

SPECTRA INDUSTRIES HOLDINGS (PVT) LTD



**SPECTRA BIO MASS
HOT WATER HEATER**



Spectra Industries Holdings (Pvt) Ltd

- ▶ Spectra Industries Holdings (Pvt) Ltd was founded in 1983 as a primary level power tool manufacturer and distributor and has created its own designation in manufacturing and selling Agricultural & Industrial products



Embracing Sustainable Practices



THE CARBON FOOTPRINT



CARBON FOOTPRINT

- It's a mark you leave on the environment from every action that releases carbon. (burning of fossil fuels)
- Key environmental concerns in the hospitality industry is the carbon footprint generated by hotels
- Emissions occur primarily from energy consumption, including electricity, heating, and cooling systems.
- By adopting renewable energy sources like bio mass, solar and wind power, hotels can significantly reduce their carbon footprint and contribute to a more sustainable energy future.

Sustainable Energy in Sri Lanka

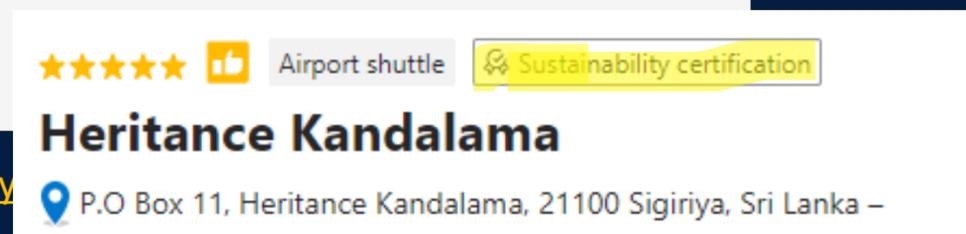
- The policy aims to lower Sri Lanka's reliance on fossil fuels and decrease overall energy usage by 20% compared to 2015 levels by the year 2030.
- This policy will help Sri Lanka achieve its goal of shifting away from fossil fuels and towards renewable energy sources by 2050.

Source : <https://www.energy.gov.lk/images/resources/downloads/national-energy-policy-2019-en.pdf>
The Gazette of the Democratic Socialist Republic of Sri Lanka

Booking.com's 2021 Sustainable Travel Report

- *83% of global travelers think sustainable travel is vital, with 61% saying the pandemic has made them want to travel more sustainably in the future*
- *To help boost the visibility of more sustainable stay options, Booking.com is now showing third-party sustainability certifications and details on a range of 30+ impactful practices in place at hundreds of thousands of properties around the world*

Source : <https://news.booking.com/bookingcoms-2021-sustainable-travel-report-affirms-potential-watershed-moment-for-industry>



