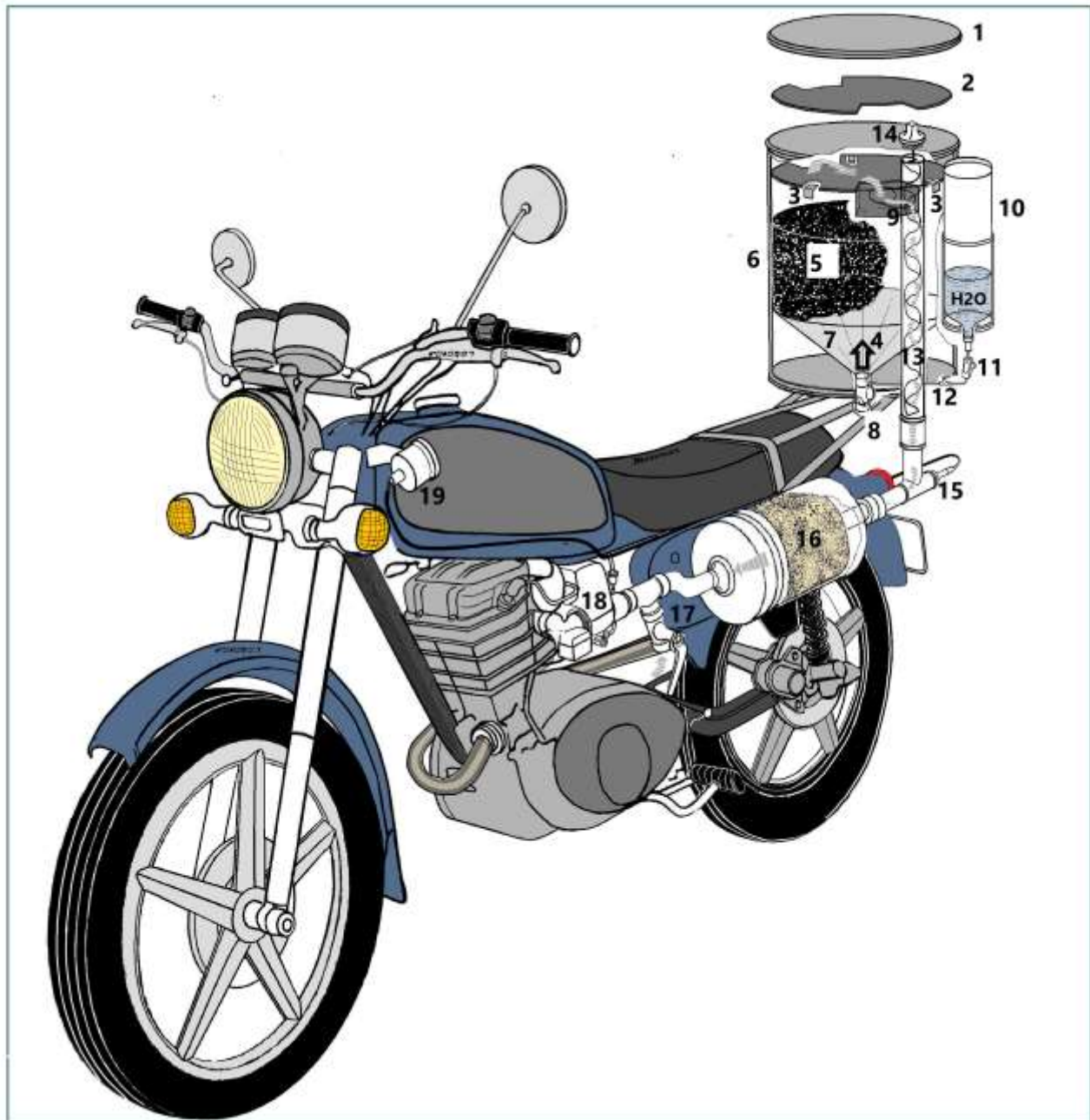
Here **it starts explaining a generic system**, then at the end, are explained different systems some simpler and economical other more advanced, with their advantages and disadvantages.

THE SYSTEM CONSISTS OF: *A) **THE GASIFIER**, *B) **THE NOZZLE** at the bottom of the drum, *C) **THE EMBER CATCHER**, *D) **THE WATER DRIP**, *E) **THE COOLER**, *F) **THE FILTER**, *G) **THE "T"** with the **(AFR) SPHERICAL VALVE** (AFR stands for Air Fuel Ratio) located before the carburetor to regulate air-"chargas" and **THE CONNECTION HOSES**, *H) **THE THERMOMETER**. In that order.

This photo shows the motorcycle without the plastics just to show the inside assembly.



For better understanding see **Motor on waste** at <https://www.youtube.com/@DriveOnWaste>



1. Gasifier drum lid.
2. Under lid.
3. Type "L" supports of the underlid.
4. Nozzle above the "T".
5. Carbonized waste load.
6. Gasifier drum.
7. Stainless steel funnel.
8. "T" with the entry of water.
9. Box and output of "gas".
10. Water bottle.
11. Micro water dripper.
12. Water valve.
13. Metallic cooler pipe.
14. Plug with twisted sheet hung inside the cooler pipe.
15. Temperature electric sensor bulb.
16. "Chargas" filter.
17. (AFR) Valve.
18. Original air filter of the motorcycle.
19. Dial of the thermometer.

*** A) THE GASIFIER:** Is the **vertical** gray drum. The lid with an airtight rubber joint preferably with a closing strap. On the base of the drum **is the nozzle** that is shown below. The example gasifier is a fine sheet metal (AWG#20 = 0.9mm) drum of diameter 11" (28 cm), high 15" (38 cm) and 5 Gal (20 Liters) of capacity. Under the lid there is an under-lid that makes the first cooling of "chargas." Inside the drum is wrapped a "galvanized protecting sheet" and a **non-magnetic stainless-steel** funnel this last **both are not indispensable**.

