



Fuel from Plastic Waste

through

DEPOLYMERIZATION TECHNOLOGY

 **PYROGREEN**
ENERGY PRIVATE LIMITED



Based in Hyderabad, 14 years of experience in Depolymerization field

Holds patent since 2010

Supply turn-key projects

Can process any kind of Plastic waste that are not recycled

Set up many plants in India since 2013

Exclusive projects for carpet, PUF, e-waste, FRP, Legacy waste and plastics from MSW

Executed 5 , 10 and 20 tpd plants



100% Indian Technology

**Capacity ranges from
5 TPD to 20 TPD and in Multiples**



Patented

**International Quality
& components**

Why Pyrogreen..

- **Unique Catalyst** - which makes it possible to process all kinds of Mixed Plastics, including plastic waste collected from MSW
- **Can process PVC** in any form **without emitting dioxins or furans.**
- Most **Economical and Affordable** technology
- Higher **Return on Investment** & Shorter **Pay Back period**
- **International Standards and Quality**
- Safety Features conforming to **International Norms**
- Emission level as per the EU requirement
- **Oil is of Euro IV Grade Quality**

Why Pyrogreen..

- **Any difficult to Recycle Materials can be processed**
- Carpet Waste which consists of both bitumen and PVC as base
- Thermocole (EPS) & PUF (Poly Urethane Foam) which is voluminous in waste stream
- FRP which has glass fiber and cannot be recycled by any other recycling methods
- Plastics film less than 20 micron thickness which is difficult to recycle
- Multilayer Films, Stickers Labels, Adhesive Tapes or Torn Plastics, Oven Sacks, Carry Bags etc .
- Composite barrier films such as PET +PE, Nylon +PE, PE+PP+PE etc