★★★★★  Airport shuttle  Sustainability certification

Heritance Kandalama

 P.O Box 11, Heritance Kandalama, 21100 Sigiriya, Sri Lanka –

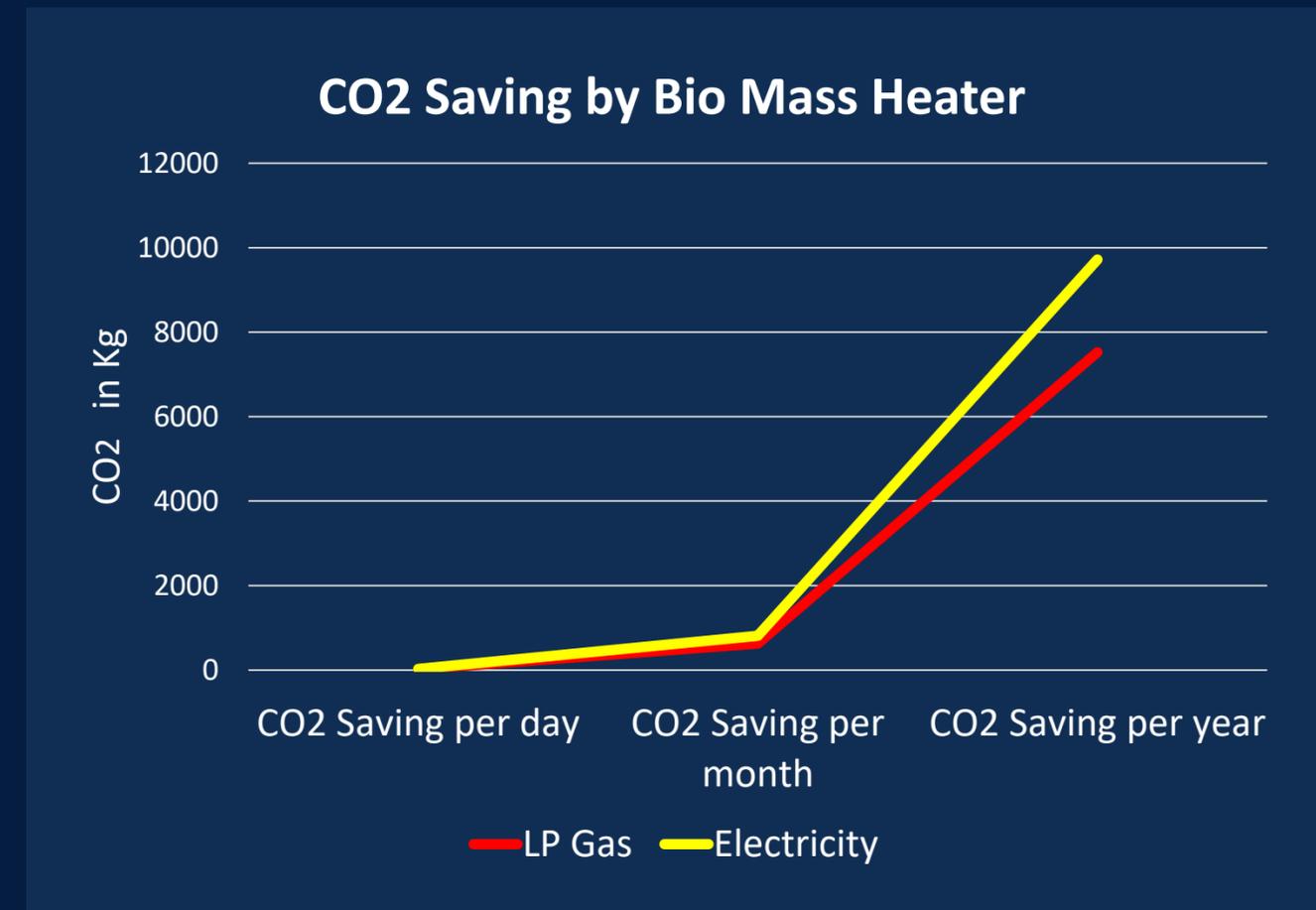
Carbon Dioxide Reduction from Spectra Bio-Mass Water Heater

- As per the data provided by the Sri Lanka Climate Fund, Carbon Dioxide saved from Spectra Bio-Mass Water Heater when using it as an alternative to Gas and Electricity is given below.
- The below calculation is for heating 70 liters of water from 27°C to 100°C

Previous Energy source	CO ₂ Reduction per 70 liters
Gas	2.09 kg
Electricity	2.7 kg

- This estimation is based on the assumption of using 700 liters of water daily

Previous Energy source	CO ₂ Saving per day	CO ₂ Saving per month	CO ₂ Reduction per year
Gas	20.9 kg	627 kg	7524 kg
Electricity	27 kg	810 kg	9720 kg



Bio-Mass Hot Water Heater



Bio-Mass Hot Water Heater

Product Specification

- 100% Sri Lankan Pride Innovation
- Patented Product
- Environment Friendly Product
- Improve the efficiency Firewood
- Food grade water chamber
- User friendly
- Minimum Maintenance
- Safe product
- High Durability Product

Product Performance

- For Batch and Continuous operation
- 50 liters of Hot water(100⁰C) within 20 min from 2 Kg firewood
- Temperature Controlling facility
- Easy to Firing
- Long-life Stainless-Steel Body
- Package type module easy to handling



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Comparison with Traditional Heating Fuel

(To boil 70 liters of 27°C water upto 100°C)