The 5-Gal (20Ltrs) drum with the funnel and the sheet has a final capacity of 4.8 Gal (18.4Lts).



The under-lid cools the chargas.



Galvanized sheet of protection & non -magnetic stainless funnel



Size of the protection sheet and the funnel

*** B) THE NOZZLE or nipple.**

It is the **HEART** of the system. It is where the gasifier load is ignited, the "chargas" is generated and the **ONLY** place where the air enters the entire system while the engine is on.

IT IS VERY IMPORTANT to respect its measure.

The interior hole size is based on the RPM and the size of the motor by the following formula.

Nozzle hole diameter in millimeters = $\sqrt{\text{cm}^3 \times 0.000145 \times \text{RPM}}$

CM³: It is the size of the engine in cubic centimeters.

$\sqrt{\text{CM}^3}$: It is the square root of the motor size in cubic centimeters.

RPM: Are engine revolutions at 40 Miles/h (65 Km/h)

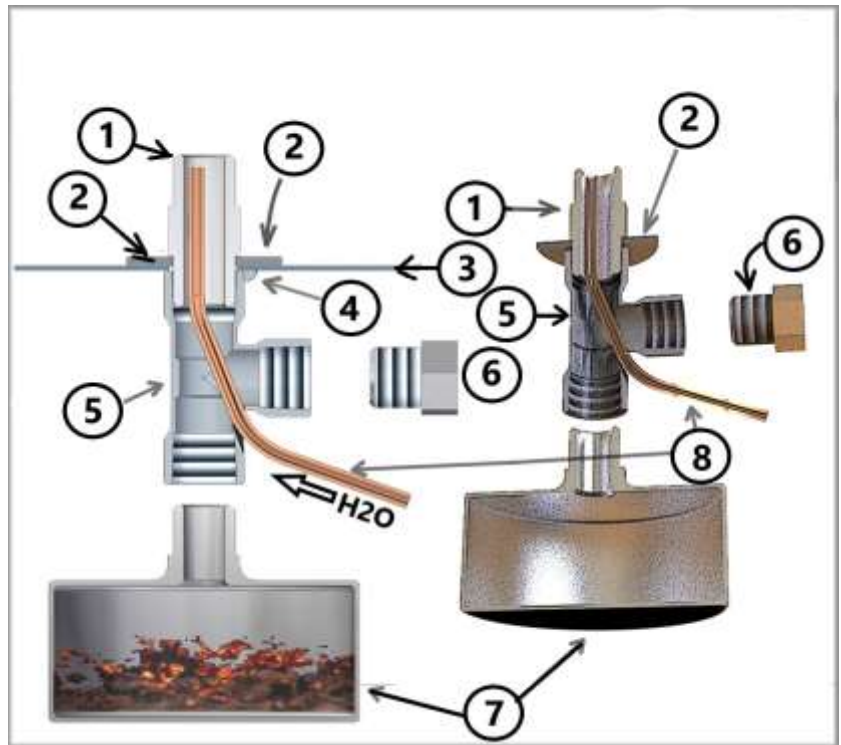
The calculation diameter is approximate, it can vary between + or - 10%.

For the motor of the example, it has a 125cc (7,6Cu") and at 40 Miles/h (65 km/h) are approximately 6,000 RPM. Then the formula for calculating the hole in the nozzle will be = $\sqrt{125\text{cc} \times 0.000145 \times 6000} = 11.18 \times 0.000145 \times 6,000 = 9,7\text{mm}$. When using water drip, it has to increase the hole of the nozzle to compensate for the section that this dripping tube occupies. When using a disarmed copper thermocouple, whose diameter is 1/8" (3mm), the calculation diameter must be increased about approximately 0.6 mm. So, the final diameter of the hole will be 3/8" + or - 10%. For this example, use a 3/8" gas nipple and the central hole was increased to 3/8" (10 mm). The dripper is inserted in the "T" by an inclined hole and fixed by a clamp.

CONCLUSION: For an engine of 110cc (6.7Cu") or 125cc (7.6Cu") the nozzle hole must be 3/8" or 10mm.

Parts of the nozzle.

1. A 3/8" (9.5mm) metallic nipple.
2. Washer under the Nozzle #1 and above the Bottom of the drum #3 as a backup for the Tack weld #4 of the "T" #5 with the Bottom of the drum in case it is a fine sheet metal.
3. Drum bottom
4. Tack weld point.
5. "T" of 3/8" (9.5mm) with an inclined hole to insert the Copper tube #8.
6. Plug to turn off the gasifier.
7. Embers catcher.
8. Water dropper copper tube.

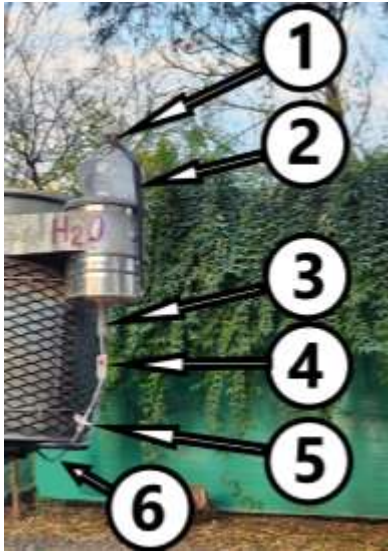
***C) EMBERS CATCHER**

While the engine is on, the UPSTREAM suction of air thru the nozzle maintains the embers INSIDE the gasifier, but when the motorcycle engine is turned off or even when it is regulating in lower rpm, it is possible that embers may fall on the floor through the nozzle and can produce a fire. For which, after the ignition of the gasifier, a metal "Embers catcher" is screwed in under the nozzle that prevents this risk.