TYPE OF PLASTIC WASTE THAT WE CAN PROCESS



All kind of mixed Plastics



Polyurethane Foam -PUF



Carpet waste



Bio-mining waste



Adhesive Tapes



Thermocole



Multilayer Films



FRP Windmill Blade



Ion exchange resin



PCB waste

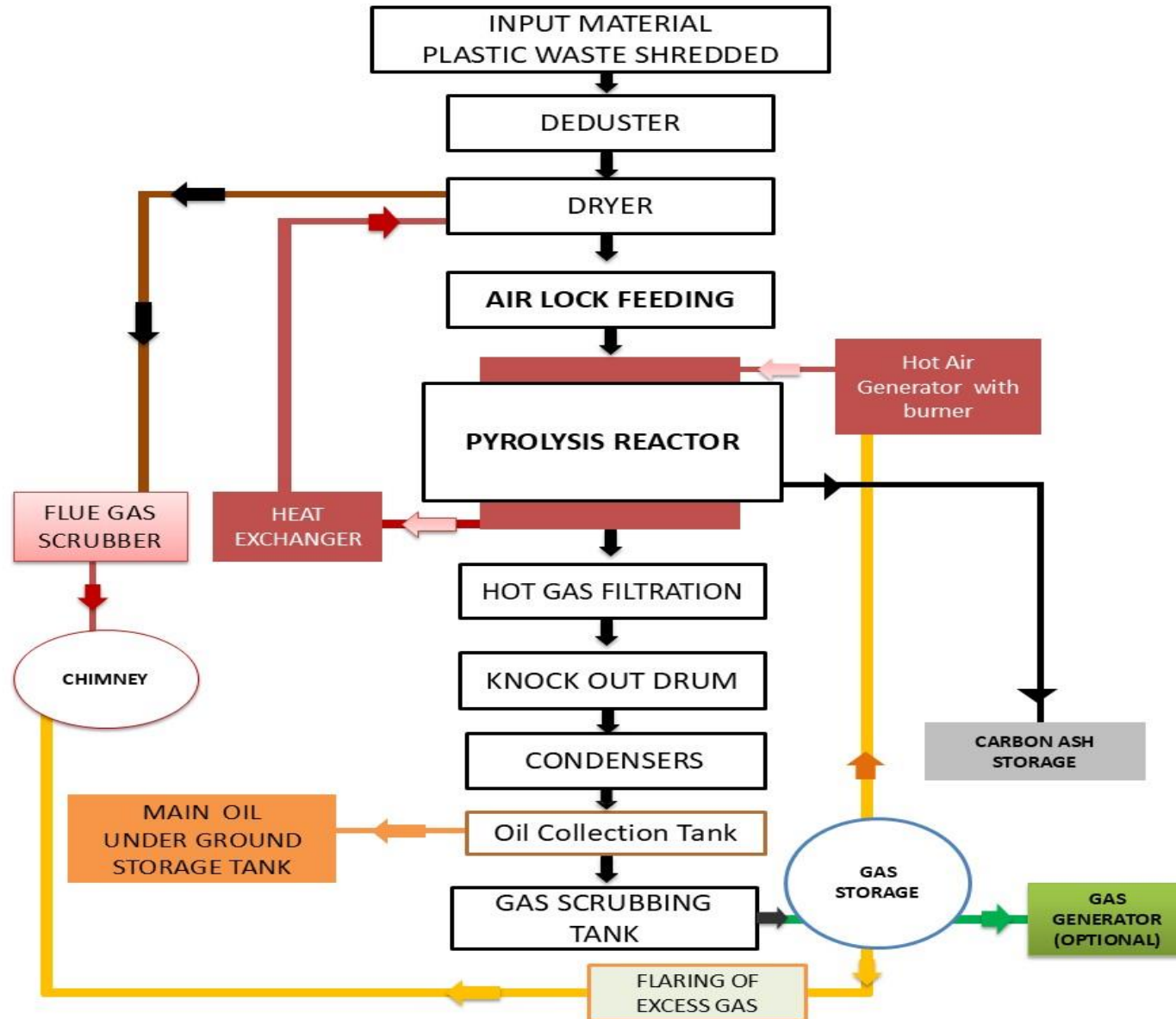


Membrane

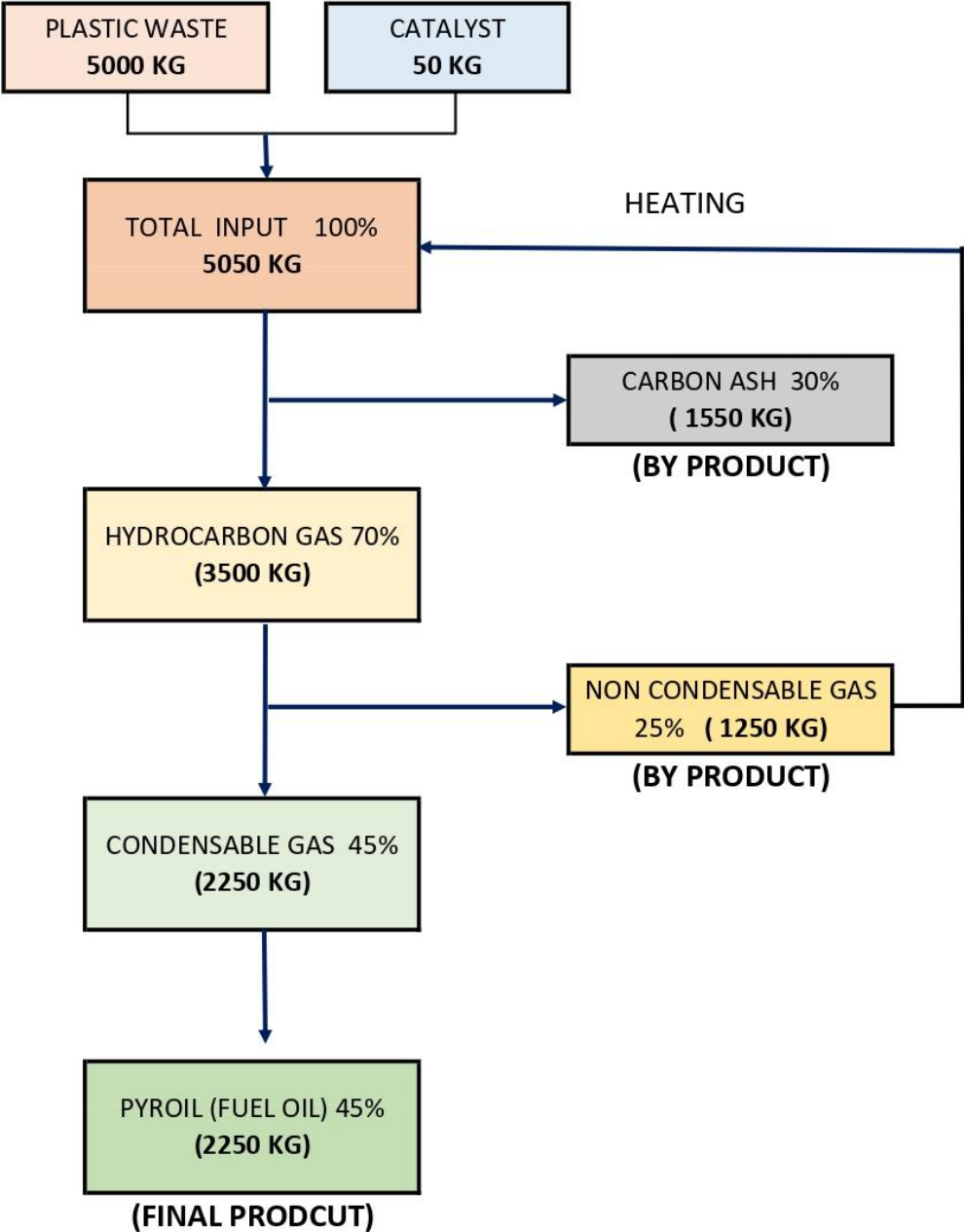


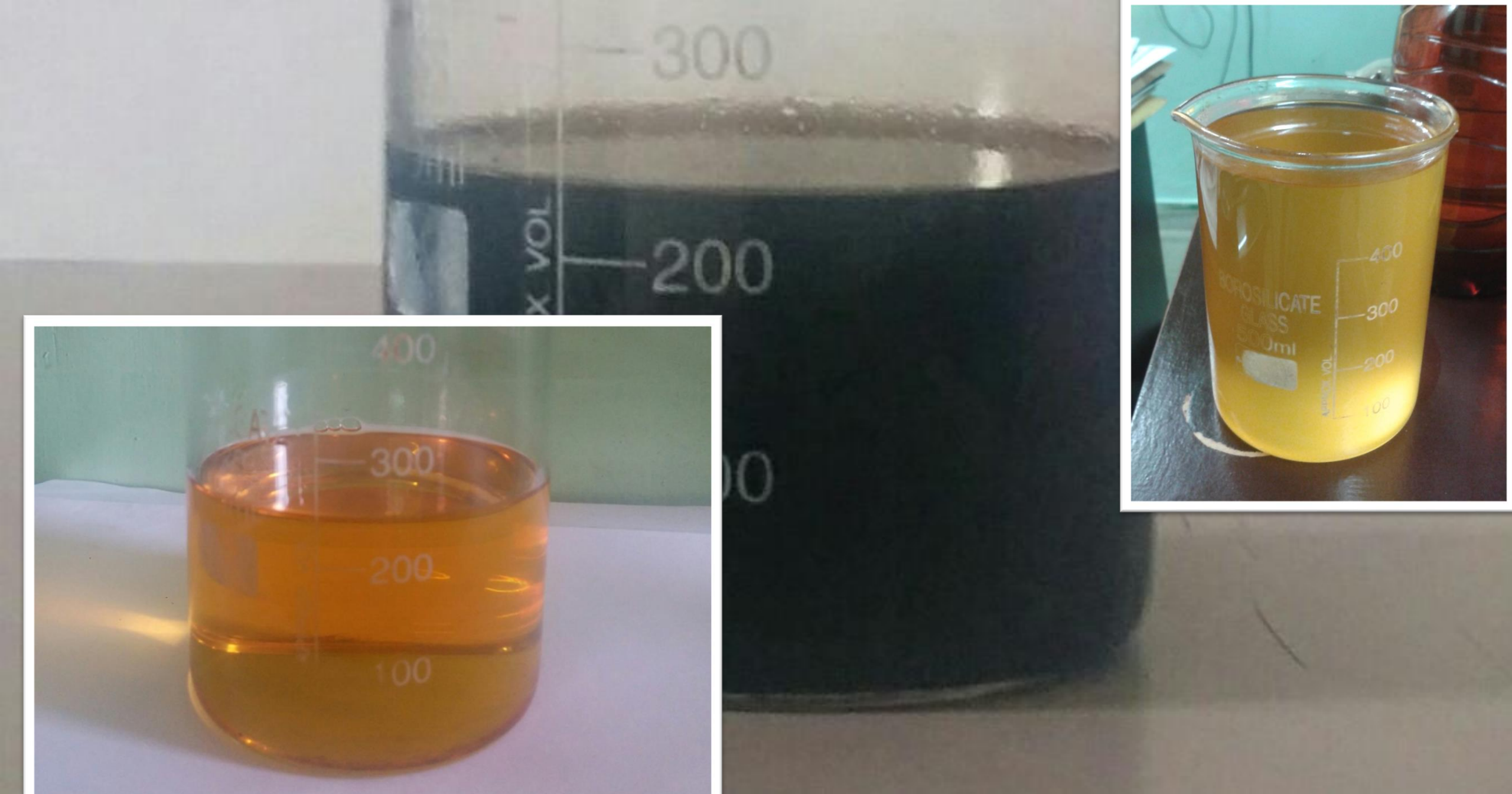
Fibre Reinforced Polymer

FLOW CHART – PLASTIC PYROLYSIS



MASS BALANCE - 5 TPD PLANT







EURO-4

DIESEL

Depolymerized Oil is possible to convert to EURO IV grade with Sulphur level less than 50 ppm.



REFERENCE PLANTS & TYPES



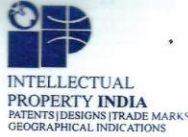
REFERENCE PLANTS & TYPES



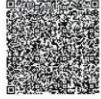
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Sl. No. :



सत्यमेव जयते



INTELLECTUAL
PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS



भारत सरकार
GOVERNMENT OF INDIA
पेटेंट कार्यालय
THE PATENT OFFICE
पेटेंट प्रमाणपत्र
Patent Certificate
(Rule 74 of Patents Rules)

Patent Number : 280292
Application Number : 2341/CHE/2010
Date of Filing : 13/08/2010
Patentee : S. SAMPATH