				
Efficiency	>95%	>65%	< 10%	>58%
Safety Risk	Moderate	High	Low	Very Low
Environment Effect	High	High	Moderate	Low
Relative Fuel consumption	6.3 kWh	0.7Kg	15kg	2.5 kg
Cost Rs/=	113/-	140/-	150/-	25/-

Unit cost of electricity - LKR. 18.00
 Cost of 1kg of LPG - LKR.200.00
 Cost of 1kg firewood - LKR. 10.00

(ශ්‍රී ලංකා සුනිත්‍ය බලශක්ති අධිකාරිය - 2013)

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Bio-Mass That Can Be Used



(Small Pieces of Firewood)



(Coconut Shells)



(Briquette)



ജന്മമരണം മുൻപായിട്ട് സൂര്യൻ

Where the product can be used

- Tea Shops
- Hotels / rest houses
- Religious places
- Catering Services
- Elderly Homes and Childcare
- Hospitals & Ayurveda Hospitals
- Police Training Schools (PTS)
- Police Stations
- Laundry
- Funeral Parlors
- Garment Factories
- Pools
- Hostels
- Military Forces Camps
- Homestays

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മുൻ മരണമുൻപായിട്ട് സൂര്യൻ



ജന്മമരണം മുൻപായിട്ട് സൂര്യൻ

Product Models



അന്യർക്കൾക്ക് ദുരിതംകൊണ്ട് പരിഹാരം



**Bio - Mass fired
Water heater**



**Bio - Mass Hot Water
Catering System**



**Bio - Mass Hot Water
Bathing System**

Bio - Mass Fried Water heater



ଆନ୍ତର୍ଜାତୀୟ ଓ ଲୋକାଦିଆ ସମାଜ

Used for - Making tea and getting hot water

- Capacity - **50** Liters
- Amount of hot water that can be taken within an hour - **150** Liters
- Firewood needed for heating 50 liters of hot water upto 100⁰C - **2kg**
- Time taken to heat 50 liters of water to 100⁰C - **20** Minutes
- Made with stainless steel



Bio - Mass Hot Water Catering System



ଆନ୍ତର୍ଜାତୀୟ ଓ ଲୋକାଦିଆ ସମାଜ

Used for - Mega kitchen/Catering and laundries

- Capacity - **350 liters**
- Amount of firewood needed to heat 300 liters of water to 90°C - **10 Kg**
- Time taken to boil 300 liters of water upto 90°C - **60 minutes**
- Heated water of 90°C will automatically flow to the storage tank
- There is a water level indicator in the storage tank to check the water level in the storage tank
- There is a thermometer to measure the temperature.
- A pressure pump is used for carrying hot water across long distances.
- Made with stainless steel



Bio - Mass Bathing System



ଆନ୍ତର୍ଜାତୀୟ ବିଦ୍ୟୁତ୍ ଉତ୍ପାଦନ କର୍ମସଂସ୍ଥା

Used for - Hot water for bathrooms

- Capacity - **350 liters**
- Amount of firewood needed to heat 300 liters of water to 70⁰C - **8 Kg**
- Time taken to boil 300 liters of water upto 70⁰C - **45 minutes**
- Hot water generated by this system can be used for 10 bathrooms.
- There is a water level indicator in the storage tank to check the water level in the storage tank
- There is a thermometer to measure the temperature
- Two pressure pumps are used for carrying hot water across long distances.
- Made with stainless steel