*** D) THE WATER DRIPPER:**

Water dissociates by thermolysis in hydrogen and oxygen INCREASE the power of "chargas" by 50%, COOLS the gasifier because with the water drops the temperature of the drum can raise up to 140°C, but without the water drops it can raise up to 240°C, **REDUCES the consumption of waste by 50%, INCREASE driving range** for the same load and **PROLONGS the useful life** of the entire gasifier: nozzle, drum, stainless funnel, etc. It is a plastic bottle, full of **NON-SALTED** water and filtered, can be contaminated, or potable, but filtered, better without chlorine. Under the thread of the bottle lid has a breath hole. In the base it has a "Intra Venus" with a plastic needle that is the serum regulation system used in hospitals and a plastic valve, are purchased in pharmacies. Wheel regulation is better than aluminum sheet. It connects to the water drip copper tube that enters in the nozzle. The amount of water drops depends on speed. Start with one drop every 6 sec. The excess water will not be seen immediately because at the beginning the excess water is absorbed by the dry load, then will condensate at the draining tube.

Use a chronometer to measure the time that takes 10 drops and divided by 10. More water does not mean more power, **excess water is harmful**. With a **dry load**, the excess of water drip will be seen, after a while of condensed water in **the drain of the motorcycle air filter box** (See page 14). Ideally, the amount of water is gradually increasing until water condensation starts to appears in this drainage. Humid load will also condensate water. This drain is in view of the driver to be monitored during driving



PARTS OF THE WATER DRIPPER.

1. Breath hole under the throat of the water bottle.
2. Water bottle of half Gal (1.8 Liters)
3. Intra Venus with plastic needle.
4. Wheel drip regulation.
5. Plastic valve.
6. The drip hose is inserted in the copper tube that enters the nozzle.

NOTE: One drop of water every 6 seconds means 2.25 Ounces (66Cm³) per 2 hours.

*E) THE "CHARGAS" COOLER: TWO SYSTEMS ARE SHOWN "A" & "B"

The "A" system is simpler and more economical. Showing the photo on the right. A ¾" (19mm) rubber hose is used that leaves the gasifying drum and goes directly to the plastic jar or "chargas" filter. This rubber hose is use in car heating systems. But this system has a driving range of only 12 Miles (20 km). The limit is given because at the exit of the gasifying drum there are plastic accessories that melt at 212°F (100°C). Here the bottle is one Pint (500cc).



DRIVING RANGE depends on many factors:

The type and size of the waste. The density of the waste. Greater weight by volume will give greater autonomy. Also, the same waste shaken between (3mm) to 7/16" (11mm) is denser than the shaken waste between 1/8" (3mm) and ¾" (20mm).

The speed. In this example, the most economical speed is 38Miles/h (60 km/h) in third gear.

The driving experience with "chargas." In example, inside the gasifier, sometimes a "bell of embers" (call "bridging") is formed that generates very little "chargas". When this occurs, by circulating on irregular surface, the vibration of the gasifier crumbles this bridge increasing the output of the "chargas".

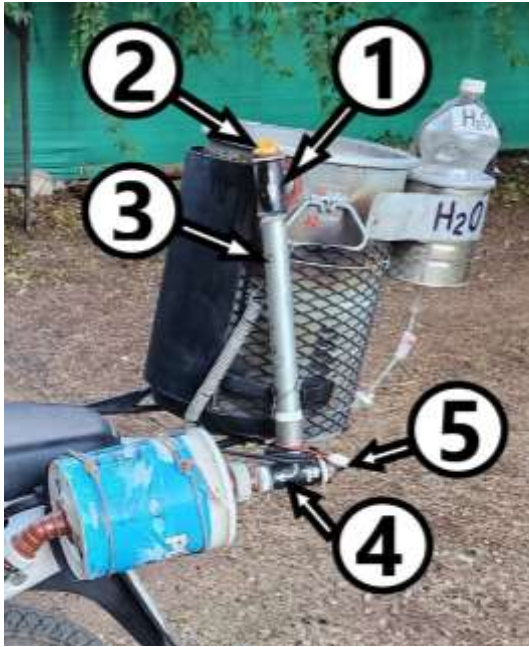
Water drip management. At the beginning use 1 drop every 6 seconds, then lower the timing to 5 seconds but latter when water condensation is seen at the drain hose go back the last drip.

A **diffusor disk**, explained bellow on page 12.

The advanced "B" system setup explained as follows.

The "B" system is the one explained below.

This Cooler system increases the driving range up to 40 Miles (65 Km) since at the exit of the gasifier are used metal parts. Since the larger driving range needs a larger bottle ½ Gal (2Ltrs).



Cooler parts

1. A "T" of 1"(25mm) galvanized iron.
2. A 1" (25mm) plug with a twisted galvanized sheet metal hanging from it, goes inside the pipe.
3. A 1" (25mm) galvanized iron pipe, inside will hang the twisted sheet metal.
4. A "T" of 1" (25mm) galvanized iron.
5. A Temperature bulb.



