Brake Oil

Process	**PROCESS OF BRAKE OIL**
Area	**It is used in cars.**
Salient Features	**It is blue color liquid product produced from Alkali, Salts, Dye & other chemicals. It is suitable to use in car brake.**
Scale of Development	**The process is developed in lab scale.**
Major Raw Materials	**Alkali, Salts, Dye & other chemicals.**
Major Plant Equipment/ Machinery	**Mixer machine.**
Details of specific application	**It is used in car brake.**
Status of Development	**Process is developed and commercialized**
Ecological/ Environmental Impact (if any, specify briefly)	**No hazardous impact on environment.**
Patenting details	**Patented, patent no. 1002354/DOT 3 SPECS**
Commercialization Status	**Lease out.**
Techno-Economics	**The process will help to set up brake oil industries in Bangladesh. It will reduce import cost of brake oil and thus will save foreign currency. It will also create new employment opportunity.**
Key words	**Alkali, hazardous, salt, dye.**

Radiator Coolant

Process	**PROCESS OF RADIATOR COOLANT**
Area	**It is used in radiator of cars.**
Salient Features	**It is blue color liquid product produced from Alkali, Salts, Dye & other chemicals. It is suitable to use in radiator of cars for cooling of car engine.**
Scale of Development	**The process is developed in lab scale.**
Major Raw Materials	**Alkali, Salts, Dye & other chemicals.**
Major Plant Equipment/ Machinery	**Mixer machine.**
Details of specific application	**It is used in car radiator.**
Status of Development	**Process is developed and commercialized**
Ecological/ Environmental Impact (if any, specify briefly)	**No hazardous impact on environment.**
Patenting details	**Not applicable**
Commercialization Status	**Lease out**
Techno-Economics	**The process will help to set up coolant industries in Bangladesh. It will reduce import cost of radiator coolant and thus will save foreign currency. It will also create new employment opportunity.**
Key words	**Alkali, radiator, salt, dye.**

Day-light sensory automated switch

Process	**Process of Day-Light Sensory Automated Switch.**
Area	**Automated Devices**
Uses	**Staircase, Garden and Street light automation for power savings**
Salient Features	**Daylight Sensory automated switch is a switching device which can sense the presence of day light. When daylight present there is no need to switch on some electronic devices. These devices will be automatically switched on during sun set and will be switched off during sunshine.** **In our country, the street lights are often switched on for several hours even after sun rise. Also the front lights and stair lights of houses and shops are also switched on. Moreover some time street lights are lit-up much before the sun set. So in many such ways we it waste a lot of electricity for our unconsciousness. But if we use this device to follow the day-light to switch off the street lights and front and/or stair light of every building and shops, and also to switch on during darkness; then we can save a lot of electricity.**
Scale of Development	**The Process is standardized at bench scale.**
Major Raw Materials	**Integrated Circuits(IC), Transistor, LDR, Relay PCB etc.**
Major Plant Equipment/Machineries	**PCB making system, Soldering Machine, Drill Machine, Power Meter, Multimeter Etc.**
Details of Specific Application	**It can be used to automate Staircase, Garden and Street light for power savings.**
Status of Development	**Design and Development of Day-Light Sensory Automated Switch is completed.**
Ecological/ Environmental Impact (If any, specify briefly)	**By using this device, wastages of electricity from Staircase, Garden and Street light can be minimized. Less energy use reduces the demand from power plants and decreases greenhouse gas emissions.**
Patenting Details	**Not patented**
Commercialization Status	**Ready for Commercialization**
Techno-Economics	**Available on demand**
Keywords	**Automated light, Energy savings**