It is hereby certified that a patent has been granted to the patentee for an invention entitled SYSTEM OF PROVIDING PREHEATING, MULTI-GATE FEEDING WITH CONTINUOUS ASH REMOVAL IN PYROLYSIS PROCESS as disclosed in the above mentioned application for the term of 20 years from the 13 day of AUGUST 2010 in accordance with the provisions of the Patents Act, 1970.

Karthikeyan
Controller of Patents

Date of Grant: 16/02/2017

OKrupla
Controller General of Patents,
Designs & Trademarks

प्रास्य ओ - 2
Form O - 2



सत्यमेव जयते



INTELLECTUAL
PROPERTY INDIA
Patents | Designs | Trademarks
Geographical Indications

क्रमांक
No. 1447021

भारत सरकार
Government of India
व्यापार चिन्ह रजिस्ट्री
Trade Marks Registry
व्यापार चिन्ह अधिनियम, 1999
Trade Marks Act, 1999

व्यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2), नियम 62 (1)
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)

व्यापार चिन्ह संख्या / Trade Mark No. 2164749

दिनांक / Date 23/06/2011

ज. संख्या / J. No. 1551

यह प्रमाणित किया जाता है कि जिस प्रकार चिन्ह की समाकृति इसके साथ संलग्न है, यह
के बारे में दिनांक नाम से रजिस्ट्रीकृत हो चुका है।

