10 YEARS EXPERIENCE SERVED THOUSANDS OF CUSTOMERS

钟鸣环保设备
ZHONGMING ECO-FRIENDLY EQUIPMENT

SHANGQIU ZHONGMING ECO-FRIENDLY EQUIPMENT CO., LTD

Shangqiu Zhongming Eco-Friendly Equipment Co., Ltd(Former Shangqiu Yilong Machinery Equipment Co., Ltd),Focus on R&D, manufacture Pyrolysis Machine and Distillation machine， Adhere to the principal of "quality first, service first", products have been sold to more than 20 provinces , exported to more than 60 countries.

Waste Oil Distillation Project Feasibility Report

Shangqiu Zhongming Eco-Friendly Equipment Co., Ltd

1st, January,2020

Catalogue

01

Project Prospect

Overview

Waste Oil Concept

First is the waste mineral oil or waste engine oil, during using, mixed with impurities such as moisture, dust, other miscellaneous oil, or metal powder generated by abrasion of machine parts;
Second is the engine oil gradually deteriorates, forms organic acids, gums, and asphalt-like substances.

Core Technology

Regeneration of waste oil, means adopt flocculation sedimentation, three removals and three injections. **Atmospheric distillation and high vacuum distillation, catalytic cracking distillation, solvent refining, solvent extraction** and other new process technologies, achieve recovery yield 88%. Eat up all of the waste mineral oil and waste engine oil. With new technology, high vacuum decompression spiral distillation tower and atmospheric spiral distillation tower are our core innovative equipment; removing impurities and toxic material from the used engine oil; Completely knock out the method of acid-alkali washing. Without secondary pollution, converting waste mineral oil and other waste oil to be high-quality diesel and by-products.

Write Basis

1.《Environmental protection law of the People's Republic of China》;
2.《Prevention and control of water pollution law of the People's Republic of China》;
3.《Regulations on environmental protection design for construction projects》;
4.《Noise standards for industrial enterprises》;
5.《Design Specification of outdoor drainage》;
etc...

Overview

Background

Waste oil pollutes the Marine and living environment.According to relative statistics, every city can produce 60,000 tons of waste oil every year, totaling over 800 million tons worldwide.

With developing of international economy, the emission of various waste mineral oil or waste engine oil increases greatly, but recovery rate is very few, leading to serious environmental pollution while waste the available petroleum resources.In accordance with the international spirit of vigorously promoting circular economy,energy conservation and emission reduction,determined to speed up the operation and construction of this environmental protection project, so that the precious renewable oil resources create greater social and economic benefits.

Necessity

As we all know, energy is one of the five essential factors for human survival,petrochemical industry is an important pillar industry of the national economy. Petroleum products are named as "blood" of international economy.

Oil is non-renewable resource. Low prices cannot be maintained for long time.With the development of economy, oil trend must be gradually upward.On the other hand, waste oil, as a raw material, declined sharply with the lower oil price. The technology of producing diesel oil from waste oil has been with low cost, stable profit and long-term trend.

To sum up, construction of this project is necessary. Once finish this project, will be conducive to local economic development and environmental protection.

Fields of Study

Research scope of this feasibility study report includes: project prospect analysis, environmental protection solution, source of raw materials,end products, energy consumption, covering area, benefit analysis, 3D finish diagram, success stories, etc., **for customer decision-making.**