Case Studies



1. Teaching Hospital - Kurunegala

Before



Rs. 183,155/= Per month

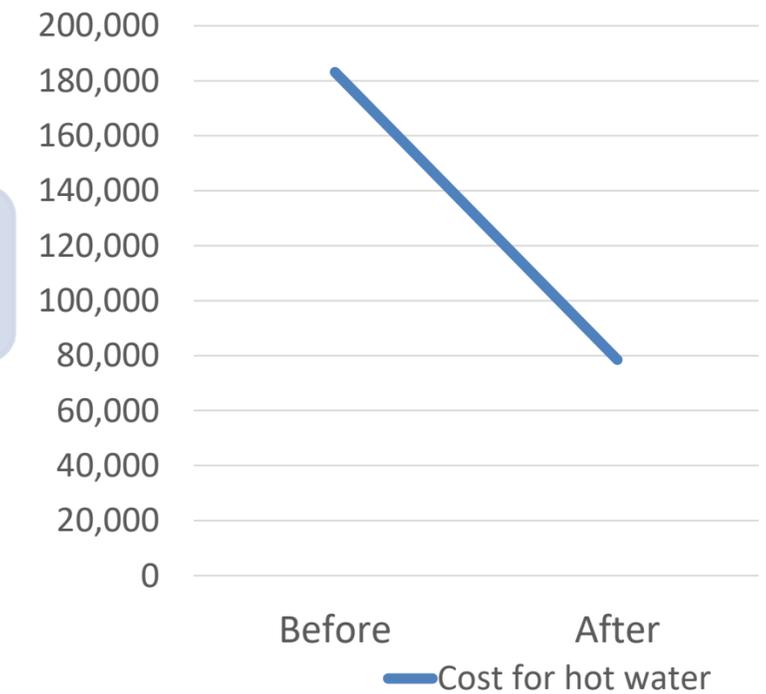
Now



Rs. 78,495/= Per month

Pay Back – 35 days
Monthly Saving 104,660 /=

Cost for hot water



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2. Colombo South Teaching Hospital - Kalubowila