Certified that Trade Mark / a representation is annexed hereto, has been registered in the name(s) of:-
PYROGREEN ENERGY PRIVATE LIMITED, 101, Plot No. 12-2-709/IC/207, Padmanabha Nagar, Mehdipatnam Hyderabad - 500028.,
Manufacturers and Traders, (Body Incorporate)

In Class 9 Under No. 2164749 as of the date 23 June 2011 in respect of

Goods and service as annexed

PYROIL-7X

मेरे निर्देश पर आज के मास के वे दिन को इस पर मुद्रा लगायी गई

Sealed at my direction, this 19th day of January, 2017



व्यापार चिन्ह रजिस्ट्री
Trade Marks Registry MUMBAI

OKrupla

व्यापार चिन्ह रजिस्ट्रार
Registrar of Trademarks

रजिस्ट्रीकरण अर्थात् 10 वर्षों के लिए है और अद्यतन 10 वर्षों की अवधि के लिए और प्रत्येक 10 वर्षों की अवधि के अन्त पर उसे नवीनीकृत किया जा सकता है।

Registration is for 10 years from the date of application and may then be renewed for a period of 10 years and also at the expiration of each period of 10 years.


यह प्रमाणपत्र विधि कार्यवाही में प्रयोग के लिए या विदेश में रजिस्ट्रीकरण अर्थात् नवीनीकरण के लिए नहीं है।

This certificate is not for use in legal proceedings or for obtaining Registration abroad.