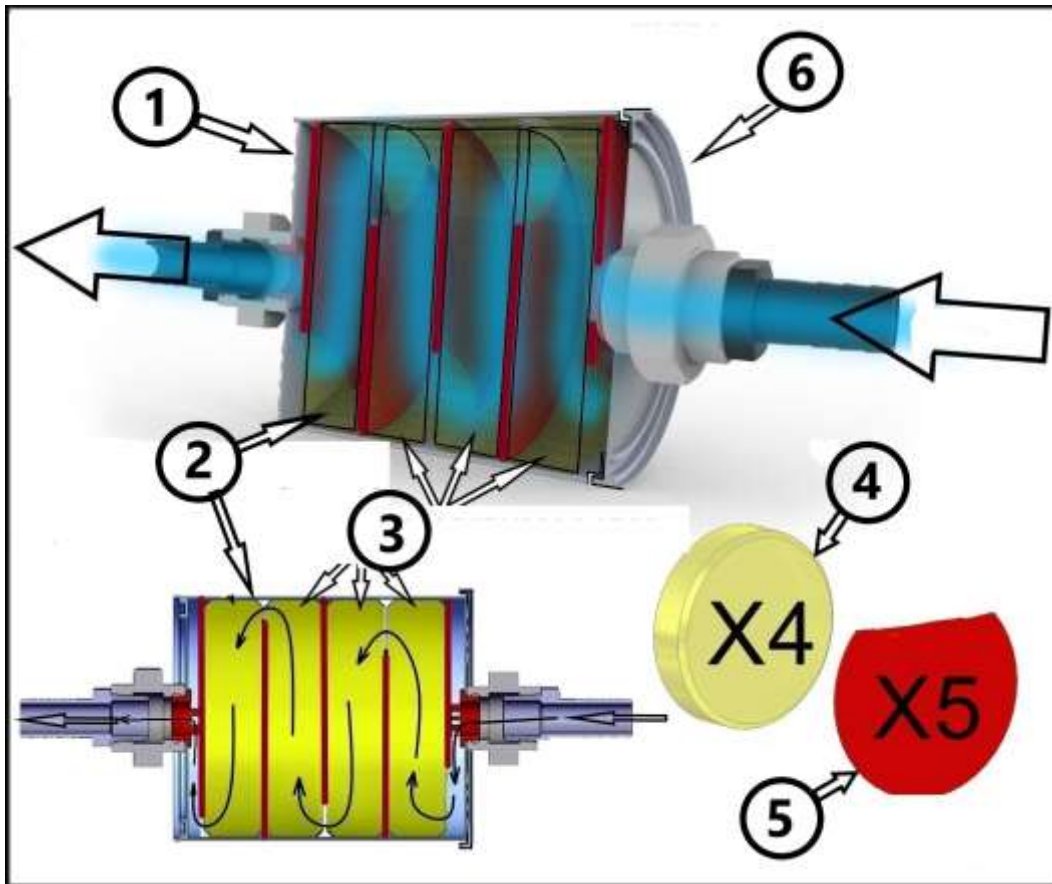
Twisted sheet hanging from the plug.

*** F) THE "CHARGAS" FILTER:**

This is a solid particle filter, **does not filter tar**. It is a 1-Gal (4 Liters) plastic jar, airtight lid with 5 metal or plastic separators plates with 4 layers of 1½" {40mm) thick high density rubber foam. The "chargas" enters through the airtight lid and exits by the bottom of the bucket. This filter must be used horizontal because here part of the excess water of the dripper and/or if the waste is very humid may accumulate and thus prevent condensed water from getting inside the engine. The driving range of this type of filter is of approximately 75 Miles (120Km).



The plates have decreasing cuts: the one on the entrance side, that is, on the side of the lid has a straight cut of 6" (150mm). The one that follows has a straight cut of 5½" (140mm), after 5" (130mm) and the other of 4½" (120mm) and the last of 4" (110mm). These cuts are alternated to the left and others to the right. The last rubber foam on the exit is moistened with mineral oil.



PARTS OF THE FILTER

1. Viewed from the top, the separators cuts go alternate at left and right.
2. The last rubber foam is humid with light oil.
3. The three first rubber foam are dry.
4. 4 rubber foams.
5. 5 Separators.
6. Airtight lid.

*** G) THE "T" AND THE SPHERICAL REGULATION (AFR) VALVE WITH THE HOSES** that connect from the gasifier to the engine.

At the exit of the gasifier drum is the **cooler** (in the "B" system). Then there is a "**chargas**" filter. From the output of this filter to the "**T**" is a $\frac{3}{4}$ " (19mm) yellow painted rubber hose that is used in car heating. This "**T**" of polypropylene and the spherical (**AFR**) Valve both are 1" (25mm). The black polyethylene hose is 1" (25mm) and connects this "T" with the input of the motorcycle air filter.



***H) THE THERMOMETER.**

As the waste load within the gasifier is consumed, the output temperature of the "chargas" increases. When it goes up to 160°F (70°C) it is time to recharge waste or change to gasoline. It is a waste level meter that is in the gasifier. The thermometer is 12Vdc of automobile. The dial is installed in view of the driver and the sensor bulb is installed in the "T" before the "chargas" filter under the pipe cooler.

The thermometer dial has two electrical connections. One is the signal that comes from the sensor bulb and another, the 12Vdc power supply that comes from the contact key, which must have its own 5 AMP own fuse.



Thermometer dial.



Thermometer sensor bulb.

EXAMPLE OF THE REAR GRILL LUGGAGE HOLDER FOR THE GASIFYING DRUM.

This grill holder must support the weight of the drum loaded with waste and water, in total 33 Pounds (15 kilos), which for the jumps is considered X4, that is, it must **support 132 Pounds (60 kilos)**.

**TOOLS FOR IGNITION AND TURNING OFF**

1. Bottle with alcohol.
2. Propane torch.
3. Mirror.
4. Round thin sheet metal.
5. Metallic plug to turn of gasifier.
6. Ember catcher with a fixed key to unscrew the plug.
7. Nozzle cleaner.
8. Probe wire to cleaner the water dripping copper tube.
9. Plastic hose to blow inside the water dripping copper tube.