02

Applicable Raw Material

Type of Raw Material

Crude Oil

Used Engine Oil

Pyrolysis Oil

Other Mazut

Waste Hydraulic Oil

Source of Raw Material

4S Shop
or other Garage

Tyre/Plastic Oil Manufacturer

Oil Middleman

Waste Oil come from big
Refinery Plant

03

End Production

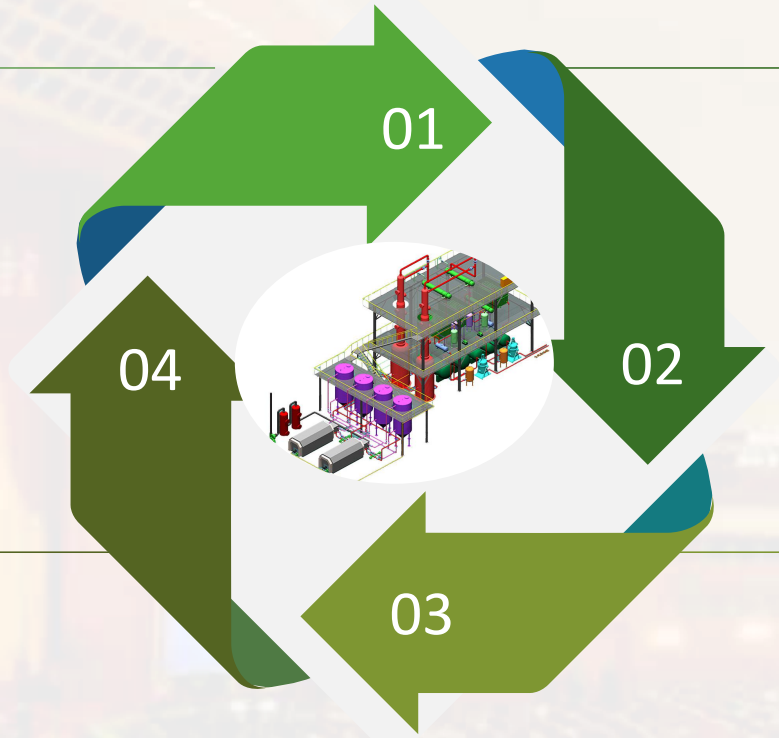
End Production Yield

12% Light Diesel

Used for car, trucks,ships and diesel generator

3% Combustible Gas

Recycle, used as heating fuel



76% Diesel

Used for car, trucks, ships and diesel generator

9% Residue Oil

Used for Asphalt, building road

End Production Usage

Car/Trucks

Used for Car diesel，meet local diesel standard

Boats

Used for boat as power oil, meet boat diesel requirement.

