EARTH RECYCLE CO., LTD.

Featured Technologies

Corporate Profile
Earth Recycle CO., LTD

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- Tel/Fax: +81-792-76-6275
- URL: http://www.earthrecycle.net/
- Established: April 16, 1997
- Capital: JPY 10,000,000
- President: Takashi Tachibana
- Contact: kengo-y@earthrecycle.net
  Kengo Yamada, Finance Manager

Featured Technologies Offered By Earth Recycle CO., LTD

1. Thermal cracking fuel production from waste plastic (processable with PVC/PVDC/PET/PUR)
2. FTPO (Fruit To Pyrolysis Oil) production from palm / jatropha / waste edible oil
3. Total recycle system with separation of compound raw materials (especially with FRP/Carbon Fiber)

   Applicable to sterilization and recycling treatment of infectious medical waste
4. Quality improvement of through solvent extraction
5. n-paraffin produced through palm/jatropha FTPO process

PATENT RIGHTS OWNED BY ER

ER Patent List

Application#	Description	Note
2009－122751	Fuel production	
2008－335728	Fuel production from waste plastic	
2006－72100	Fuel production from waste disposals	
2001－15174	Pyrolysis process applied to waste plastic	#4768920
11－232106	Pyrolysis process applied to waste plastic	#4485621
PCT／JP2009／066347	FTPO production	* Also applied in Malaysia/Indonesia
2010－129599	Pyrolysis furnace for waste plastic	
2010－180938	Round lateral type pyrolysis furnace	
2010－200526	FTPO production system	
2010－200527	Dispersive FTPO production system	
2004－327047	Separation method of useful substance from compound plastic with PVC/PET and alminium compound film	#4637551
2011－140141	Separation method and such device of compound plastic waste	

Thermal Cracking Fuel Production From Waste Plastic

Advantages of Thermal Cracking Fuel Production from Waste Plastic etc.

Product benefits

- Used as supplementary fuel for heating oil, bunker A, heavy oil, fuel for in-house generator etc. without remodeling of existing facilities
- Mainly PE/PP/PS processed with stable results, but plastic with other commingled extraneous substances can also be processed.
  (PVC/PVDC/PET/PUR/sand/paper/metals/water/seawater etc.)
- Processed even with waste tire with non-plastic materials, waste edible oil, waste lubricant oil, solvent

Cost benefits

- Cost saving of waste disposal process such as simplified or omitted pre-process equipment (compression/packing)
- Simple operation/maintenance, no coking

Other benefits

- Enhance corporate reputation contributing to green environment.
  (No dioxin emission, decrease in volume of landfill, etc.)
- Safety with operation under ordinary pressure

Yield% and Usage of Product Materials

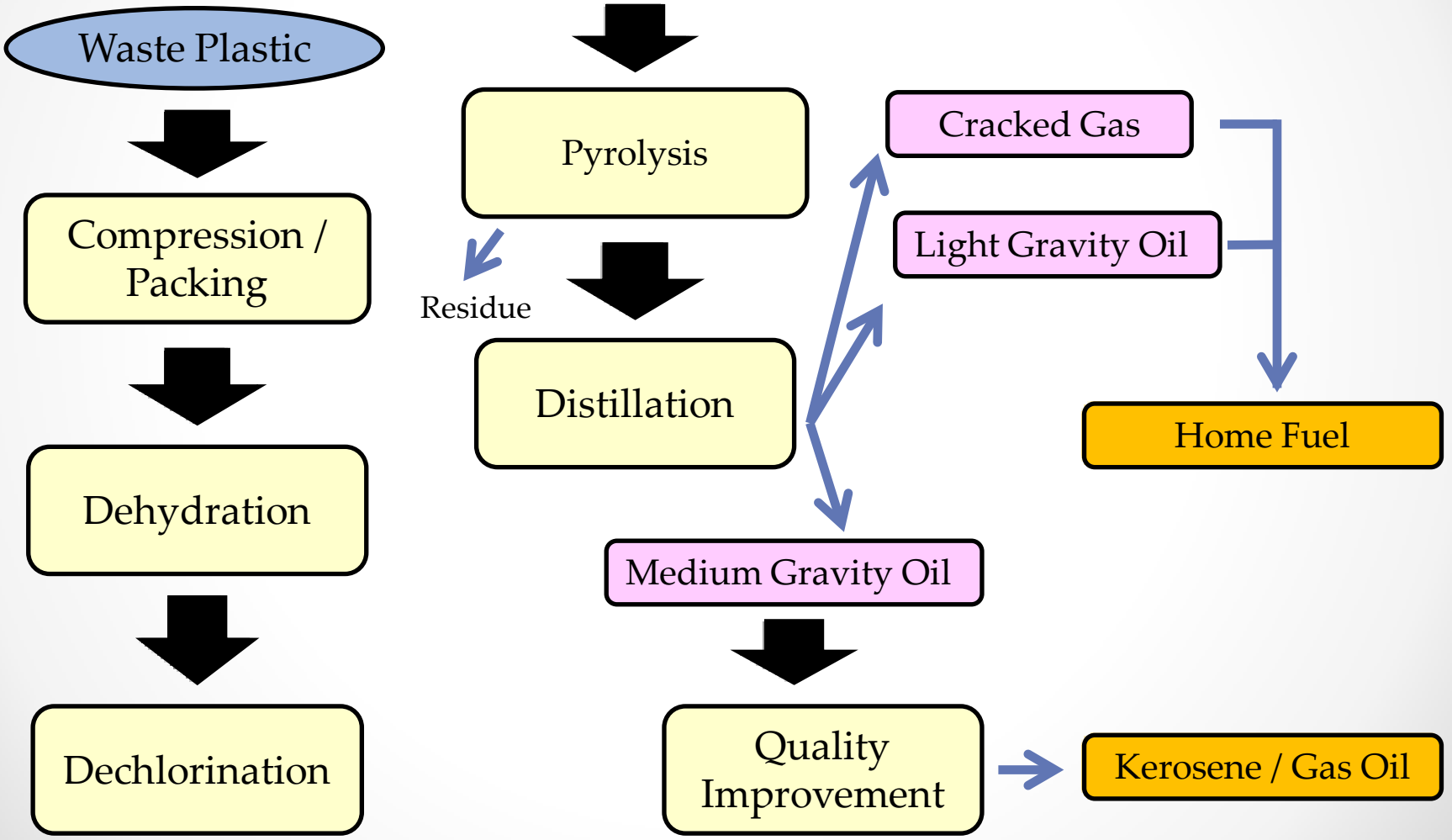
<Thermal Cracking Oil Produced from Waste Plastic>

