Mini Plant

SERIGAS™

MINI Power Plant

Bangalore-based Scalene Energy Research Institute (SERT), a research wing of Scalene Cybernetics, has developed an organic fuels technology which it-claims is the world's first-of-its-kind. Based on selective microbes, the technology is capable of processing any organic feedstock into biogas and convert the gas into electricity. The energy plant's waste is further processed into fertilizers and pesticides, leaving almost no carbon footprint behind.

SERI has developed a highly-controlled biological reaction process comprising the use of specifically cultured microbial ecosystem for aerobic and anaerobic digestion of organic feedstock, including food waste, non-consumable part of fruits, vegetables and other agricultural waste, municipal solid waste, oil effluents, animal, poultry and fish waste, excreta of humans and animals, and weeds such as water hyacinth and water lettuce parthenium.

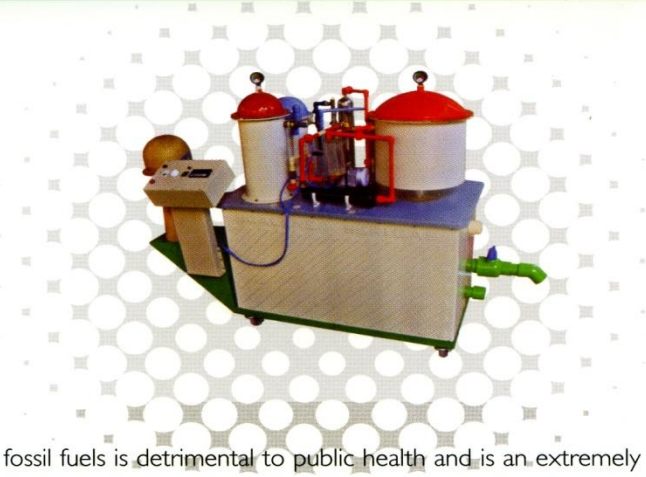
The SERI energy plant is set up in 7,500 square feet area. It has been developed by a core team of12 members in collaboration with Industrial Training Institute in Bangalore. The SERI technology operates in a multistage microbe incubated bio-reaction (MIBR) system. According to Rajah Vijay Kumar, chairman and chief scientific officer of Scalene Greenergy Corporation, Scalene Cybernetics, the process produces pure combustible gas in quantities 30-60 percent more than conventionally used techniques.

The process begins with preconditioning the feed by either chopping or drying it or treating it with organic substances to break the cell wall of the material. Substances like lignin, cellulose, and hemicellulose are converted to carbohydrate using microbes. The computerized system checks material consistency and potential hydrogen (pH) levels. Once the alkalinity level reaches between 5.8 and 6.8 milliequivalent per liter, the crushed feed is pumped up into the bio-reactors for the next stage of the process.

Based on the feed sample, suitable microbes are identified and cultured in SERI's Microbial Biotech Laboratory in Bangalore. There are around 16 different species of microbes that are cultured at the laboratory. The on-board computers of the bio-reactors monitor certain parameters, such as pH level, temperature, humidity, flow rate, hydraulic retention time, total solids, carbon-nitrogen ratio, pathogens, feed poisoning, organic carbon content, and microbial census, with necessary corrective measures for each of them.

The crude gas produced from the bio-reaction process is refined further to enhance the purity of the methane content of the gas and to remove other gases including carbon dioxide, hydrogen sulphide, hydrogen, nitrogen, and oxygen. The refining produces 98 percent pure methane, with 1 percent carbon dioxide and 1 percent hydrogen. While the refinery works, Seri's Carbon Dioxide Rebreather uses set of special microbes that utilize carbon dioxide produced from the refining process and an electron source to produce carbon monoxide (CO) and hydrogen (H'). The electron source is provided by a small solar panel. The CO and H, are then fed back into the bio- reactors to aid in the reaction process and in increasing the production of crude gas by 15.

To utilize the refined gas and produce electricity out of it, SERI uses a Spiral Protium Accelerating Reactor Super Enrichment (SPARSE) technique developed by the Centre for Advanced Research and Development, Bangalore. The technique uses Seri's refined gas to generate electricity. With one ton of feedstock Seri's technology can produce 200 kilograms of refined gas per day. And a kilogram of refined gas can generate up to 1,600 kilowatt hour of electricity. The generator engines used by SPARSE are computerized to work on input from parameters relating to air-fuel changes, engine intake vacuum, engine speed, air fuel ratio, oxygen sensors, and precision spark ignition system. And the engines virtually have no harmful emissions. They just emit water vapor and small traces of nitrogen oxide due to the nitrogen in the air.



The carbon equivalent of 200 million barrels of oil are burnt each day to support the Planet's growing population of approximately 6 billion persons' search for prosperity. Carbon dioxide build up in the atmosphere has reached levels that are about 30 percent higher than at any time in the last 170 years.

Continued dependence on fossil fuels is detrimental to public health and is an extremely dangerous experiment that may have no point of return for our civilization, as we know it. World's largest killers are not Cancer, Heart Disease or AIDS and the like. It is simply the Air we breathe, the Water we drink and the Food we eat, all of which are highly polluted.

In order to cater to the growing demand for fuel supplies, it has rather become imperative for us to look for sustainable renewable sources of energy supplies.

The carbon equivalent of 200 million barrels of oil are burnt each day to support the prosperity of 6 million people on this planet

Scalene Greenergy Corporation presents you the SERIGAS™ technology, which is a significant contribution towards building a sustainable energy source model.