Diesel Generator

Quality meet generator require quality

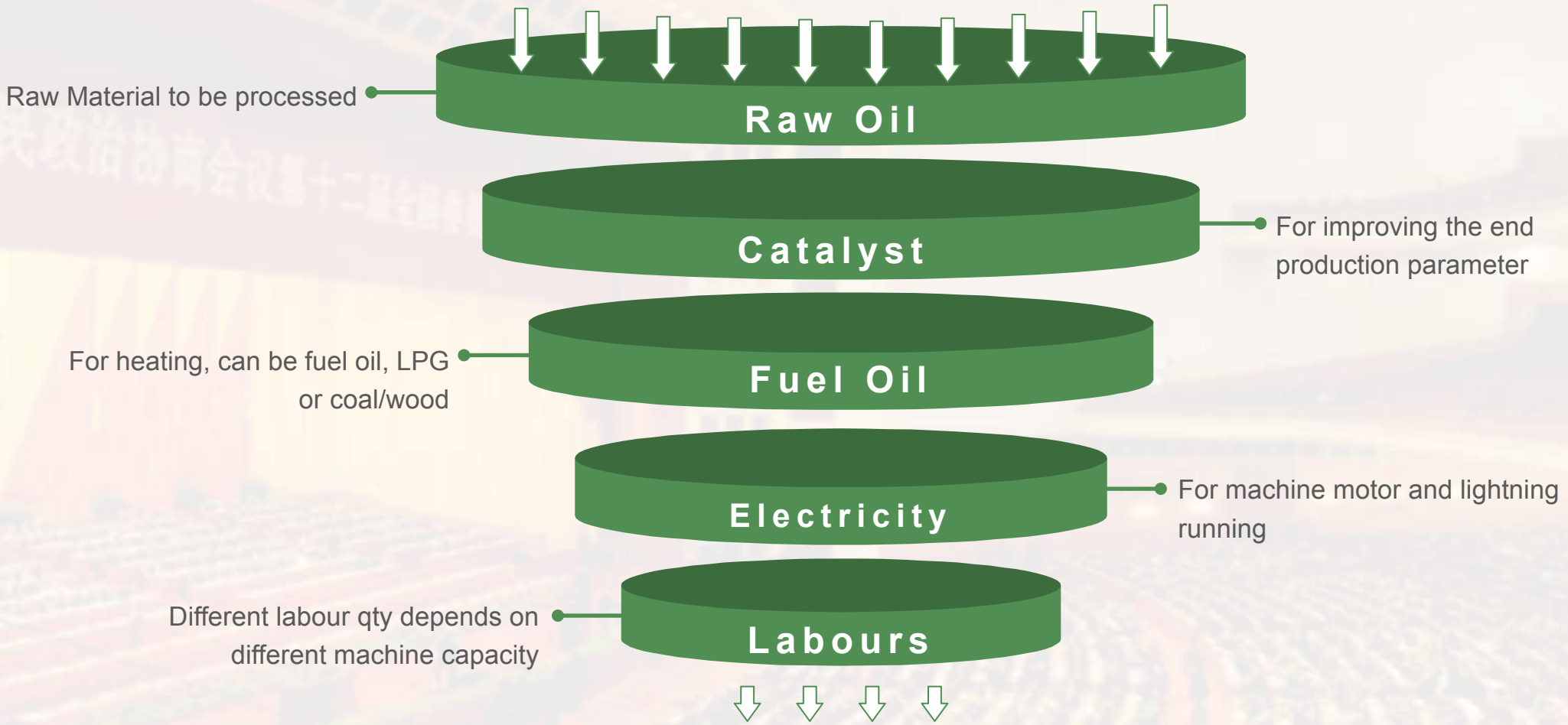
Light Fuel Oil

Used as fuel oil, meet fuel oil standard quality

04

Economic Benefit Analysis

Energy Consumption



Note: Investor can calculate above cost by RMB 350.00 for processing per ton waste oil. Catalyst can be regenerated and recycled,so acturally the cost will be lower in practical production.

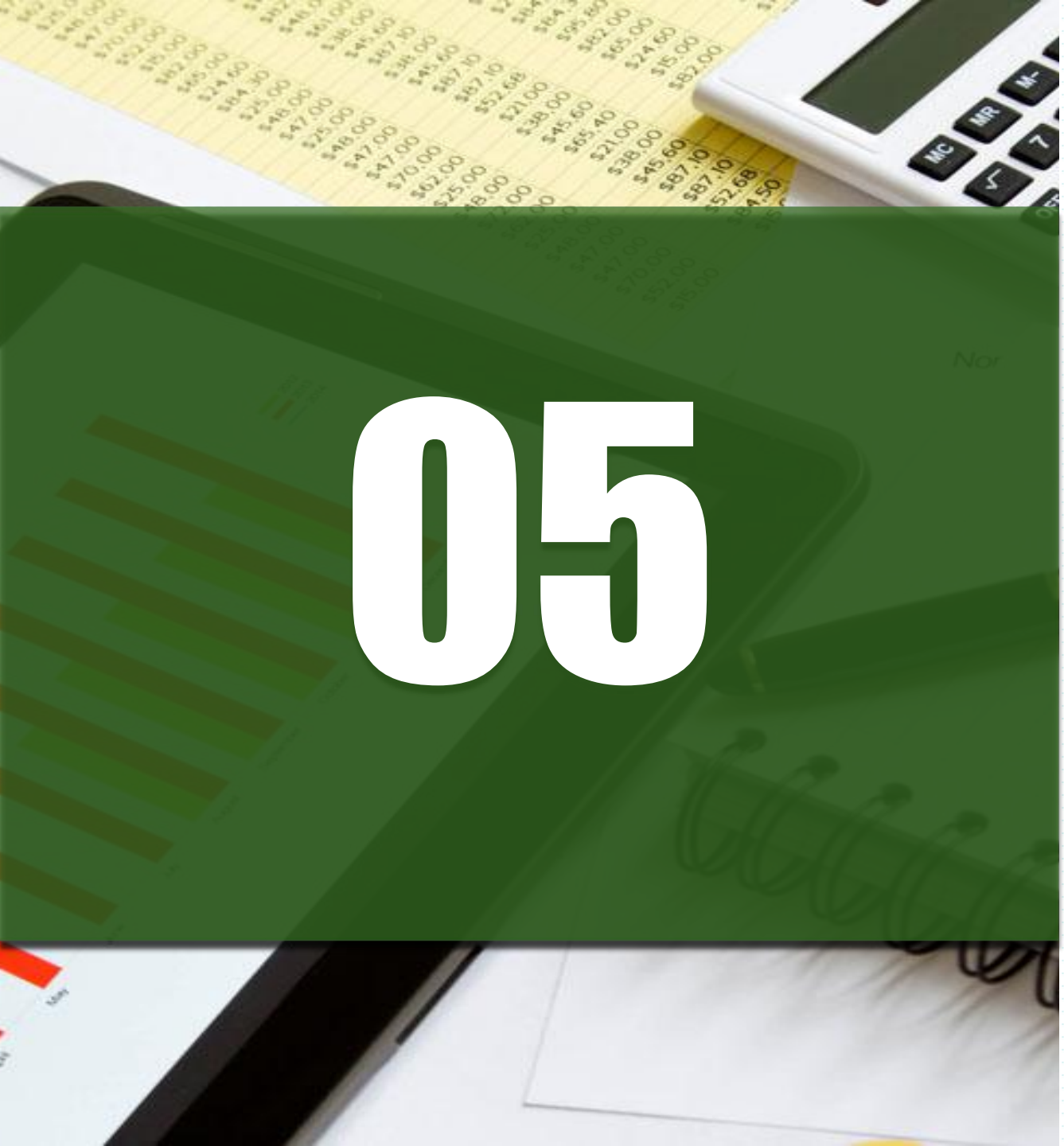
Energy-Saving Measures

Overall Measure

1. Recycle Syngas used for heating fuel, reduce fuel cost,achieve energy recycling;
2. High Automatic, fully reduce labor cost;
3. Catalyst can be regenerated, loss around 5-8%, recycling for reducing enterprise manufacturing cost;
4. Machine parts quality all strictly meet National Standard, lifetime can be min 8 years, reduce equipment loss and failure rate;
5. 24 hours continuous working, Reduce the instantaneous loss while power switch;
6. All parts of the equipment adopt international standard, special customized material, reduce maintenance cost and maintenance period.