Before



Rs. 802,575/= Per month

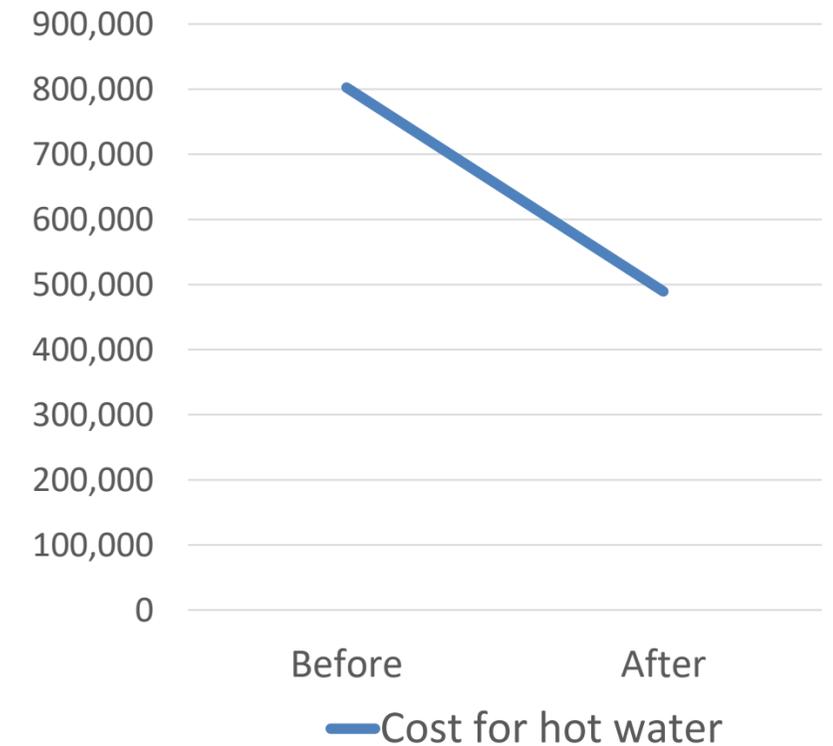
Now



Rs. 489,375/= Per month

Pay Back – 2 Months
Monthly Saving Rs. 313,200 /=-

Cost for hot water



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3. Kandy General Hospital

Before



RS.188,000/= Per month

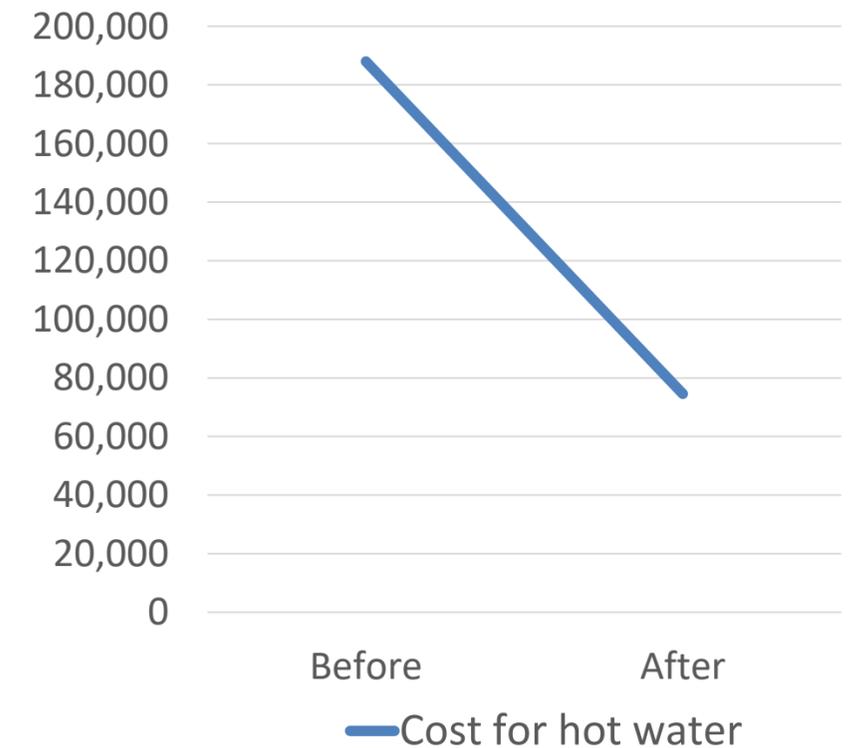
Now



Rs. 74, 550/= Per month

Pay Back – 4 months
Monthly Saving Rs. 113,450/=

Cost for hot water



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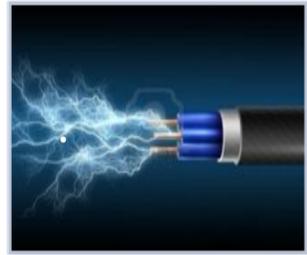
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Before



No	Name of Institute	Model of the water heater	Cost before (Per month)	Cost after installation (Per month)	Savings	Payback Period
1	Colombo South Teaching Hospital, Kalubowila	Catering system	Rs. 802,575	Rs. 489,375	Rs. 313,200	2 Months
2	Kandy General Hospital	Catering system	RS.188,000	Rs. 74, 550	Rs. 113,450	4 Months
3	Teaching hospital Kurunegala	Catering system	Rs. 183,155	Rs. 78,495	Rs. 104,660	35 Days

Now



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Successful Implementations



This product has been Selected for the Bio Mass Project in Sri Lanka, Implemented by Following Organizations



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Colombo Dockyard PLC



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සායනිකව මිලින සලසුණ

General Hospital (Teaching) Kandy



Colombo South Teaching Hospital - Kalubowila



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Sri Dalada Maligawa - Kandy



Police Station - Diyathalawa



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Boralanda Police Training School



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Srimali Grand Meridian Hotel Narammala



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Mahamewnawa - Kurunegala



Provincial General Hospital Badulla



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Certificates obtained for Bio - Mass Hot Water Heater



Performance Report

- 1. Client - Spectra Industries Lanka (Pvt) Ltd.
- 2. Address - Maspotha, Kurunegala
- 3. Contact Details - 0718578323 / 0777582731
- 4. Background

Spectra Industries, Maspotha Kurunegala has developed a biomass fired hot water generator at no pressure for small scale applications such as restaurants, hospitals etc. A boiler performance test has been carried out on 16th June 2018 on request of Spectra Industries and the results are given below.

5. Results

5.1. Types of biomass used

Mixed Firewood	-	25%
Moisture content	-	
Size	-	
Diameter	-	3 to 4 inch
Length	-	4 to 6 inch

5.2. Test Results

Amount of water heated	-	56 Liters
Biomass use for heating the above amount	-	1.9 kg
Initial temperature of the water	-	26 °C
Final temperature of the heated water	-	100 °C
Heating time	-	15 Minutes

5.3. Performance Evaluation

Energy content in the firewood	-	26.4 MJ
Energy use for water heating	-	17.4 MJ
Thermal efficiency of the water heater	-	66%
Power of the water heater	-	19 kW