टिप्पणी - इस व्यापार चिन्ह के स्वामित्व में कोई परिवर्तन होने पर, या कारोबार के मुख्य स्थान के पते में या भारत में कारोबार के लिए पते में परिवर्तन होने पर परिवर्तन के लिए अर्थात् नवीनीकरण किया जाना चाहिए।

Note: Upon any change of ownership of this Trademark, or change in address, of the principal place of business or address for service in India a request should AT ONCE be made to register the change.

Output Quality


CHENNAI METTEX LAB PRIVATE LIMITED
 Jothi Complex, 83, M.K.N. Road, Guindy, Chennai - 600 032.
 (Approved/Recognized by APEDA, AGMARK, GAFTA, EIC, FSSAI, BIS & MoEF)

E-mail : test@mettestlab.com Phone : 044-22323163, 42179496, 91
 Web : www.mettestlab.com Fax : 044 22311034

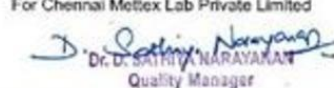
TEST REPORT

Page No. 1 of 1

ISSUED TO : M/s. Sun Global, Chennai.
T.C Date : 15.12.2020
T.C No : CML/20-21/40899
 Sample oil from Pyrogreen, Hyderabad
Date of Receipt : 11.12.2020
Cust. Ref : SRF Dated : 10.12.2020
Commenced on : 13.12.2020
Lab No : 2147110
Completed on : 15.12.2020
Sample Name : Pyrolysis Oil - Plastic.

S. No	Test Parameters	Test Method	Test Result
1	Ash Content, % by mass	IS 1448 Part 4	< 0.01
2	Carbon Residue (Ramsbottom) on 10% residue (on whole sample), % by mass	IS 1448 Part 8	0.24
3	Pour Point, °C	IS 1448 Part 10	(-) 8
4	Copper Strip Corrosion Test @ 100°C for 3 Hours	IS 1448 Part 15	1a, lightly orange and freshly polished strip
5	Flash Point (PMCC), °C	IS 1448 Part 21	77
6	Kinematic Viscosity @ 40°C, cSt	IS 1448 Part 25	2.24
7	Sediments, % by mass	IS 1448 Part 30	< 0.01
8	Density @ 15°C, gm/cc	IS 1448 Part 16	0.811
9	Total Sulphur, % by mass	Using ICP – OES	0.52
10	Water Content, (% by volume)	IS 2362 (by Karl Fisher)	0.12
11	Gross Calorific Value, Kcal/gm	ASTM – D 4809	10915
12	Acidity, inorganic	IS 1448 : Part 2	NIL
13	Asphaltenes (N-Heptane Insolubles), % by weight	ASTM D 6560	0.25
14	Cleanliness spot rating	ASTM D 4740	No.2
15	Distillation Percent V/V Recovered at 350°C, % by weight	IS 1448 Part 16	97
16	Distillation Percent V/V Recovered at 370°C, % by weight		97
17	Total Acidity	IS 1448 Part 8	NIL
18	Total Contamination, mg/kg	EN 12662 : 2014 (E)	114
19	Polycyclic Aromatic Hydrocarbons (PAH), % by weight	IP 346	0.45

End of Report

For Chennai Mettest Lab Private Limited

Dr. D. SATHIYANARAYAN
 Quality Manager



NOTE: Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders will be liable for legal action. Unless otherwise stated the submitted results in this test report refer only to the sample(s) tested and such sample(s) are retained for 15 days only from the completion date of testing. In case of regulatory samples, which will be retained for a specific period as per statutory requirements, while permissible & environmental testing related remnant samples will be discarded consequent upon completion of testing. Samples are not drawn by us unless otherwise stated. This document cannot be reproduced except in full, without prior written approval of the laboratory. This report is for the exclusive use of Chennai Mettest Lab's customer, and is provided in accordance with the agreement between Chennai Mettest Lab and its Customer.