Product material	Yield (wt%)		Usage
	3P	Household plastic	
Cracked gas	5～15	10～25	Home fuel
Pyrolysis oil	78～85	55～78	Burner fuel
Light grade oil	30～40	20～40	Home fuel
Middle grade oil	40～50	30～40	Burner fuel/Power generator
Heavey oil			Burner fuel
Residue	5～15	15～25	Supplementary fuel/Base course materials

Aspects of Thermal Cracking Oil from Waste Plastic

Aspects of Pyrolysis Oil		<Before Qlty Imp.>	<After Qlty Imp.>
Item	Units	Pyrolysis Oil from House Waste Plastic	Midium Gravity Oil from House Waste Plastic
Density at 15℃	g/cm	0.82	0.86
Viscosity at 30℃	CST	1.5	5.0
Nitrogen	ppm	–	130.0
Sulfur	ppm	–	100.0
Chlorine	ppm	100.0	30.0
Reaction		neutral	neutral
Residual Carbon	%	0.1	0.05
Heat Value	cal/g	10,200	10,300

Overall Flow of Oil Production from Waste Plastic through Thermal Cracking



Waste Plastic Oil Production Plant

Projected Annual Plan

Annual Operation Plan
<Waste Plastic Disposal Plant>

PROJECTED ANNUAL PROFITS in JPY'000	Parameter				
capacity (ton/day)		1	3	6	12
Yearly capacity (ton)	330	330	990	1,980	3,960
Plant cost		50,000	100,000	120,000	220,000
Oil produced (kl)	50%	165	495	990	1,980
Ulitities (kw)		61	182	364	729
Operation Labor (person)		2	2	6	8
Residue volume	7.0%	23	69	139	277
REVENUE					
Process cost per ton	20	6,600	19,800	39,600	79,200
Oil sold per kl	60	9,900	29,700	59,400	118,800
Total revenue		**16,500**	**49,500**	**99,000**	**198,000**
VARIABLE COST					
Utilities per kw	18	1,093	3,280	6,560	13,120
Residue disposal per ton	20	462	1,386	2,772	5,544
Solvent per ton	10	231	693	1,386	2,772
Total variable cost		**1,786**	**5,359**	**10,718**	**21,436**
FIXED COST					
Repair & maintenance	3%	1,500	3,000	3,600	6,600
Labor wage per person	4,000	8,000	8,000	24,000	32,000
Interest	3%	1,500	3,000	3,600	6,600
Depreciation	10	4,500	9,000	10,800	19,800
Tax	1.50%	750	1,500	1,800	3,300
Admi (% of fixed cost)	10%	1,625	2,450	4,380	6,830
Total fixed cost		**17,875**	**26,950**	**48,180**	**75,130**
Total production cost		19,661	32,309	58,898	96,566
Net profit		**(3,161)**	**17,191**	**40,102**	**101,434**
Net Profit %		-19.2%	34.7%	40.5%	51.2%
Payout Period	years		3.8	2.4	1.8

Annual Operation Plan
<Waste Plastic Disposal Plant>

80 JPY/USD

Annual Operating Plan in USD'000	Parameter				
capacity (ton/day)		1	3	6	12
Yearly capacity (ton)	330	330	990	1,980	3,960
Plant cost		625	1,250	1,500	2,750
Oil produced (kl)	50%	165	495	990	1,980
Ulitities (kw)		61	182	364	729
Operation Labor (person)		2	2	6	8
Residue volume	7.0%	23	69	139	277
REVENUE					
Process cost per ton	0.25	83	248	495	990
Oil sold per kl	1	124	371	743	1,485
Total revenue		**206**	**619**	**1,238**	**2,475**
VARIABLE COST					
Utilities per kw	0.23	14	41	82	164
Residue disposal per ton	0.25	6	17	35	69
Solvent per ton	0.13	3	9	17	35
Total variable cost		**22**	**67**	**134**	**268**
		10.8%	10.8%	10.8%	10.8%
FIXED COST					
Repair & maintenance	3%	19	38	45	83
Labor wage per person	50	100	100	300	400
Interest	3%	19	38	45	83
Depreciation	10	56	113	135	248
Tax	1.50%	9	19	23	41
Admi (% of fixed cost)	10%	20	31	55	85
Total fixed cost		**223**	**337**	**602**	**939**
		108.3%	54.4%	48.7%	37.9%
Total production cost		246	404	736	1,207
Net profit		**(40)**	**215**	**501**	**1,268**
		-19.2%	34.7%	40.5%	51.2%
			3.8	2.4	1.8