Description of each element:

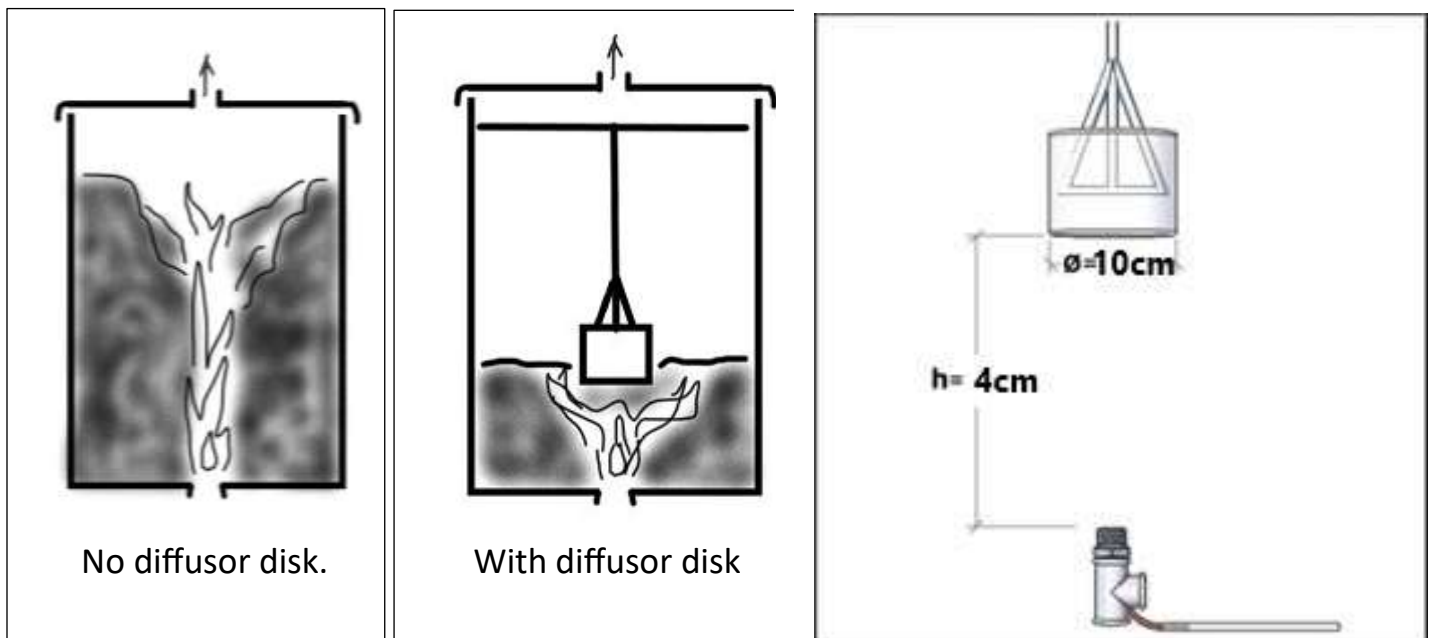
1. **BOTTLE WITH ALCOHOL.** **ONLY when there is already aspiration in the nozzle,** it is used to splash with alcohol the carbonized waste that is inside the gasifying drum through the nozzle to facilitate ignition.
2. **PROPANE TORCH.** **ONLY when there is already aspiration in the nozzle,** it is used to light the gasifier. The coal turns on inside the drum through the nozzle.
3. **MIRROR.** It is used to see that there are embers on the gasifier through the nozzle
4. **ROUND THIN SHEET METAL.** It is used to turn off the gasifier. It is placed between the union at the exit of the "chargas" filter.
5. **METALLIC PLUG.** It is to turn off the gasifier plugging the air entrance at the nozzle.
6. **EMBERS CATCHER.** It screws under the nozzle to prevent embers from falling through the nozzle to the floor being able to cause a fire. It has a kind of fixed key of the metallic plug size to be able to loosen it if it is hard to remove.
7. **NOZZLE CLEANER.** It is an iron rod that is useful for cleaning the nozzle from the bottom up. It has a slot to avoid touching the copper tube of the water dripper that crosses the inside of the nozzle. If the last time the gasifier was used and it was not empty, this rod is good to remove the ashes in the nozzle to be able to turn on the gasifier. Also, to restart the gasifier if it was stopped for a while and to see if there are embers on thru the nozzle with the mirror.
8. **PROBE WIRE.** It is used to clean from down up the copper tube of the water dripper that enters the nozzle because it can be clogged with dust or ashes at the top.
9. **BLOWING PLASTIC HOSE.** After using the probe wire to clean the copper tube, this hose is used to blow through this copper tube and verify that air is free to pass.

Finished Motorcycle on waste.



DIFFUSOR DISK.

The autonomy can be increased for the same load. When the diffuser disk is not, a kind of column or fire is produced from the nozzle that crosses the load vertically missing the load of the sides. Instead, the diffuser disk forces the fire to cross the entire load. It is hung a few centimeters above the nozzle. This increases autonomy, but the final speed decreases. Here is used a refractory round disk with 40 to 60% of alumina, 4" (10cm) diameter, $\frac{3}{4}$ " (2cm) thick fixed at 1 $\frac{1}{2}$ " (4cm) above the nozzle gives an autonomy of 62Miles (100km), but the maximum speed will be only up to 37Miles/h (60 km/h). In addition, the diffuser disk causes the maximum output temperature of the "chargas" to be below 160°F (70°C), that is, the motorcycle goes out due to lack of "chargas" and not due to high gas outlet temperature. Using a "floating" diffuser disc the driving range can be of 78miles (125Km), but is hard to explained and to draw it here, I will upload an explanatory video at Youtube Channel. <https://www.youtube.com/@DriveOnWaste>



COMPANION BACKREST:

As the gasifier drum can raise a lot of temperature, around 280°F (140°C) with the drip of water and up to 450°F (230°C) if the drip of the water is off, it is recommended to install a backrest with high thermal insulation for the companion.