Emissions from Chimney:

STACK EMISSION TEST RESULTS				
NO	TEST	RESULT	CPCB STANDARS	EU Standards
1.	Concentration of particulate matter (Dust)	18.4 mg/Nm³	115mg/Nm ³	10 mg/Nm ³
2.	Sulphur Dioxide (SO ₂)	31.1 mg/Nm³	80 mg/Nm ³	50 mg/Nm ³
3.	Oxides of Nitrogen (NOX)	42.6 mg/Nm³	120 mg/Nm ³	200 mg/Nm ³
4.	Carbon Dioxide (CO ₂)	0.15%	0.13%	-Not available-
5.	Carbon Monoxide (CO)	2.7 mg/nM³	3.5mg/Nm ³	50 mg/Nm ³

Approvals from Tamil Nadu Pollution Control Board

By Registered Post with Ack. Due
(This document contains 5 Pages)

TAMILNADU POLLUTION CONTROL BOARD

CONSENT ORDER No.4695 DATED 19.11.2008

Proceedings No.T12/TNPCB/F-28617/RS/KPM/W/08 Dated 19.11.2008

Sub: TNPC Board - Consent for Establishment - M/s. SAMKI TECH RESOURCES, S.No.208/1, Pukkathurai Village, Madhuranthagam Taluk, Kancheepuram District - for the establishment or take steps to establish the industry under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974, as amended in 1988 (Central Act 53 of 1988).

Ref: 1. Your Application No.1331 dated 12.08.2008.
2. DEE I.R. No.F-KPM2578/OL/DEE/KPM/08 dated 12.08.2008.
3. CCC meeting dated 03.10.2008.
4. Unit's letter dated 14.11.2008.

Consent to establish or take steps to establish is hereby granted under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974, as amended in 1988 (Central Act 53 of 1988) (hereinafter referred to as 'The Act') and the Rules and Orders made there under to

The Authorized Signatory,
M/s. Samki Tech Resources,

(hereinafter referred to as 'The Applicant') authorizing him/her/them to establish or take steps to establish the industry in the site mentioned below:



S.F. No. 208/1, Pukkathurai Village,
Madhuranthagam Taluk,
Kancheepuram District.

POLLUTION PREVENTION PAYS
அகம் தர்ப்பணம் வாய்ப்பணக்கு! புறம் தர்ப்பணம் வாய்ப்பணக்கு!

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(This document contains 11 Pages)

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Jan. 22, 2009 12:31PM P2

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TAMILNADU POLLUTION CONTROL BOARD

CONSENT ORDER No.17737 DATED:20.1.2009.

Proceedings No.T12/ TNPCB/ Misc./F-28617/KPM-SPR/RS/ A/08/ dated:20.1.2009.

Consent for New operation of the plant under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended.

Sub: TAMIL NADU POLLUTION CONTROL BOARD - CONSENT - M/s. Samki Tech Resources, S.No. 208/1, Pukkathurai Village, Madhuranthagam Taluk, Kancheepuram District - for the New operation of the plant under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended.

Ref: 1. Your Application No: 4930 Dated:12.08.2008.
2. I.R. No. DEE/TNPCB/SPR/RS/1029/dt.29.12.2008.
3. Unit's letter dated 5.12.0208.



Consent is hereby granted under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended. (Central Act, 14 of 1981) as amended (hereinafter referred to as 'The Act') and the rules and orders made there under to

The Authorized Signatory,
M/s. Samki Tech Resources,
S.No. 208/1, Pukkathurai Village,
Madhuranthagam Taluk,
Kancheepuram District.

(hereinafter referred to as 'The Applicant') authorizing him to operate his industrial plant in the Air Pollution Control Area as notified by the Government and to make new of emission from the stacks/ chimneys.

POLLUTION PREVENTION PAYS
அகம் தர்ப்பணம் வாய்ப்பணக்கு! புறம் தர்ப்பணம் வாய்ப்பணக்கு!

By Registered Post with Acknowledgement Due
(This document contains 2 Pages)

TAMILNADU POLLUTION CONTROL BOARD

RENEWAL OF CONSENT ORDER NO. : 21699 Dated: 23-07-2009

Proceedings No. : F. SPR1029/RS/DEE/TNPCB/SPR/W/2009 dated:23.07.2009

Consent for Existing/New or Altered outlet/discharge of sewage and/or trade effluents under Section 25 of the Water (Prevention and Control of Pollution) Act 1974, as amended (central Act 6 of 1974).