Bio Diesel Fuel Production Through Pyrolysis Process

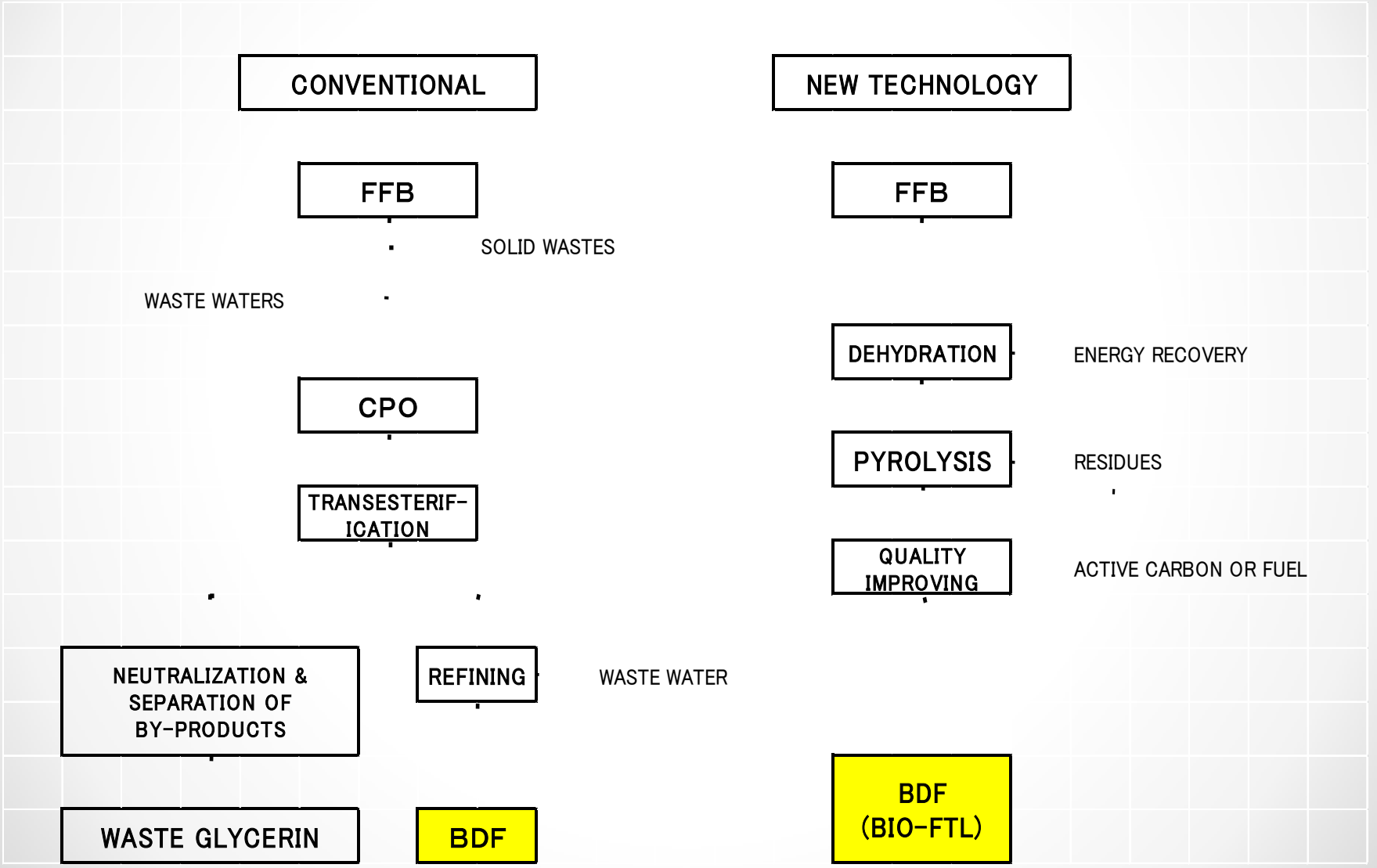
<Palm/Jatropha/Waste Edible Oil>

Advantages of FTPO Process

1. **Direct production without CPO production**
2. **Quality of final product (oil pouring point -17℃)**
3. **Productivity (Rotten fruit used / shells and bunches used for active carbon)**
4. **No wastes**

Adv #1 : Direct Production Without CPO Process

Process Comparison <Conventional vs ER process>



COMPARISON WITH VARIOUS FTPO PRODUCTION PROCESS

	PROCESS	REACTION RATE	REACTION CONDITION	FREE FATTY ACID REMOVAL	FREE FATTY ACID CONVERSION TO FUEL	GLYCERIN CONTAMINATION	CATALYST
1	Methyl Ester	Fast	60℃ at Atmospheric Pressure	Need	Impossible	Yes	Yes
2	Metal Oxidation	Rather Slow	60℃ at Atmospheric Pressure	Need	Impossible	Yes (some)	Yes
3	Immobilized Enzyme	Slow	40℃ at Atmospheric Pressure	Needless	Impossible	Nil	Yes
4	Supercritical Alcohol	Fast	350℃ 43Mpa	Needless	Possible	Nil	
5	Ion-Exchange Resin	Fast	50℃ at Atmospheric Pressure	Needless	Possible	Nil	
6	Hydrogeneration Decomposition	Fast	Hydrogen at High Temperature and High Pressure	Needless	Possible	Nil	Yes
7	GTL Fischer-Tropsch Reaction	Fast	Gasify FT Synthesis	Needless	Possible	Nil	Yes
8	Pyrolysis	Rather Slow	430℃ at Atmospheric Pressure	Needless	Possible	Nil	Yes (inexpensive)

Raw Material Feeding Conditions: In case of No.1 to 7, CPO are fed. In case of No.8, FFB are fed

Adv #2. Quality of Final Product <ER BIO FUEL>

Property Comparison with Other Oil

Items	Unit	ER BIO FUEL	NEXBTL	GTL, ftr	FAME	Gas Oil
Density at 15℃		810	780 ~ 785	770 ~ 785	885	835
Viscosity at 40℃	mm^2/s	2.0	3.0 ~ 3.5	3.2 ~ 4.5	4.5	3.5
Cetane Number		64	98 ~ 99	73 ~ 81	51	53
10% Distillation	℃	160	260 ~ 270	260	340	200
90% Distillation	℃	320	295 ~ 300	325 ~ 330	355	350
Cloud Point	℃	-17	-30 ~ -5	0 ~ +3	0 ~ -5	-5
Oxygen Content	wt%	0	0	0	11	0
Sulfate Content	wt%	<10	<10	<10	<10	<10

Data Source: JPEC (Japan Petroleum Energy Center)

Test Results of Palm FTPO

<Palm FTF>　　Test conducted on Jun 11 – Aug 26, 2010

	Parameter	Units	Results	Analysis Method
1	Flash Point	℃	61.00	JIS K2265-1
2	Viscosity (40℃)	cSt	2.05	JIS K 2283
3	Disillation Characteristic			Conforms to JIS K 2254
4	Carbon	%	84.79	Thermal conductivity detector
5	Hydrogen	%	14.74	Thermal conductivity detector
6	Nitrogen	%	0.06	Thermal conductivity detector
7	Sulfer	%	< 0.01	Coulometric titration
8	Oxygen	%	0.30	Infrared spectrometry
9	Chlorine	%	< 0.01	Coulometric titration
10	Carbon residue	%	< 0.01	JIS K 2270-5
11	Gross calorific value	kJ/kg	45,830	JIS K 2279
12	Moisture	%	< 0.01	JIS K 2275-4
13	Total acid number	mgKOH / g	0.47	JIS K 2501-5
14	Pour point	℃	-17.50	JIS K 2269-3
15	Cetane index	-	65.70	Conforms to JIS K 2280

Test Results of Jatropha FTPO

<Jatropha FTF>　　Test conducted on Jun 11 – Aug 26, 2010

	Parameter	Units	Results	Analysis Method
1	Flash Point	℃	64.00	JIS K2265-1
2	Viscosity (40℃)	cSt	2.08	JIS K 2283
3	Disillation Characteristic	see attached		Conforms to JIS K 2254
4	Carbon	%	84.94	Thermal conductivity detector
5	Hydrogen	%	13.59	Thermal conductivity detector
6	Nitrogen	%	0.25	Thermal conductivity detector
7	Sulfer	%	0.03	Coulometric titration
8	Oxygen	%		
9	Chlorine	%	< 0.01	Coulometric titration
10	Carbon residue	%	0.02	JIS K 2270-5
11	Gross calorific value	kJ/kg	45,710	JIS K 2279
12	Moisture	%	0.03	JIS K 2275-4
13	Total acid number	mgKOH / g	0.05	JIS K 2501-5
14	Pour point	℃	<-20.0	JIS K 2269-3
15	Cetane index	-	55.90	Conforms to JIS K 2280

Adv #3. FTPO Production Earnings

Yield Of Palm / Jatropha

Palm Fruit

PALM FRUITS	
PYROLYSIS GAS (15%)	FUEL ON SITE
LIGHT GRADE OIL (3%)	FUEL ON SITE
FTPO (27%)	**BIODIESEL FUEL**
RESIDUES (14%)	FUEL ON SITE ACTIVE CARBON
MOISTURE (41%)	DEODORIZING AND ENERGY USE