Super Saver LED Dim light

Process	**Process of Super Saver LED Dim Light.**
Area	**Energy saving lamp**
Uses	**In houses as Super Saver Dim Light.**
Salient Features	**Light Emitting Diode (LED) emits light producing less amount of waste heat. Incandescent lamp emits only 5% light energy whereas LED emits more than 40% of supply energy. It consumes power at a very low amount but its energy transfer ratio is very high compared to any other lighting system. It saves energy by using ultra bright LED's, in a scientific manner. Developed Super Saver LED Dim Light produces almost same amount of light consuming less than one twelfth of AC power that consumes by a conventional incandescent lamp. Its life Time is about 50,000 hrs, whereas for incandescent lamp it is 1,000 hrs and compact fluorescent lamp (CFL) it is 8,000 hrs.**
Scale of Development	**The Process is standardized at bench scale.**
Major Raw Materials	**LED, PCB, SMPS Circuit etc.**
Major Plant Equipment/Machineries	**PCB making system, Soldering Machine, Drill Machine, Power Meter, Multimeter Etc.**
Details of Specific Application	**It can be used In houses as Super Saver Dim Light to save up to 95% electricity compared to a conventional Dim light.**
Status of Development	**Design and Development of the LED based dim light is completed.**
Ecological/ Environmental Impact (If any, specify briefly)	**LED lamps contain no toxic elements. Most offices currently use fluorescent strip lights which contain noxious chemicals such as mercury. LED lamp helps to protect the environment from further toxic waste. Less energy use reduces the demand from power plants and decreases greenhouse gas emissions. Its life time is very long. A longer life span means lower carbon emissions.**
Patenting Details	**Not patented**
Commercialization Status	**Ready for Commercialization**
Techno-Economics	**Available on demand**
Keywords	**Dim Light, LED lamp, Energy savings**

Process of Fiber Glass Biogas Plant

Process	**PROCESS OF FIBER GLASS BIOGAS PLANT.**
Area	**Renewable Energy, Bioenergy, Biofuel.**
Salient Features	**Potable, Long lasting, Easy to install.**
Scale of Development	**Domestic size (2.5- 3.0 m^3), based on digester volume.**
Major Raw Materials	**Fiber glass, Glue, Center Pipe, Biogas Burner.**
Major Plant Equipment/ Machinery	**Gas digester, Biogas burner.**
Details of specific application	**Biogas contains mainly 60-70% methane which is mainly used for cooking purposes. Besides this it can be used for lighting and electricity generation.** **The residue/slurry left after gas evaluation is a good fertilizer.**
Status of Development	**Developed.**
Ecological/ Environmental Impact (if any, specify briefly)	• **No smoke during use of biogas stoves.** • **Reduction in bad smell of raw materials presently use to the biogas plant.** • **Biogas plants save forests and trees.** • **Minimize global warming.** • **Biogas helps to keep the environment hazard free and hygienic.**
Patenting details	**N/A**
Commercialization Status	**Lease out.**
Techno-Economics	**Produced biogas is used for cooking and lighting.** **Biogas plants save expenditures for cooking. It does also reduce the use of LPG.** **Bio-slurry is used as fertilizer, fish feed etc.** **Saves the foreign currency.**
Key words	**Renewable Energy, Biofuel, Biogas, Methane Gas, Bio-fertilizer.**

Process of Newly Designed Fixed Dome Biogas Plant

Process	**A PROCESS OF NEWLY DESIGN FIXED DOME BIOGAS PLANT MODEL.**
Area	**Renewable Energy, Bioenergy, Biofuel**
Salient Features	**Indigenous Raw materials, Easy construction & Long lusting.**
Scale of Development	**Domestic size ($3m^3$), based on digester volume.**
Major Raw Materials	**Bricks, Sand, Cement, Center Pipe, Biogas burner.**
Major Plant Equipment/ Machinery	**Center pipe, Biogas burner.**
Details of specific application	**Biogas contains mainly 60-70% methane which is mainly used for cooking purposes. Besides this it can be used for lighting and electricity generation.** **The residue/slurry left after gas evaluation is a good fertilizer.**
Status of Development	**Process developed and disseminated 7800 biogas plants among 22 districts through two Climate Change Trust Fund (CCTF) projects.**
Ecological/ Environmental Impact (if any, specify briefly)	**No smoke during use of biogas stoves.** **Reduction in bad smell of raw materials presently use to the biogas plant.** **Biogas plants save forests and trees.** **Minimize global warming.** **Biogas helps to keep the environment hazard free and hygienic.**
Patenting details	**N/A**
Commercialization Status	**Disseminated 7800 biogas plants among 22 districts through two Climate Change Trust Fund (CCTF) Project.**
Techno-Economics	**Produced biogas is used for cooking and lighting.** **Biogas plants save expenditures for cooking. It's also reduce the use of LPG.** **Bio-slurry is used as fertilizer, fish feed etc.** **Saves the foreign currency.**
Key words	**Renewable Energy, Biofuel, Biogas, Methane Gas, Bio-fertilizer.**