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 Accredited Consultant to Sri Lanka Sustainable Energy Authority
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NATIONAL INNOVATION FORUM ON BIOMASS ENERGY

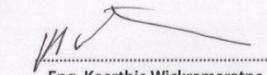
This is to certify that
Spectra Hot Water Boiler

invented by
W.M. Wimalaweera

was awarded the
1st Place
 of the
Best Innovation of the 'Other Innovations' Category
 at the
Vidulka National Innovation Forum on Biomass Energy 2017




Eng. Ranjith Sepala
 Director General
 Sri Lanka Sustainable Energy Authority


Eng. Keerthie Wickramaratne
 Chairman
 Sri Lanka Sustainable Energy Authority

Date 21/08/2018



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 இலங்கை நிலையற்ற சக்தி ஆளுகாட்சை
 Sri Lanka Sustainable Energy Authority
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 A Statutory Authority of Ministry of Power & Renewable Energy

අපගේ යොමුව: RE/05/05
 6 දෙසැම්බර් 2016

සියළු දෙනාගේ දැනගැනීම පිණිසයි

ස්පෙක්ට්‍රා ජීව ඉන්ධන ජලකාපකය (Biomass fired water heater)

කුරුණෑගල මහකෙලියේ ඇති ස්පෙක්ට්‍රා ඉන්ඩස්ට්‍රිස් ලංකා (පුද්ගලික) සමාගම විසින් නිපදවා ඇති ජලවිකරන, ජීව ඉන්ධන ජල කාපකයේ (Biomass fired water heater) ක්‍රියාකාරීත්වය අප ආයතනයෙන් පරීක්ෂාකර ඇති අතර, එමඟින් පෙට්‍රල්/ඩීසල්/භූමි තෙල් හෝ එල්. ඩී. වායුව භාවිතයට වඩා ලාභදායී සහ පරිසර හිතකාමී ලෙස උණු ජලය ලබාගත හැකි බව තහවුරු වී ඇත.

ශ්‍රී ලංකාව අත්සන් කර ඇති, පැරිස් පාරිසරික ගිවිසුම අනුව, වසර 2030 වන විට භවිතාගාර වායු විමෝචන 20%ක් දක්වා අඩුකර ගැනීමට එකඟවී ඇති අතර එම අරමුණු සාක්ෂාත්කරගැනීම සඳහා පොසිල ඉන්ධන භාවිතය වෙනුවට මෙවැනි ජෛව ඉන්ධන භාවිතාකරන උපකරණ ප්‍රවර්ධනය කළ යුතු වී ඇත.

දැනට මෙම උපකරණය, රෝහල්, ළමා නිවාස, ආපන ශාලා, ලැබුම් හල් ආදී ස්ථාන රැසක භාවිතාවන අතර, බොහෝ ස්ථානවල මුළුතැන්ගෙයින් ඉවත්කරන පොල් කටු, ගෙවත්තෙන් ලබාගන්නා දර භාවිතාකිරීම හේතුවෙන්, ඉන්ධන සඳහා අමතර වියදමක් වැයවෙතැයි කවදා පරිසරය පරිමුඛ කරගැනීමටද මෙය පිරිවහලක් වේ.

මෙවැනි පරිසර හිතකාමී, පුනර්ජනනීය බලශක්ති භාවිතයෙන් ක්‍රියාකරන උපකරණයක් නිෂ්පාදනයකර වෙළඳපොළට හඳුන්වාදීමට කටයුතු කල ස්පෙක්ට්‍රා ඉන්ඩස්ට්‍රිස් ආයතනය ඇගයීමට ලක්කරන අතර මෙම නිෂ්පාදනය වැඩි දියුණු කර ගැනීමට අවශ්‍ය අනුග්‍රහය ලබාදීමට සුදුසු බව නිර්දේශ කරමු.

මෙයට විශ්වාසී


 එම්. එම්. අර් පත්මසිරි
 අධ්‍යක්ෂ ජනරාල්

අංක 05 නැවතෝරියා පලමු මහල, BMICH, බණ්ඩාරවෙල මාර්ග, කොළඹ 07, ශ්‍රී ලංකාව.
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නන්දනගේ ජී ලාංකික සලකුණ