Jatropha Curcas Seeds

JATROPHA CURCAS SEEDS	
PYROLYSIS GAS (15%)	FUEL ON SITE
LIGHT GRADE OIL (7%)	FUEL ON SITE
FTPO (18%)	**BIODIESEL FUEL**
RESIDUES (35%)	FUEL ON SITE ACTIVE CARBON
MOISTURE (20%)	DEODORIZING AND ENERGY USE

Yield Of Edible Waste Oil

Edible Waste Oil

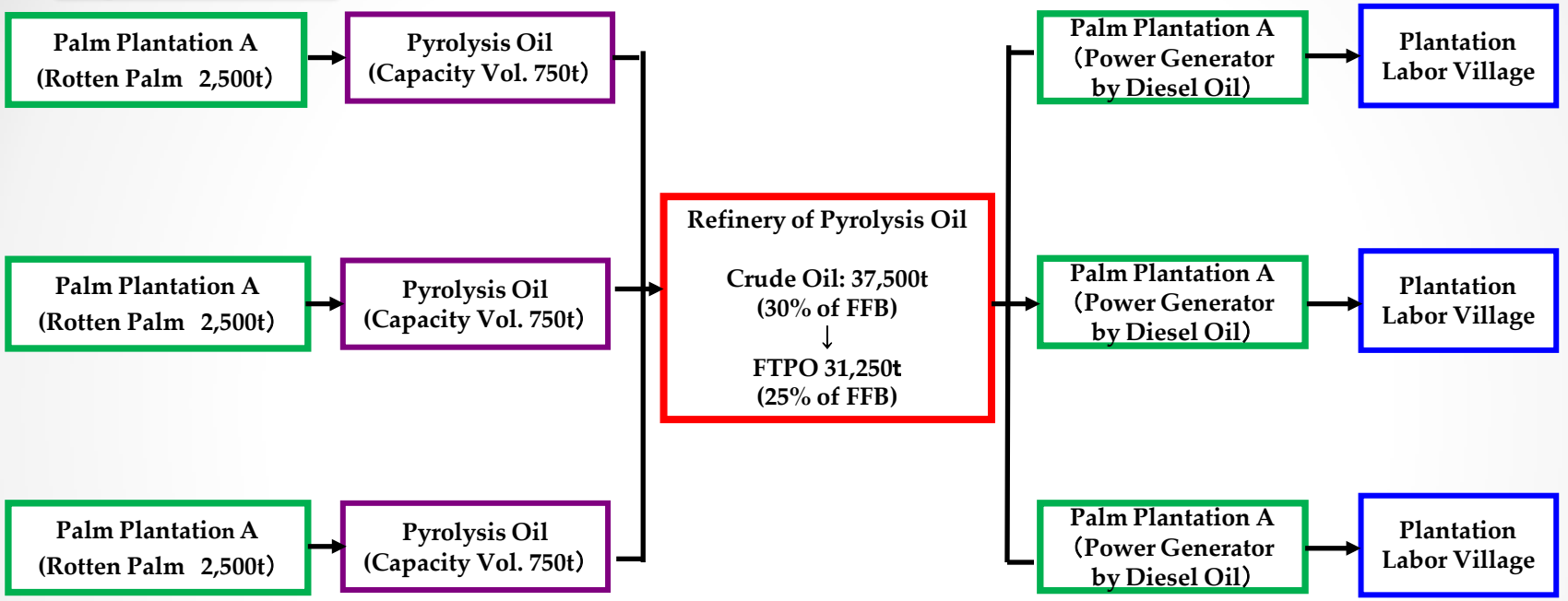
EDIBLE WASTE OILS	
PYROLYSIS GAS (20.0%)	FUEL ON SITE
LIGHT GRADE OIL (7.2%)	FUEL ON SITE
FTPO (49.5%)	**BIODIESEL FUEL**
HEAVY GRADE OIL (8.5%)	FUEL ON SITE
RESIDUES (14.8%)	FUEL ON SITE ACTIVE CARBON

Production Cost Comparison

Annual Operation Plan								USD vs MYR	3
Palm FFB to FTPO production								USD vs JPY	80
	PROJECTED ANNUAL PROFITS							in JPY'000	
	Plant Construction Cost		USD	2,500,000			JPY	**200,000**	
	Other setup cost		USD						
	Production Capacity		t/year	9,240					
	Payout Period		year	2.6					
	Items	Yearly Quantities	unit	@	USD	%	Remarks	in JPY'000	Quantities
1	Revenue								
	Palm biodiesel fuel	2,587	t	1,000.0	2,587,200			206,976	
	Active carbon	693	t	1,250.0	866,250			69,300	
	Total Revenue	**3,280**	**@/t**	**1,053**	**3,453,450**	**100.0%**		**276,276**	
2	Expenses								
	Variable Cost								
	(1) Raw Material	9,240	t	187.5	1,732,500	50.2%		138,600	
	(2) Catalyst	924	t	87.5	80,850	2.3%		6,468	
	(3) Solvent	139	t	1,000.0	138,600	4.0%		11,088	
	(4) Electricity	950,400	kw	0.2	213,840	6.2%		17,107	
	(5) Water	17,820	t	1.3	22,275	0.6%		1,782	
	Total Variable Cost	**3,280**	**@/t**	**667**	**2,188,065**	**63.4%**		**175,045**	
3	Fixed Cost								
	(1) Labours	2.0	men	25,000	50,000	1.4%		4,000	
	(2) Plant Maintenance	2,500,000	plant cost	3.0%	75,000	2.2%		6,000	
	(3) Depreciation	0.9	residual	7	321,429	9.3%		25,714	7 years period 90%
	(4) Operation & General Expenses	571,429	fixed cost	10.0%	57,143	1.7%		4,571	10% of total fixed cost
	Total Fixed Cost	**3,280**	**@/t**	**154**	**503,571**	**14.6%**		**40,286**	
4	**Operating Profit**	**3,280**	**@/t**	**232**	**761,814**	**22.1%**		**60,945**	
5	Other Expense								
	(1) Interest on Borrowings			5.0%	125,000	3.6%		10,000	Construction x 0.05
	Total Other Expense	**3,280**	**@/t**	**38**	**125,000**	**3.6%**		**10,000**	
6	**Net Profit**	**3,280**	**@/t**	**194**	**636,814**	**18.4%**		**50,945**	