Sub: TAMIL NADU POLLUTION CONTROL BOARD- RENEWAL OF CONSENT - M/s Samki tech Resources, S.F. No. 208-1, Pukadurai Village, Maduranthagam Taluk, Kancheepuram District - Discharge of sewage and / or trade effluent under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 (Central Act. 6 of 1974)

Ref: 1. Proc. No. T12/TNPCB/Misc/F-2861/KPM-SPR/RS/W/08/dt. 20.01.2009
2. I.R. No. : F.SPR1029/ RS/DEE/ SPR/2009 dated 03.06.2009
3. T/o. Procs. No. F.SPR1029/RS/DEE/TNPCB/SPR/A/2009, dt. 12.06.2009
4. Unit's reply dt. 26.06.2009
5. Personal Hearing conducted on 13.07.2009

Consent is hereby granted under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 (Central Act 6 of 1974) (herein after referred to as "The Act") and the rules and orders made there under to

The Authorized Signatory
M/s Samki Tech Resources
S.F. No. 208-1
Pukadurai Village
Maduranthagam Taluk
Kancheepuram District

(herein after referred to as ("The Applicant") authorizing him to make/continue to make discharge or use existing or bring into use altered outlet for discharge of sewage and/ or trade effluent.

This is subject to the provisions of the Act and the rules and order made there under and further subject to the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued in this office Proceedings cited above and subject to the following conditions.

POLLUTION PREVENTION PAYS
அகம் தர்ப்பணம் வாய்ப்பணக்கு! புறம் தர்ப்பணம் வாய்ப்பணக்கு!

Approvals from AP & Telangana Pollution Control Board



ANDHRA PRADESH POLLUTION CONTROL BOARD
25-35/11, Tulasi Reddy Complex, 2nd Floor, Opp. Govt. ITI College,
Zonal Office, R.C.Puram, Medak Dist - 502 032
Ph.No. 08455280477, Fax: 08455-280377

REGISTERED POST WITH ACK DUE
CONSENT ORDER FOR ESTABLISHMENT

Order No. PASHA-163/PCB/ZO/RCP/CFE/2011-

Date: 07.09.2011

Sub:- PCB - CFE - M/s. Pyrogreen Energy Pvt. Ltd., IDA, Pashamylaram(V), Patancheru (M), Medak District.- Consent for Establishment of the Board under Sec. 25 of Water (P&C of P) Act, 1974 and Under Sec. 21 of Air (P&C of P) Act, 1981- Issued - Reg.

Ref:- 1. Industry's CFE application received through GM, DIC, Sangareddy on 02.07.2011 & clarification submitted by the industry on 19.07.11 & 04.08.2011 at APPCB, RO, Sangareddy
2. APPCB, R/o Sangareddy verification report dt: 16.08.2011 and received on 30.08.2011.
3. CFE Committee meeting held on 06.09.2011 at APPCB, Zonal Office, R.C.Puram.

I. In the reference 1st cited, an application was submitted to the Board seeking Consent for Establishment (CFE) to set-up a unit to produce fuel oil with installed capacities as below, with a project cost of Rs.2.56 Cr (Rupees Two Crores and Fifty six Lakhs only).

Proposed Product	Capacity
Fuel Oil	6 TPD
Carbon Black	1 TPD

II. As per the application, the industry is proposed to be located at IDA, Pashamylaram(V), Patancheru (M), Medak District.

IV. The above site was inspected by Environmental Engineer & Asst. Environmental Engineer-III, Regional Office, A.P. Pollution Control Board, Sangareddy on 19.07.2011 and found that the industry is surrounded by **East** : Vacant plots ; **West** : Vacant plots **North** : Vacant plots **South**: Road.

IV. The Board, after careful scrutiny of the application, verification report of Regional Officer, Sangareddy recommendation by the CFE Clearance Committee meeting held on 06.09.2011 at APPCB, Zonal Office, R.C.Puram, hereby issues CONSENT FOR ESTABLISHMENT to the industry, under Section 25 of Water (Prevention and Control of Pollution) Act, 1974 and under Section 21 of Air (Prevention and Control of Pollution) Act, 1981 and the rules made there under. This Order is issued to manufacture the products mentioned at para (I) only.