**TWO DIFFERENT SYSTEMS: *1 & *2 FOR THE ENTRY OF "CHARGAS" TO THE AIR FILTER BOX.**

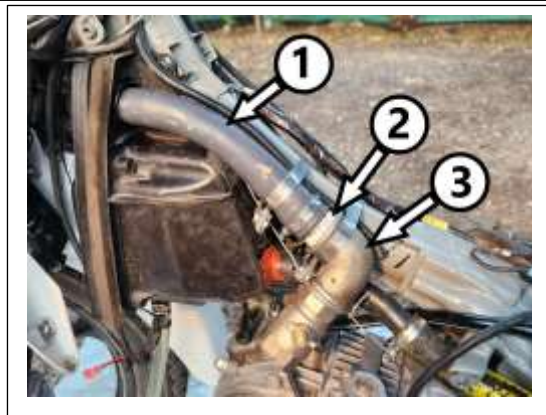
***1 System.** From the "T" of 1" (25mm) the "chargas" enters directly in to the air intake of the motorcycle filter with a 1" (25mm) polyethylene hose. But if it exceeds the drip of water and/or if the load is too humid then the air filter may get wet and it will be hard or impossible to run on gasoline. It can be replaced by one of rubber foam.



***2 System.** Here the "chargas" and the air enters the engine are separately. The "chargas" enters to the air filter box without going through the filter and the air enters into the air intake.



A hole is made to the air filter box where the "chargas" enters without passing and wetting the air filter.



The air entry remains thru the air intake of the filter, always regulated by the (AFR) valve. MAKE SURE all the elements must be at least **INTERIOR of 1" (25mm)**. #1 Polyethylene hose. #2 Metallic nipple inserted in the hose, do not use plastic barbed fitting. #3 Female-female elbow do not use male-female elbow.

It is recommended to **replace the original spark plug** with a colder one, since the temperature measured next to the spark plug running with gasoline is 186°F (86°C), but instead running on "chargas" with water is 220°F (104°C).

The water drain of the air filter box of the bike. Is recommended to enlarged it with a transparent plastic hose as a deposit of possible condensed water. See photo on the right. The water dripping must be adjusted little by little so that, without decreasing the engine power, the least amount of water condensation in this drain accumulates. It should be in view of the driver to be watched during driving.



TWO DIFFERENT TYPES OF START:

The first type of start is with a bit of gasoline, the second is for those places where there is no gasoline at all and **is explained at the end**. Go to <https://www.youtube.com/@DriveOnWaste>
First let's see the different positions of the Air-"chargas" Regulation (AFR) Valve.



POSITION #1.
Completely open valve, for gasoline.



POSITION #2.
Completely closed valve.



POSITION #3.
Position for "chargas"



POSITION #4.
Variable position for starting.

INITIAL SITUATION: Nothing should interrupt the moment of ignition. Make sure is everything: the alcohol bottle, the torch, the mirror, the nozzle plug, the round thin sheet metal, the mber catcher, a probe wire, a blowing hose, a hull, gloves, documents, etc.

- 1) Check the state of the spark plug, the motorcycle air filter and the "chargas" filter.
- 2) Open the airtight top lid of the gasifying drum, the cooling underlid, fill with carbonized and **dry** waste, place the cooling underlid, clean the edges of the drum where the airtight lid is set. Place that lid and the strap.
- 3) Remove possible debris at the tube tip. Pass a probe wire and blow with the hose to clean it.



Tip of the water dripping tube obstructed.



Introduce a probe wire through the copper water tube from the outside.



View from the inside the exit of the probe wire.

A) START WITH GASOLINE. THE START WITHOUT GASOLINE is explained in page 18.

- 1) Open the spherical (AFR) valve in position **#1** completely open. Open the gas tank valve. Turn on the motor, adjust the carburetor so that the RPM of the motor in low are a little more accelerated because the "chargas" has less calories than gasoline. Remove **the ember catcher** and **the plug** from under the nozzle and the **round thin sheet metal** from the union that seals at the output of the "chargas" filter.
- 2) While the engine is running on gasoline, place the (AFR) valve in the variable position **#4**. **Thus, the engine aspires PART through the nozzle and PART of the air through the (AFR) valve. The position will be the most closed possible until the engine starts missing due to lack of air.**
- 3) Turn on the gasifier with a splash of alcohol through the nozzle and then with the torch. View the embers inside the gasifier looking with a mirror through the nozzle.



Bottle with alcohol.



Alcohol in nozzle



Propane torch



Fire in nozzle



View of ember at the mirror.

Bless Lord to those who invoke you with sincere devotion regardless of religion.

- 4) Screw the embers catcher under the "T" to prevent embers from falling to the ground.
- 5) From now on the ignition process can be continued on the road or steady before moving.
- 6) As the system is **purged**, "chargas" will start entering together with gasoline in to the carburetor. To avoid having the engine go off due to the **excess of the two fuels**, it must be kept a little accelerated and opening a little the position **#4** of the (AFR) valve trying to maintain an acceptable mixture of air and gasoline + "chargas". **After another 3 minutes** of keeping the engine accelerated, close the gasoline valve. The engine will continue to run because there are gasoline remains in the carburetor. Open the water dripper to 1 drop every 6 seconds.
- 7) At the time the carburetor is completely emptied, approximately 1 minute, a sudden and short acceleration is produced, and **immediately place the (AFR) valve in position #3 for "chargas"**. See the photo above with this "Position **#3**". The first time can be difficult because it has to guess the position **#3** for "chargas". In injection engines, **this is much easier** because there is no carburetor. **Ideally** start the engine ONLY on "chargas" no water and then open de water dripper.
- 8) Accelerate little by little so that within the gasifier the "combustion center" grows (that is, a greater production of "chargas") and that water thermolysis (more power) occurs.
- 9) If you turn on for the first time, circulate about 5km at 50/60 km/h and adjust the **#3** position of the (AFR) valve for maximum power **and mark it**. That will facilitate the next starts.
- 10) At the beginning the speed will be slow, then will increase with of more "chargas."