Project Examples

Dispersed Method

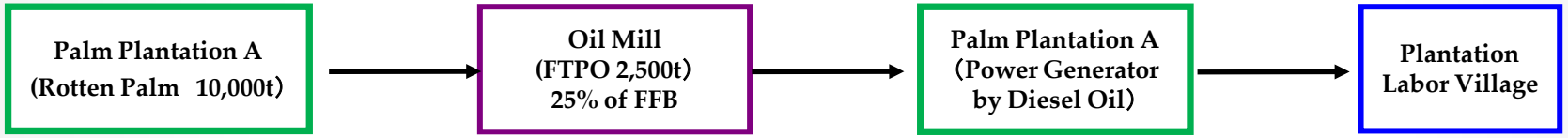


Base Premises

* 50 Palm Plantations (125,000t)
*Active Carbon 18,750t (15% of FFB)
*Yearly Power Generation (kw) now 140MW with existing diesel generators

Project Examples

Concentrated Method



Base Premises

*Yearly Power Generation : 10MW

Adv.#4 Environmental Solutions

Environmental Solutions

1. FFB solid residues in pyrolysis process reused as fuel
   - Pyrolysis gas : 5,600 kcal/kg
   - Solid palm shells & fibers 3,150 kcal/kg
   - Solid jatropha 5,726 kcal/kg
2. No water wasted unlike CPO process
   (45% of moisture is vapored in drying process and deodorized)
3. CO2 emission reduced by 2.624kg/ℓ

WASTE SUBSTANCES AND WASTE WATER AT CPO MILL PLANT

Environmental Impact	Waste Substances & Waste Water (Gravimetric Ratio)	Present Status
Air Pollution	EFB: Empty Fruit Bunch (29wt%)	EFB are incinerated and its heat energy is used for steam generation as heat source. The smoke and soot from incineration have come to be seen as a pollution problem. It will be prohibited by a law in near future.
	Mesocarp Fiber (12.5wt%)	Those are the residues after oil squeezing from fruits and used as the boiler fuel to take steam for sterilization process in the plant.
	Shell (8.0wt%)	Those are left as the residues after oil squeezing from fruits and used for the boiler fuel as well as mesocarp fibers.
Water Pollution	POME: Palm Oil Mill Effluent	1.5 m^3 water at the maximum are necessary to treat 1.0 ton FFB at CPO plant and 50%of CO are finally discharged as POME. Discharging source of POME are as below. (1) Condensation liquid (36% / POME) from sterilizing facility. (2) Waste water (60% / POME) from water clarification facility. (3) Waste water at hydro cyclone process.

Solution of Environmental Pollution by Solid Wastes and Waste Waters

1. Pyrolysis of FFB residues such as fibers, shells are done and its pyrolysis gases and small quantity of oil are taken and these are used for fuel at own plant. Respective heat value are: pyrolysis gas = 5,600kcal/kg, solid fuel of palm = 3,150kcal/kg (13,180kj/kg), solid fuel of jatropha = 5,726kcal/kg (23,960kj/kg)
2. 45% of moisture contained in FFB are separated as vapors at drying process. And the vapors which have strong offensive odor are deodorized with high temperature oxidation at 800℃ and converted into high calorie and superheat vapor gas which are used at drying and pyrolysis process, then emitted to air from stack at 250 as non-pollution gas.

“Total Recycle System by ERC”
Recycle Process of Industrial Disposals through Separation of Compound Raw Material

“Total Recycle System by ERC” Overview

Landfill / Incineration disposal → **Valuable recycled materials**


Agriculture Films

Drifted Garbage

Tires

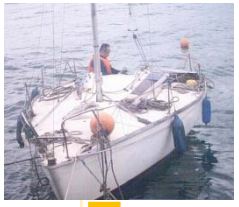
Bathtub (FRP)

Waste Edible Oil


Lubricant

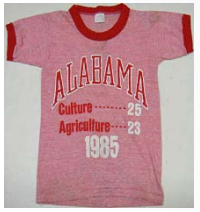
Medical Waste

Waste Plastic



Ship Body (FRP)