Scalene Greenergy Corporation Limited (SGCL) is a member company under Organization De Scalene, which spreads across India, Europe, North America, Middle East and South East Asia. Organization De Scalene's research wings, Center for Advanced Research and Development (CARD) and Scalene Energy Research Institute (SERI) have indigenously developed many technologies in the field of artificial intelligence, medical engineering, biotechnology, microbiology, power engineering, fuel enrichment and hold many patents to their credit.

Carbon dioxide build up in the atmosphere has reached levels that are about 30 percent higher than at any time in the last 170 years.

SERI organic fuel technology, a proprietary technology, is the first of its kind in the world that has been the result of over 8 years of research and development at Scalene Energy Research Institute (SERI). It has been designed to process any organic feed stock including **food waste, kitchen waste, vegetable wastes, agricultural wastes, municipal solid wastes, slaughter house wastes, fish waste, poultry litter, Poultry waste, water weeds such as water hy**acinth, water lettuce to even **used news paper, using proprietory MIBR bio reactors.**

It is time that we look away from conventional sources towards other renewable and sustainable sources of energy.

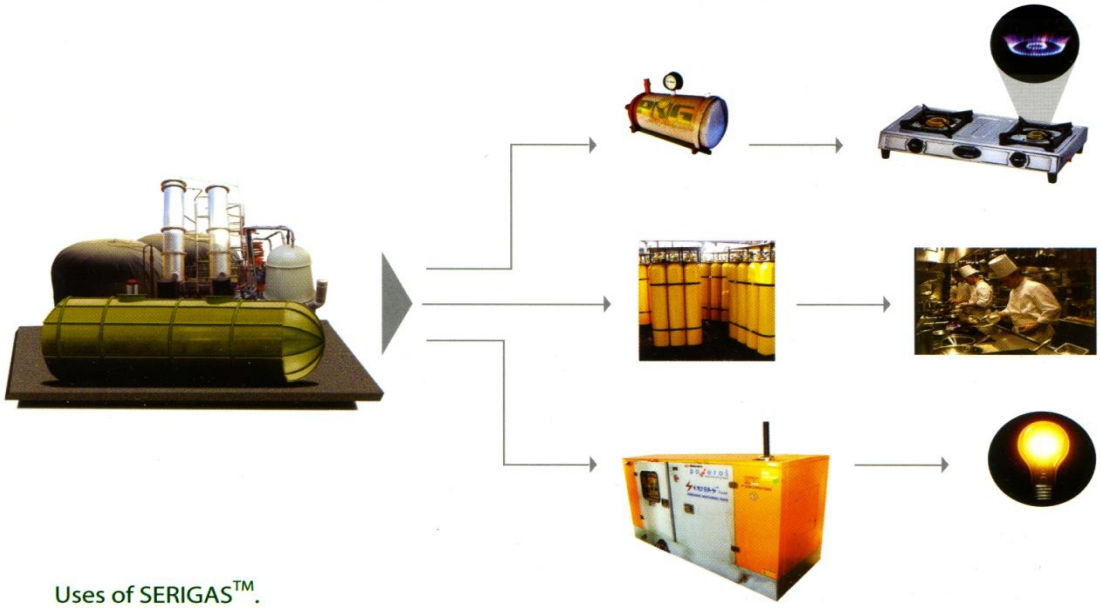
SERI organic fuel technology is a multi stage, variable HRT, Microbial Incubated Bio Reaction (MIBR) system. The process aids in production of highly purified combustible natural gas in quantities exceeding 30-60% more than any currently available technologies. The design of the unit is fully modular with scope for expansion. SERIGAS™ has the efficiency of LPG and safety of firewood when considered for cooking. With a mini generator, power can be produced even with the lowest capacity SERIGAS™ plants.

Powering Life by Enriching Energy

Technical specifications

Plant capacity. Feed Per day	Kg	35 -70	100 - 200	160 -340	300 - 600	640 -1300	1100-2350
Size of the plant width x length	M	0.9 x 3.9	1.24 x 5.7	1.5 x 6.7	1.8 x 8.2	2.3 x 10.6	2.8 x13.0
Total height of the plant	M	2.4	3	3	3.6	4.2	4.8
Total area required	Sq.m	8	16	22	33	54	81
Material of construction		MSGC	MSGC	MSGC	MSGC	MSGC	MSGC
Civil work requirement	M	nil	nil	nil	1.52 x 1.52 x 1.52	2.08 x 2.13 x 2.08	3.04 X 3.04 x 1.82
Power consumption per day	KWh	5	7.5	7.5	10	10	17.5
Gas production per day -max	Kg	14	42	70	126	266	490
•Average gas production per day	Kg	5.5 - 11	16 - 33	25 - 56	48 - 100	102 - 212	176-390
Option							
Power production. Units/day	KWh	40	128	224	400	848	1560

* Gas production will vary depend on the type of feedstock.
* Owing to continuous development, specifications are subject to change without prior notice.
* Pictures shown are not actual representation and are for illustration only.



Uses of SERIGAS™.

- SERIGAS™ is refined and purified to PNG standards.
- A replacement fuel for LPG, Diesel, Furnace oil, LDO and wood.
- SERIGAS™ can be used in D.G.Sets, Boiler, Thermic fluid heating, domestic and industrial cooking.
- Carbon emission minimal compare to any other fuel.
- Highly economical and easy to handle.
- Support from MNRE (Ministry of New Renewable Energy) for gas bottling and electricity production.
- Safe and self-dependent fuel.

World's largest killers are not Cancer, Heart Disease or AIDS and the like... it is simply the Air we breathe, the Water we drink and the Food we eat, all of which are highly polluted.

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