Economic-Benefit Analysis

Economic-Benefit Analysis(Take 30TPD used engine oil as example)						
Input	Raw Material	Used Enging Oil	30 tons	2000RMB/ton	60,000 RMB	73,420 RMB
	Fuel	Fuel Oil	0.8tons /day	2000RMB/ton	1,600 RMB	
	Power	3phases, 50HZ, 380V,30kw/hour	24hours	720KW/day	720 RMB	
	Catalyst			250RMB/ton	7500RMB	
	Labour Cost	4 workers*3 shifts	RMB300/ day/labor		3600 RMB	
Output	Diesel	79%	23.7 tons	4800RMB/ton	113,760RMB	129,360 RMB
	Gasoline	9%	2.7 tons	5000RMB/ton	13,500RMB	
	Residue Oil	7%	2.1 tons	1000RMB/ton	2,100RMB	
	Syngas	3%				
Daily Profit: 129360RMB - 73420RMB= 55940 RMB						
Monthly Profit:25 working days, 55,940RMB* 25days =1398500 RMB						
Yearly Profit:10 working months , 1,398,500RMB *10 month= 13,985,000RMB						



05

Covering Area

Project Covering Area

5-10TPD

720㎡ (L36m/W20m/H10m)

10-20TPD

900㎡ (L45m/W20m/H10m)

30-40TPD

1200㎡ (L40m/W30m/H11m)

50TPD

1500㎡ (L50m/W30m/H11m)

06

Technical Proposal

Principal for Technical

Advancement

Adopt advanced technology and high technology

Reliability

Technology and Equipment has been tested by practical, and also with reliable testing record

Applicability

Adopted technology shouldl be appropriate to the capacity, production plan and management level