Process of Fixed Dome Biogas Plant

Process	**DESIGN OF FIXED DOME BIOGAS PLANT MODEL.**
Area	**Renewable Energy, Bioenergy, Biofuel**
Salient Features	**Indigenous Raw materials, Easy construction.**
Scale of Development	**Domestic size ($3m^3$- $5m^3$), based on digester volume.**
Major Raw Materials	**Bricks, Sand, Cement, Center Pipe, Biogas burner.**
Major Plant Equipment/ Machinery	**Center pipe, Biogas burner.**
Details of specific application	**Biogas contains mainly 60-70% methane which is mainly used for cooking purposes. Besides this it can be used for lighting and electricity generation.** **The residue/slurry left after gas evaluation is a good fertilizer.**
Status of Development	**Process developed and disseminated around 22,000 biogas plants 64 districts through two ADP projects.**
Ecological/ Environmental Impact (if any, specify briefly)	**No smoke during use of biogas stoves.** **Reduction in bad smell of raw materials presently use to the biogas plant.** **Biogas plants save forests and trees.** **Minimize global warming.** **Biogas helps to keep the environment hazard free and hygienic.**
Patenting details	**N/A**
Commercialization Status	**Disseminated 22000 biogas plants around 64 districts through two ADP Projects.**
Techno-Economics	**Produced biogas is used for cooking and lighting.** **Biogas plants save expenditures for cooking. It does also reduce the use of LPG.** **Bio-slurry is used as fertilizer, fish feed etc.** **Saves the foreign currency.**
Key words	**Renewable Energy, Biofuel, Biogas, Methane Gas, Bio-fertilizer.**

Process of Floating Dome Biogas

Process	**PROCESS OF FLOATING DOME BIOGAS PLANT MODEL.**
Area	**Renewable Energy, Bioenergy, Biofuel**
Salient Features	**Indigenous Raw materials, Easy construction.**
Scale of Development	**Domestic size ($3m^3$), based on digester volume.**
Major Raw Materials	**Bricks, Sand, Cement, Center Pipe, Biogas Burner.**
Major Plant Equipment/ Machinery	**Gas Chamber, Biogas burner.**
Details of specific application	**Biogas contains mainly 60-70% methane which is mainly used for cooking purposes. Besides this it can be used for lighting and electricity generation.** **The residue/slurry left after gas evaluation is a good fertilizer.**
Status of Development	**Developed.**
Ecological/ Environmental Impact (if any, specify briefly)	• **No smoke during use of biogas stoves.** • **Reduction in bad smell of raw materials presently use to the biogas plant.** • **Biogas plants save forests and trees.** • **Minimize global warming.** • **Biogas helps to keep the environment hazard free and hygienic.**
Patenting details	**N/A**
Commercialization Status	**Disseminated 22000 biogas plants around 64 districts through two ADP Projects.**
Techno-Economics	**Produced biogas is used for cooking and lighting.** **Biogas plants save expenditures for cooking. It does also reduce the use of LPG.** **Bio-slurry is used as fertilizer, fish feed etc.** **Saves the foreign currency.**
Key words	**Renewable Energy, Biofuel, Biogas, Methane Gas, Bio-fertilizer.**

Improved Cook Stove

Process	**Process of Improved Cook Stove (ICS)**
Area	**Combustion**
Uses	**At household and Commercial Cooking**
Salient Features	**The Improved Cook Stoves are those which save more fuel and comfort in cooking than those traditional one. The improvement was made by proper dimensioning of combustion chamber to provide maximum heat transfer to the utensils. Several types of ICS were developed, like with chimney, without chimney, single mouth, double mouth etc. They can save 50-65% of fuel compared to traditional one, reduce CO_2 emission, save cooking and keep kitchen clean.**
Scale of Development	**The Process is standardized for both household and commercial use.**
Major Raw Materials	**Clay, MS Grate , Chimney made of cement, Bamboo strips etc.**
Major Plant Equipment/Machineries	**No special equipment is needed.**
Details of Specific Application	**It can be used for household cooking and also for commercial use.**
Status of Development	**Development of several types of stove was done. Need based development services are going on.**
Ecological/ Environmental Impact (If any, specify briefly)	**More than 90% people of Bangladesh live in Village and use wood, cow dung, straw, leaves etc. as fuel for cooking. This is causing rapid deforestation here. As ICS can save fuel up to 65%, It helps to protect deforestation and reduce CO_2 emission.**
Patenting Details	**Not patented**
Commercialization Status	**Not yet commercialized. Portable ICS can be commercialized**
Techno-Economics	**Available on demand**
Keywords	**Fuel savings, Environment friendly.**