V. This CFE is issued from pollution control point of view only. Zoning and other regulations are not considered.

VI. The CFE now issued is subject to the conditions mentioned in Schedule 'A' and 'B'.

Encl: Schedule 'A' & Schedule 'B'

To
M/s. Pyrogreen Energy Pvt. Ltd.,
IDA, Pashamylaram(V),
Patancheru (M), Medak District.
E_mail: pyrogreen@gmail.com

JOINT CHIEF ENVIRONMENTAL ENGINEER (FAC)



ANDHRA PRADESH POLLUTION CONTROL BOARD
25-35/11, Tulasi Reddy Complex,
2nd Floor, Opp. Govt. ITI College,
Zonal Office, R.C.Puram, Medak Dist - 502 032.

Phone : 08455 280477
Fax : 08455 280377
Grams : Kalusya Nivarana
Website : www.appcb.ap.nic.in

CONSENT & HWA ORDER

BY REGISTERED POST WITH ACKNOWLEDGEMENT DUE

Consent Order No : APPCB/ZO/RCP/PASHA/163/W&A/2013- Date: 13.05.2013

(Consent Order for Existing/New or altered discharge of sewage and/or trade effluents/outlet under Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and amendments thereof; Operation of the plant under section 21 of Air (Prevention & Control of Pollution) Act 1981 and amendments thereof and Authorization / Renewal of Authorization under Rule 5 of the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008.

CONSENT is hereby granted under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974, under section 21 of Air (Prevention & Control of Pollution) Act 1981 and Authorization under Rule 5 of the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 (hereinafter referred to as 'the Acts', 'the Rules') and the rules and orders made thereunder to

To
M/s. Pyrogreen Energy Pvt. Ltd.,
Plot No.115, Phase-III
IDA, Pashamylaram (V),
Patancheru (M),
Medak District-502 307.

(hereinafter referred to as 'the Applicant') authorizing to operate the industrial plant to discharge the effluents from the outlets and the quantity of Emissions per hour from the chimneys as detailed below.

i) Outlets for discharge of effluents:

Outlet No.	Outlet Description	Max Daily Discharge	Point of Disposal	Limiting Standards (mg/lit except pH)
1	Domestic	0.5 KLD	Septic tank followed by soak pit.	---

ii) Emissions from chimneys:

Chimney No.	Description of Chimney	Quantity of Emissions in m ³ /hr. at peak flow
1	Stack attached to Pyrolysis reactor of capacity 500 Ltrs	---
2	Attached to D.G set capacity of 1 X 200 KVA	---



TELANGANA STATE POLLUTION CONTROL BOARD
Zonal Office, 25-35/11, Tulasi Reddy Complex, 2nd Floor,
Opp. Govt. ITI College, R.C.Puram, Medak Dist - 502 032.
Phone : 08455 280477, www.tspcb.cgg.gov.in

CONSENT & AUTHORIZATION ORDER

BY REGISTERED POST WITH ACKNOWLEDGEMENT DUE

Consent Order No : TSPCB/ZO/RCP/PASHA/163/W&A/2016-1261 Date: 27.06.2016

(Consent Order for Existing/New or altered discharge of sewage and/or trade effluents/outlet under Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and amendments thereof; Operation of the plant under section 21 of Air (Prevention & Control of Pollution) Act 1981 and amendments thereof and Authorization / Renewal of Authorization under Rule 6 (2) of the Hazardous & Other Wastes (Management and Transboundary Movement) Rules, 2016.

CONSENT is hereby granted under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974, under section 21 of Air (Prevention & Control of Pollution) Act 1981 and Authorization under Provision of Hazardous & Other Wastes (Management and Transboundary Movement) Rules 2016, (hereinafter referred to as 'the Acts', 'the Rules') and the rules and orders made thereunder to

To
M/s. Pyrogreen Energy Pvt. Ltd.,
IDA, Pashamylaram(V),
Patancheru (M), Medak District.

(hereinafter referred to as 'the Applicant') authorizing to operate the industrial plant to discharge the effluents from the outlets and the quantity of Emissions per hour from the chimneys as detailed below.

i) Outlets for discharge of effluents:

Outlet No.	Outlet Description	Max Daily Discharge	Point of Disposal
1	Domestic	0.5 KLD	Septic tank followed by soak pit.

ii) Emissions from chimneys:

Chimney No.	Description of Chimney	Quantity of Emissions in m ³ /hr. at peak flow
1	Stack attached to Pyrolysis reactor of capacity - 500 Ltrs	---
2	Stack attached to D.G set capacity of 200 KVA	---



ADDRESS

- 304 Sahiti Sri Vidya Petals
- Patrika Nagar, Hitec City
- Hyderabad- 500 081 India

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