Carbon Fiber



Used Clothes

Metal Wire

Advanced separation of compound materials + Liquidation into fuel

Fuel Product

Boiler

Power Generator

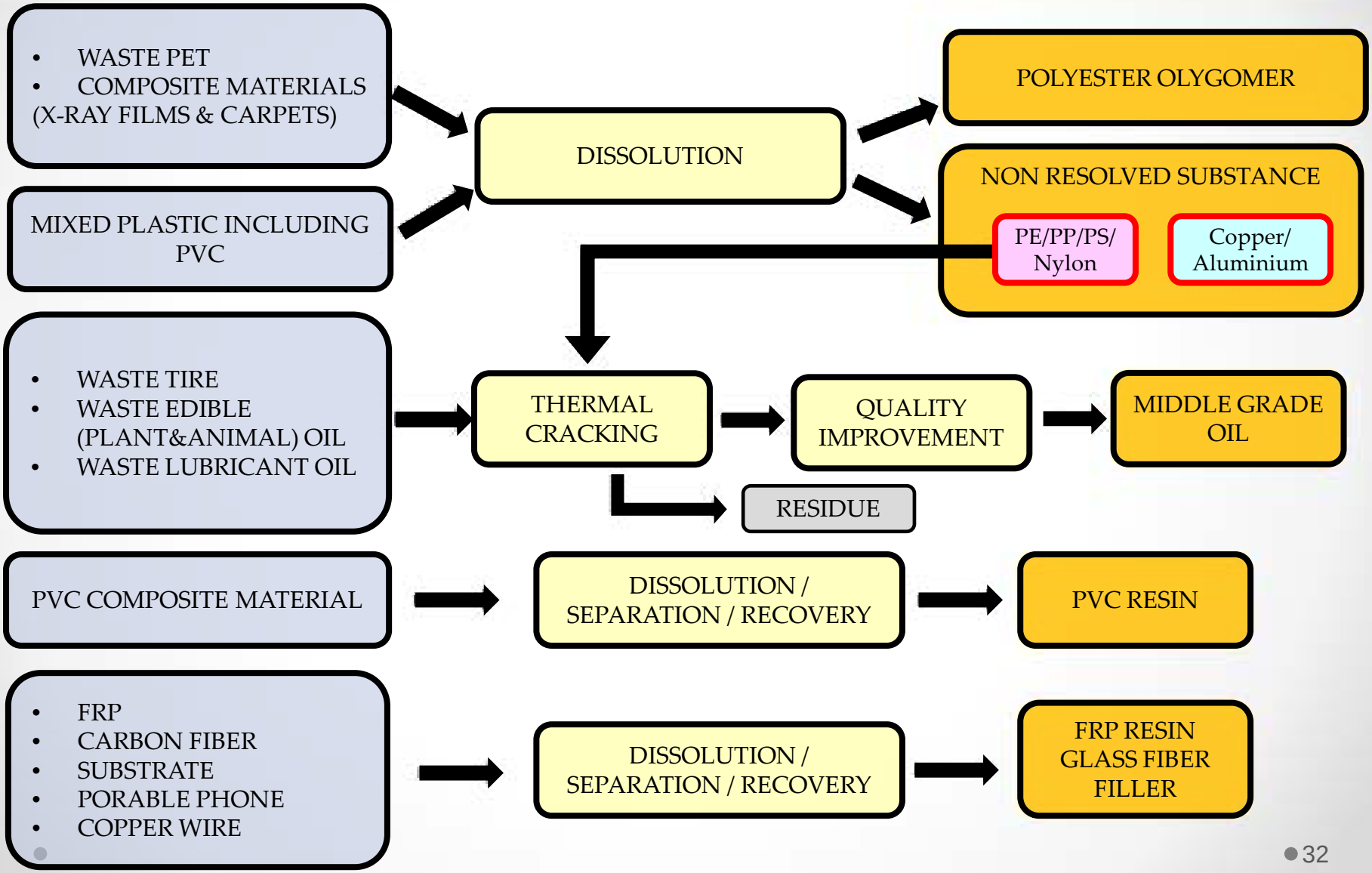
Glass Fiber

Carbon Fiber Sheet

Natural Fiber

Copper

"Total Recycle System by ERC" Each Process



PET Composite

Carpet

X-ray Film

PET/PE/Al


Clothes

Films


PET / Nylon


Mixed Waste Plastic

Dissolution

PET Recycled

- PET Oligomer
- Aluminium
- Plastics （PE,PP,PS etc.）
- Cotton/Hemp/Rayon/Nylon

PVC Composite

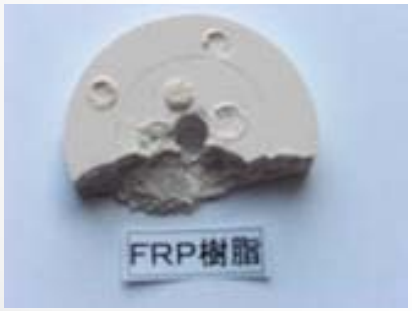
PVC Wallpaper

PVC Recycled

PVC Resin

Separated Paper

FRP(Fiber Reinforced Plastic) Resin



FRP Resin

FRP Recycled

Glass Fiber

Filler

Unsaturated Polyester Resin

Carbon Fiber

Waste Carbon Fiber Tube

Carbon Fiber Recycled

Substrate

Substrate

Recycled Substrate Materials

Metals (Copper/Gold/Zinc)

Parts / Resin

Glass Sheet

Waste Metal Wire

Metal Waste Wire

Recycled Metal Wire

Copper/Resin/Paper

Waste Mobile Phone

Waste Mobile Phone

Recycled Metals & Parts

Resin/Metals/Liquid Crystal

Waste Auto PP Parts

PP+ Surface Cover(Clothes/Urethane)

PP with 15% Talc + Surface Cover

PP + Surface Cover(PVC/Urethane)

PP

Cover

PVC

PP Foam + Talc

PP

PVC

Polyvinyl Chloride

Hard PVC

87% De-Chloride PVC

Old Clothes / Rags

Polyester 62%, Rayon 33%, Cotton 5%

Rayon

Cotton

Compound Separation Process Applied To

Sterilization And Recycle Treatment Of Infectious Medical Waste

Process Overview
<Medical Waste Treatment>

Resin syringes
Infusion apparatus
Gauze
Rubber

- Securely sterilized
- Dried
- Separated

- Process duration : 30minutes / batch
- Volume of waste : 50 L ~ 2000 L / batch
- Space necessary : 6mL x 4mW x 6mH

Advantages
<Medical Waste Treatment>

Product benefits

- Recycled as oil/valuable raw materials
- PVC can be treated

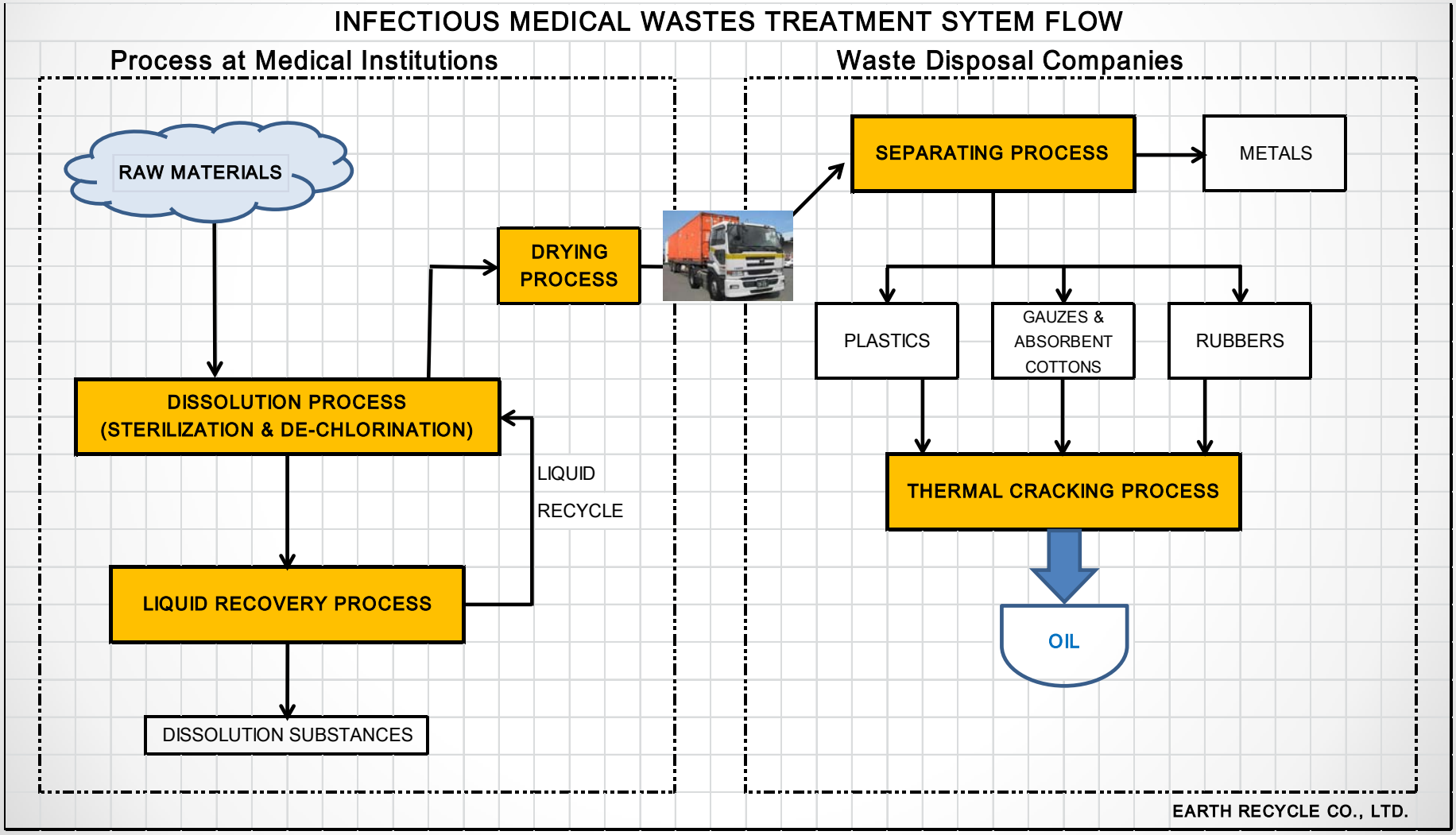
Cost benefits

- Combination of sterilization and separation (new process)
- Solvent recycled during the process
- Automatic operation without special skills