LED based energy saving lamp

Process	**Process of LED based energy saving lamp of AC power source**
Area	**Energy saving lamp**
Uses	**Lighting of House, Office, Street and Industries for power savings**
Salient Features	**Light Emitting Diode (LED) emits light producing less amount of waste heat. Incandescent lamp emits only 5% light energy whereas LED emits more than 40% of supply energy. It consumes power at a very low amount but its energy transfer ratio is very high compared to any other lighting system. Developed AC based LED lamp produces almost same amount of light consuming less than one tenth of AC power that consumes by a conventional incandescent lamp. Its life Time is about 50,000 hrs, whereas for incandescent lamp it is 1,000 hrs and compact fluorescent lamp (CFL) it is 8,000 hrs.**
Scale of Development	**The Process is standardized at bench scale.**
Major Raw Materials	**Power LED, Heat sink, SMPS Circuit etc.**
Major Plant Equipment/Machineries	**PCB making system, Soldering Machine, Drill Machine, Power Meter, Multimeter Etc.**
Details of Specific Application	**It can be used for lighting of House, Office, Street and Industries to save up to 90% electricity compared to a conventional incandescent lamp.**
Status of Development	**Design and Development of the LED based energy saving lamp is completed.**
Ecological/ Environmental Impact (If any, specify briefly)	**LED lamps contain no toxic elements. Most offices currently use fluorescent strip lights which contain noxious chemicals such as mercury. LED lamp helps to protect the environment from further toxic waste. Less energy use reduces the demand from power plants and decreases greenhouse gas emissions. Its life time is very long. A longer life span means lower carbon emissions.**
Patenting Details	**Applied for patent**
Commercialization Status	**Ready for Commercialization**
Techno-Economics	**Available on demand**
Keywords	**LED lamp, Energy savings, Environment friendly**

Machine Oil

Process	**Production of lubricating oil (machine oil) for power loom industries in Bangladesh.**
Area	**Used in machinery for lubrication purpose.**
Salient Features	**Machine oil is lubrication oil which used to reduce friction between the moving parts of machine. It has high boiling range (240°C – 360°C), high flash point (150°C), high viscosity, high thermal stability and resistant to corrosion of machine parts in power loom.**
Scale of Development	**The process is developed in lab scale.**
Major Raw Materials	**Base oil, additive, color.**
Major Plant Equipment/ Machinery	**Mechanical stirrer, mixing vessel, centrifuge machine, vacuum pump**
Details of specific application	**The product is applicable in lubrication purpose in machinery in power loom industry.**
Status of Development	**The machine oil has been developed and commercialized.**
Ecological/ Environmental Impact (if any, specify briefly)	**No harmful impact on environment.**
Patenting details	**Not applicable**
Commercialization Status	**Lease out**
Techno-Economics	**The process will help to set up lubricating oil industries in Bangladesh. It will reduce import cost of lubricating oil and thus will save foreign currency. It will also create new employment opportunity.**
Key words	**Lubricating oil, corrosion, thermal stability, viscosity.**

Solar Oven

Process	**Solar Oven**
Area	**Solar Thermal Appliances**
Uses	**It can be used for cooking and warming foods using sunlight**
Salient Features	**Only heat of sunlight is used to cook food in solar oven, no electricity or other fossil fuel is needed. It takes 2.5 to 3 hrs to cook various types of food at a time. During this cooking time no need to stay near the oven. It saves labor-time to cook. Cooked foods are highly hygienic. There is no danger of burning food and flavors remain intact.**
Scale of Development	**The Process is standardized at bench scale.**
Major Raw Materials	**Aluminum Sheet, Glass wool, Plastic board, Glass etc.**
Major Plant Equipment/Machineries	**Tin cutter, Glass cutter, Rivet gun. Drill machine, Press machine, Etc.**
Details of Specific Application	**It can be used to cook food with heat from sunlight instead of gas or electricity.**
Status of Development	**Design and Development of Solar Oven is completed.**
Ecological/ Environmental Impact (If any, specify briefly)	**Solar oven is eco-friendly. By using this, dependency on gas or electricity can minimized. It can also help to maintain better air quality indoors, reduce carbon monoxide emissions, keep cooler temperatures indoors and reduce deforestation by minimize the need for solid fuel.**
Patenting Details	**Not patented**
Commercialization Status	**Ready for Commercialization**
Techno-Economics	**Available on demand**
Keywords	**Solar cooking, Renewable energy, Environment friendly**