IF IT DOES NOT START:

If the motorcycle works well on gasoline, but does not start on "chargas", here some suggestions.

- 1) The waste load **must be dry**, so check if the waste load is wet and replace if necessary.
- 2) As the entire system works airtight, **the only places** where the air should enter are the nozzle and (AFR) valve. So, it must be verified that the whole system is sealed, that is, **there is no other place** where may be any air filtration.
- 3) Airtight "chargas" filter? Cover the output and blow at the input see if there is no filtration.
- 4) Clogged "chargas" filter? Blow at the input and see that the air comes out freely.
- 5) Some obstructed, tight or crushed hose that prevents the passage of the gas. So, review it.
- 6) Ensure that the hose or hoses enters and fits snugged into the air filter.
- 7) A lot of water vapor is bad because: **A)** The waste load is too humid or **B)** The drip of water was done before there was not enough temperature for thermolysis. Check with a mirror that the gasifier is on and that it has being working with no water for at least 3 minutes. Start with one drop every 6 seconds and ones the motor is running, may increase to every 5 seconds.
- 8) The gasifier lid has not closed hermetically. Make sure the edges of the gasifying drum were cleaned before placing the lid.

Not only of bread must live the man, but also of the waste he generates.

Thank you, Dad for your Love, do not abandon the work of your hands

DRIVE ON CHARGAS:

Once the fair position **#3** of the (AFR) valve is found for "chargas" no longer needs to move it anymore, the motorcycle is handled only with the accelerator. While driving try adjusting very little this (AFR) to get maximum power. The power with "chargas" is a bit lower than with gasoline, so it should be used with the engine a bit more accelerated. **IMPORTANT:** Each time the engine is turned off, **close the water dripper** because water thermolysis will no longer take place, the charcoal load will get wet and it will be difficult or impossible to start. Also, when the engine is off, the gasifier starts to cool down and the embers starts to die. So, in this case when restarting the engine directly on "chargas" accelerate the engine to lit up the embers, and only when the engine is running and stable **ONLY** on "chargas" with no water then open the dripper. **The maximum speed is 44 Miles/h (70Km/h)** with a motorcyclist of 158 Pounds (72 kilos) of weight. **The consumption for the first 62 Miles (100Km), depending on the speed, is almost 8.8 Pounds (4 Kilos) of waste, almost 4 Gal (16Ltrs) of waste + 1/4 Pint (1/8 Liter) of water** (1 water drop every 6 seconds). After about 62 Miles (100 Km) need to recharge or change to gasoline. Check the gas filter and clean, check the water condensate in the transparent plastic hose of the drain at the air filter box and drain it if necessary.

RECHARGE OR CHANGE OF FUEL:

During the entire riding the output temperature of the "chargas" will be in the order of the 120/140°F (50/60°C). When it reaches 160°F (70°C) it is time to recharge waste or change to gasoline. **Pay close attention!** because when it reaches 150°F (65°C) the temperature rises very quickly to the 176°F (80°C), the rubber foam disintegrates and the plastics begin to bend.

1) If you are going to recharge with waste: Close the water dripper. Turn off the engine by turning the contact key. Remove the strap and the lid of the gasifier. Be careful when removing the cooling underlid, because it will be very hot and, in addition, there may be a gentle explosion as a "puff." Without much delay, recharge, place the underlid, **clean the edges of the gasifier** before placing the upper lid and the strap. Turn on the engine **without purging the entire system**. When the engine is running good **ONLY** on "chargas" with no water then open the water dripper.

2) If you are going to change to gasoline: Close the water dipper. Turn off the engine by turning the contact key. Turn off the gasifier drum **FIRST** by closing the air entrance to the nozzle with the metal plug, **then** shut off the gasifier output with the round thin sheet metal between the union at the outlet of the "chargas" filter. Open the (AFR) valve completely in position **#1** for gasoline. Open the gasoline valve and turn on the engine.

***ATTENTION #1** If it costs too much or is impossible to turn on with gasoline it may be because the cellulose filter of the bike has moistened. It may be because the waste load may be very humid and/ or because the drip of water has been excessive. The humid filter should be replaced by a dry one. Recommendation to avoid this: 1) Without decreasing the engine power, adjust the water drip so there will be no excess water and/or also 2) Change the original cellulose filter for a "high flow" that is of rubber foam and that is not clogged by moisture, but disintegrates at 176°F (80°C) so it should be very careful not to exceed that temperature.

END OF THE TRIP, DEFINITIVE TURNING OFF.

- 1) Cut the water dripper. Turn off the engine by turning the contact key. Turn off the gasifier. **FIRST** by plugging the air entrance into the nozzle with the metal plug **and then** shut off the gasifier outlet with the round thin sheet metal in between the union at the outlet of the "chargas" filter. Leave it like this until the load has completely cooled.
- 2) If it ended up using with "chargas" it is convenient to clean any possible remains of tar deposited in the carburetor dragged by a poor carbonized load. After closing the gasifier, open to the maximum the (AFR) valve in position **#1**, open the gasoline tank valve, turn on the engine and keep it working or circulate for 3 minutes. If it costs to turn on to see ***ATTENTION #1** above.
- 3) **Next day**, with a cold gasifier drum, empty it, clean the accumulated ashes around and above the nozzle, shake the remaining load of the dust produced by vibration and movement. Blow with high pressure air the interior of the drum, **ALL** the cooling system from the gasifying drum to the "chargas" filter **especially the temperature sensor bulb**.
- 4) Open the "chargas" filter to see if there is accumulation of water and drain. Check the rubber foams. If it is dirty with ashes shake them, blow with high pressure air, but if they are dirty with tar remains change for new ones.