Other benefits

- No waste liquid / noxious gas discharged

Process Flow
<Medical Waste Treatment>



Quality Improvement Of Solvent Extraction

Quality Improvement through Solvent Extraction

Product benefits

1. Fuel stabilized during the process and suitable for sale (product quality improved through thermal cracking process)
2. Fuel for power generator or auto fuel
3. Deodorizing and oxidation stabilization of nitrogen compound / organic chloride

Cost benefits

1. Recycle 95% of solvent during the process
2. Automated operation

Other benefits

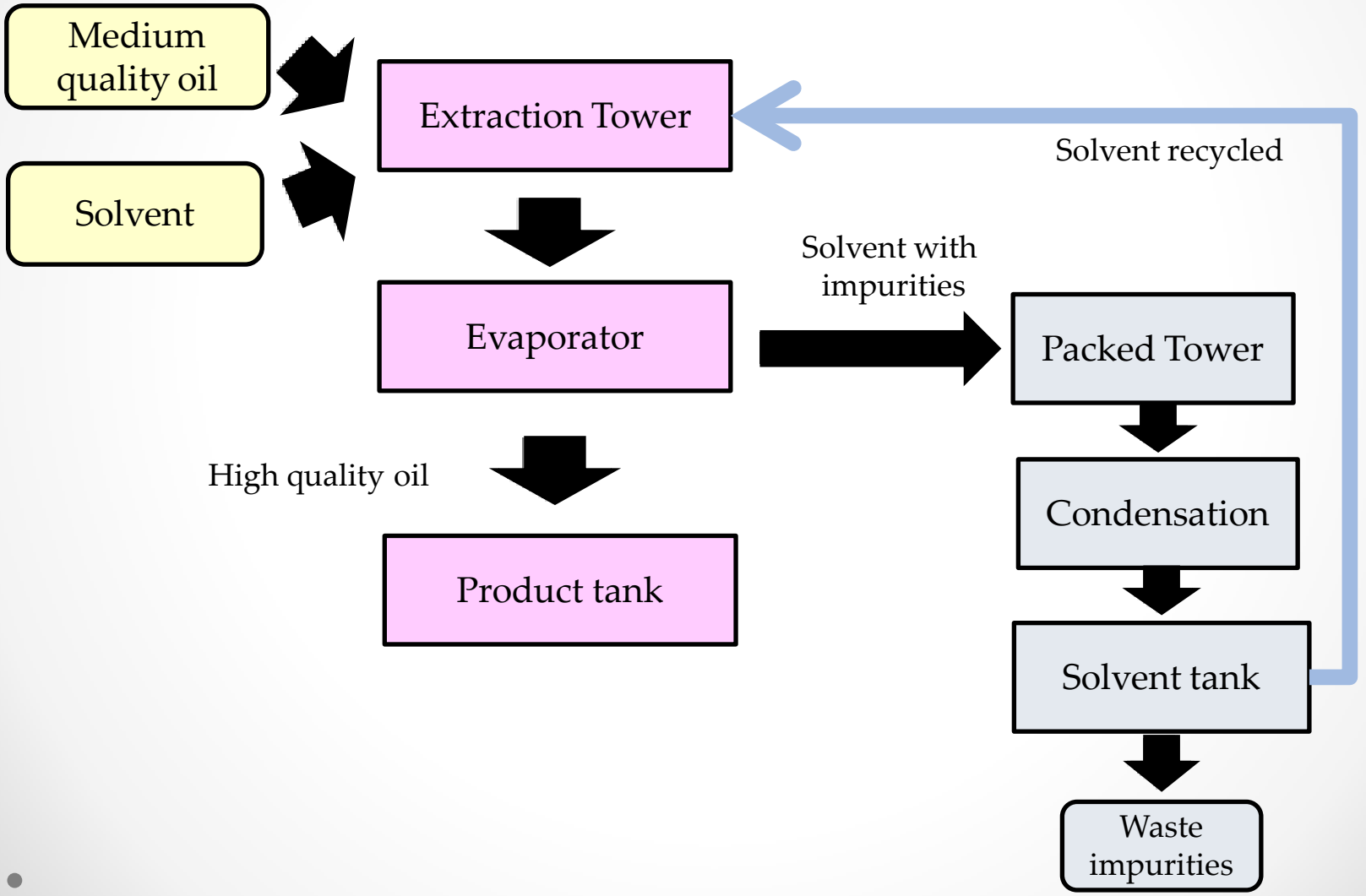
1. Operated either with batch / sequence system
2. Operated in oxygen-free condition
3. Safely operated under normal air-pressure / normal temperature

Aspect of Improved Quality through Solvent Extraction

Raw material : Household waste plastic		
	Before	After
Color	green	stable
Ph	2	6
Nitrogen	1,200	130
Chlorine	2,500	580
Sulfur	140	100
Odor	Irritating odor	Improved

Raw material : Waste lubricate oil		
	Before	After
Color	yellow brow	stable
Ph	4	6
Nitrogen	440	130
Chlorine	650	130
Sulfur	1,800	1,600
Odor	Odor	Improved

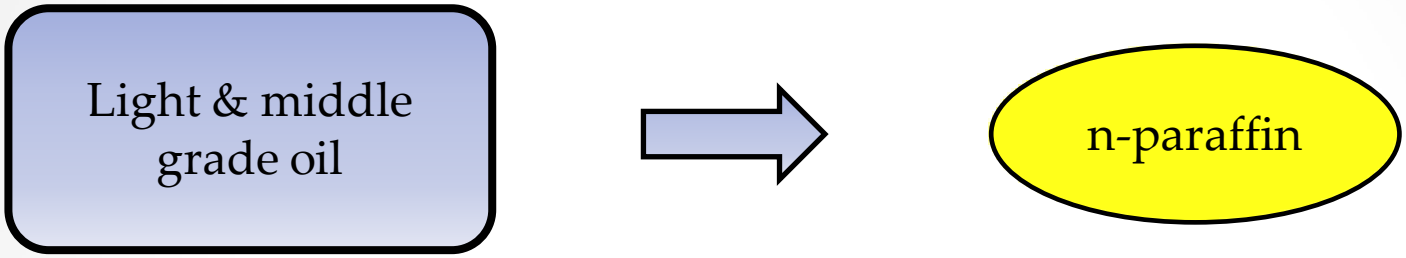
Process For Quality Improvement <Solvent Extraction>



Quality Improvement Equipment

N-paraffin Production

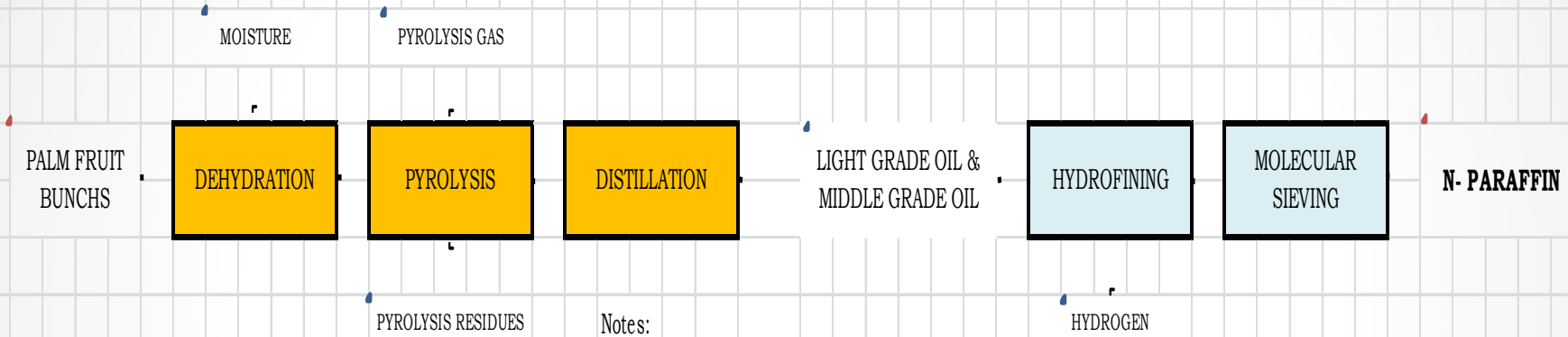
Process Overview <n-paraffin>



- n-paraffin produced through light / middle grade oil through pyrolysis process
- Olefin, sulfur, nitrogen decreased by hydrofining
- n-paraffin selectively absorbed in molecular sieving

Process Flow <n-paraffin>

1. PRODUCTION PROCESS FLOW



Notes:

(1) The composition of light and middle grade oil by pyrolysis are N-Paraffin, Olefin Sulfur and Nitrogen.

(2) Olefin, Sulfur and Nitrogen are decreased by hydrofining treatment.

(3) N-Paraffin is selectively absorbed by molecular sieving.

Material Balance <n-paraffin>

Raw Materials (Palm Fruit Bunchs)
100wt %
8 tons/h (63.360tons/y)

Dehydration / Pyrolysis / Distillation

Moisture	Pyrolysis Gases	Light&Middle Grade Oil	Pyrolysis Residues
41 wt%	15 wt%	30 wt%	14 wt%

Hydrofining (2.4tons/h, 19,000tons/y)

Hydrogenation Oil
24 wt%

Molecular Sieving (1.92tons/h, 15,200tons/y)

N- Paraffin
19 wt%
1.54 tons/h
12.16tons/y

Plant Capacity <n-paraffin>

(1) Pyrolysis : 8t/h

(2) Distillation tower : 3t/h

(3) Hydrofining : 2.4t/h

- Reaction temperature 280° to 340° celsius
- Pressure 30 to 50kg/cm2
- Liquid hourly space velocity 3.0 to 5.0 hr-1

(4) Hydrogen generator : 50 Nm3/t x 2.4 = 120 Nm3/h

(5) Molecular sieve : 1.92t/h

Product Feature <n-paraffin>

1. **Product usage**
    - **Synthetic detergent**
    - **Raw material of non-ionic synthetic**
    - **Raw material of chlorinated paraffin and solvent**

2. **Market price tripled of biodiesel**

Projected Annual Operating Plan <n-paraffin>

Annual Operation Plan
Palm FFB to n-parafine

	PROJECTED ANNUAL PROFITS							in JPY'000	
	Plant Construction Cost		USD	34,625,000	USD vs MYR	3		**2,770,000**	
	Other setup cost		USD		USD vs JPY	80			
	Production Capacity		t/year	8,779					
	Payout Period		year	1.49					
	Items	Yearly Quantities	unit	@	USD	%	Remarks	in JPY'000	Quantities
1	Revenue								
	n-paraffine	8,779	t	3,125.0	27,434,375			2,194,750	
	Reffined	6,569	t	1,000.0	6,569,000			525,520	
	Pyrolysis residue	2,800	t	1,250.0	3,500,000			280,000	
	Total Revenue	**18,148**	**@/t**	**2,067**	**37,503,375**	**100.0%**		**3,000,270**	
2	Expenses								
	Variable Cost								
	(1) Raw Material	39,270	t	187.5	7,363,125	19.6%		589,050	
	(2) Catalyst	6,653	t	87.5	582,120	1.6%		46,570	
	(3) Solvent	898	t	1,000.0	898,128	2.4%		71,850	
	(4) Electricity	6,336,000	kw	0.2	1,425,600	3.8%		114,048	
	(5) Water	118,800	t	1.3	148,500	0.4%		11,880	
	Total Variable Cost	**18,148**	**@/t**	**574**	**10,417,473**	**27.8%**		**833,398**	
3	Fixed Cost								
	(1) Labours	15.0	men	25,000	375,000	1.0%		30,000	15 persons x USD 26,000
	(2) Plant Maintenance	34,625,000	plant cost	3.0%	1,038,750	2.8%		83,100	Construction Cost x 0.03
	(3) Depreciation	0.9	residual	7	4,451,786	11.9%		356,143	15 years period 90%
	(4) Operation & General Expenses	7,596,786	fixed cost	10.0%	759,679	2.0%		60,774	10% of total fixed cost
	Total Fixed Cost	**18,148**	**@/t**	**365**	**6,625,214**	**17.7%**		**530,017**	
4	**Operating Profit**	**18,148**	**@/t**	**1,127**	**20,460,688**	**54.6%**		**1,636,855**	
5	Other Expense								
	(1) Interest on Borrowings			5.0%	1,731,250	4.6%		138,500	Construction x 0.05
	Total Other Expense	**18,148**	**@/t**	**95**	**1,731,250**	**4.6%**		**138,500**	
6	**Net Profit**	**18,148**	**@/t**	**1,032**	**18,729,438**	**49.9%**		**1,498,355**	