B) THE START WITHOUT GASOLINE of the MOTORCYCLE.

In those places where there is no gasoline at all, the bike can be turned on without gasoline. A 12Vdc **fan-aspirator** is needed that begins the suction on the nozzle for the ignition of the gasifying drum through the nozzle and a **vent**.

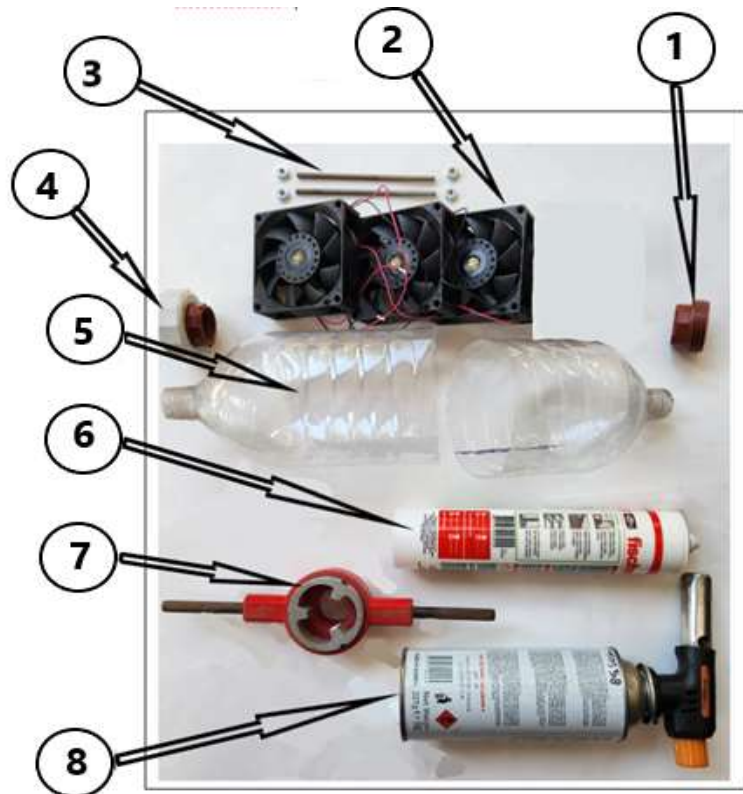
FAN-ASPIRATOR.

Use a Bilge blower as the ones use on RV vehicles or nautical. Or it can be assembled using three 12Vdc fans or "coolers" of electronic equipment that are economical to buy or very economical or free in the workshops that repairs electronic or computers equipment. The three coolers must be exactly the same. When they join together with the threaded rod **make sure that the three blows at the direction**. The three are connect electrically in parallel. Then the half PET bottles are placed according to the photo. Heat the bottles with a torch, the heat shrinks and hugs it to the coolers. With the threading die it must thread the neck of the bottles where is the thread for the caps. This can be screwed with glue o epoxy every half of the union in each bottle.



PARTS OF THE FAN ARMED WITH 3 COOLERS.

1. Male piece of the union.
2. Three Coolers.
3. Two threaded rods with nuts to join the coolers.
4. Female piece of the union.
5. Two bottles of half cut.
6. Silicone tube.
7. Threading die to make the thread in the necks of the bottles.
8. Propane torch.

**THE VENT:**

The vent is placed at the outlet of the starter blower. It is a union with a **metal** nipple where all the air in the system is vented or purged outside at the beginning of the ignition process. When all the air of the system is expelled, ignite here the "chargas", the flame must be transparent, blue or clear yellow. If it is strong orange, it means that "chargas" has tar and can dirty carburetor. Only when the flame is stable open the water dripper injected into the nozzle.



The hydrogen from the water thermolysis is expected to come out of this vent. The blower is disconnected with this vent and replaced by a pipe to connect the gasifier output directly to the "chargas" filter. The function of the nipple **of metal** is so that it does not melt with the heat of the flame.

In this world let's leave a footprint so that humanity does not leave a waste footprint in this world.

Give Glory to God with doing and saying always and everywhere!

FAN IGNITION.

Electrically connect the fan to the 12 Volts of the motorcycle battery. The fan with the vent can be placed anywhere at the exit of the gasifier. For example: A) Connect the fan to the exit of the valve (AFR) in such a way that it aspirates of the same and vent outside. As seen in the photo. Place this (AFR) valve in position #1, that is completely open. B) Another way: It is to place the fan at the exit of the gasifier, as seen in the photo bellow.



Or also after the cooler.

Anyway, this produces the aspiration at the nozzle to start the ignition with alcohol and torch. Purge the system until the flame of the "chargas" can be turned on at the vent and it is stable. Connect the fan outlet to the "chargas" filter. Purge. Turn off the fan and remove it. Reconnect. Place the (AFR) valve in position **#3** for "chargas" and turn on the motorcycle engine with the electric starter or with the starting pedal.



DRIVING ON CHARGAS, RECHARGE OR CHANGE OF FUEL, END OF THE TRIP, DEFINITIVE TURNING OFF. Read from page 17.

THE ANALYSIS OF THE COMBUSTION GASES that comes out through the exhaust pipe running only with "chargas" and water gave the following results. Multinet system version 08-05-018.



It can be seen that it is almost non contaminant 0.03% of CO and with a contribution of 24.5% oxygen to the environment.

CONCLUSION: All the vehicles of the world pollute and consume oxygen, but when USING "CHARGAS" WITH WATER IT ALMOST NOT CONTAMINATING AND PROVIDES OXYGEN!!!

The total cost to convert the bike of this example to run on "chargas" was almost 97 dollars.

THANKS TO: Fabiola Dieguez my wife. **Marcelo Rava, Marino Morikawa** and **Cristian Gonzalez** helpers and great friends.