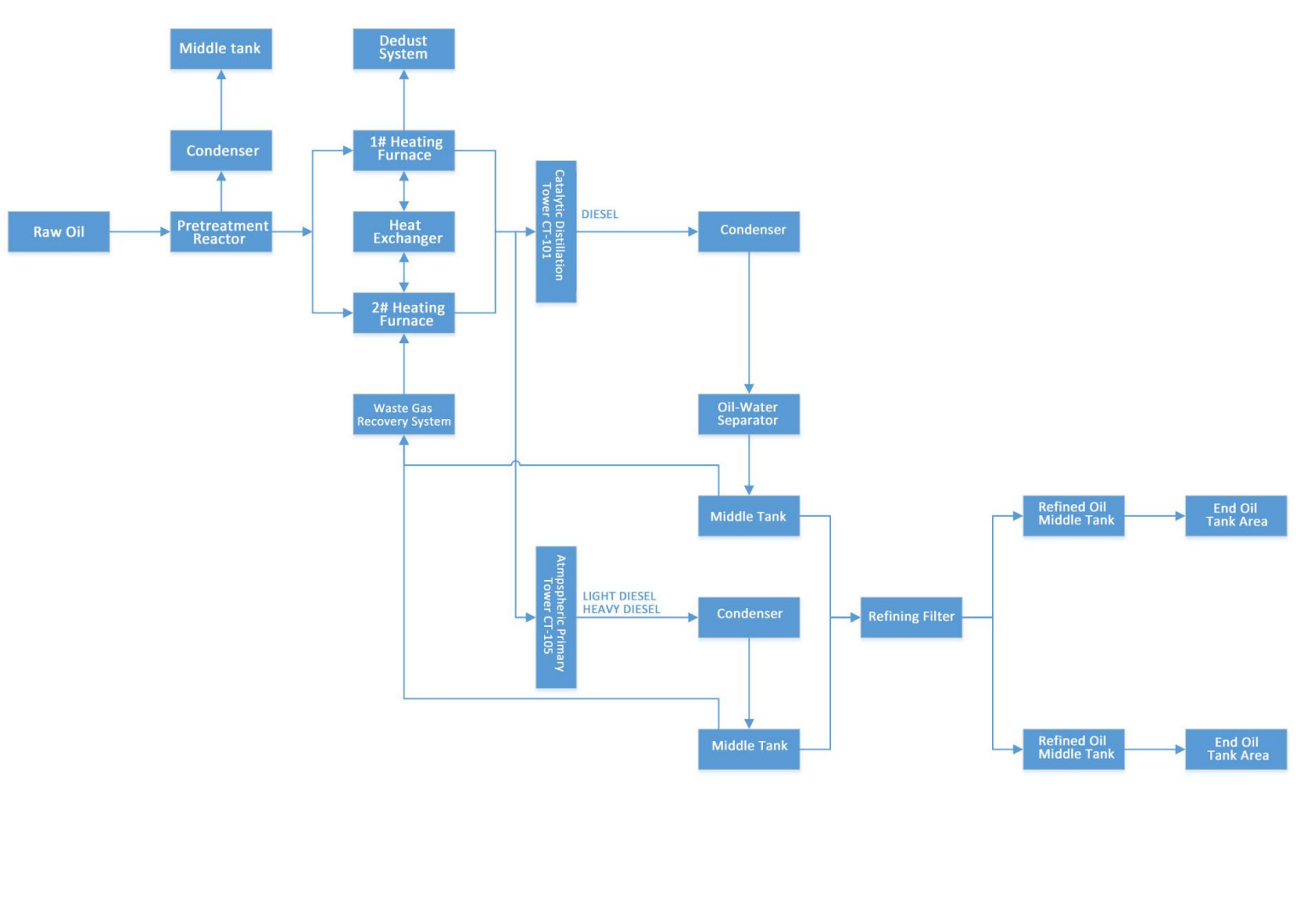
Economic Rationality

Based on advanced,Applicable and reliable equipment,should further check if the technology is economic, if good for investor, if good for reducing cost to improve ecomomic benefit.

Tech. Flow Chart

(1) Adopt the Atmospheric Distilaltion and Vacuum Distillation,Catalytic Cracking disitllation, Solvent Refining and Solvent Extraction, etc... new technology.

(2) Adopt Self developed catalyst, composite filter material and other creative technology to ensure end production quality.



Brief Process Description

- This Project belongs to:New Energy Eco-friendly,waste resource recycling project.After searching from International info, this technology has been most advanced;
- Adopt the Atmospheric Distilaltion and Vacuum Distillation,Catalytic Cracking disitllation, Solvent Refining and Solvent Extraction, etc... and other new technology;
- Adopt Self developed catalyst, composite filter material and other creative technology to ensure end production quality.
- High efficient spiral fractionation tower is of tongue type tray, rotating 22.5^0 --30^0 when higher each layer, making the upturned tongue wings change angel while tower tray rotating.Each rotation of the tray is equivalent to 10 times the distance of the conventional gas curve, increasing the yield and mass.
- Drip needle set up with atmospheric horizontal cracker, so that the liquid generated by the cracker gas drop through through the gas zone, drip into the high-temperature liquid surface.Speed up the cracking speed and increase the output extra 7%.
- This technology mainly based on the decomposition principle of polymer compounds, through professional crackers, primary distillation towers, high-efficiency atmospheric spiral fractionation towers, high vacuum decompression spiral rectification towers, stripping towers, catalytic reactors, condensers, solvent refining equipment,Coking catalyst tower and other patented equipment, unique design, national initiative, unique technology, one-step processing with comprehensive chemical and physical reactions for waste mineral oil, waste engine oil and other waste oil,produce Naphtha, diesel, other industrial fuel oils and by products.

Advantage Analysis

1

Advanced Technology

Sourcing from September 2004 international test reports and search reports, conclusion is that the technology is novel, innovative and practical for industrial production.

2

Environmental

Our technology process has no exhaust gas, waste water and waste residue discharge, waste oil recovery rate 100%.

3

Safe and Reliable

Five safety measures are equipped by our equipment, also with self-control, semi-automatic,modern automatic alarm system, pressure control operating system

4

Low Production Cost

Utilization of waste, waste gas recycle as heating fuel, 100% eat up and clean up the waste oil; waste water recycle as as cooling water after treatment, reduce production cost significantly.

5

High Yield

Our technology has high cracking yield, good catalytic effect, and high fractionation accuracy, which improves the total yield from original 80% to 90%.

6

Mass Balance

Raw Material is Waste engine oil and other waste oil; End production is diesel and other by production.

07

Waste Analysis and Treatment

Eco-Friendly

Waste Water

Waste Gas

Solid Waste

Noise

Our technology has no waste gas, waste water or other solid waste discharge, and the waste oil recover rate is 100%, no second time pollution. Processed waste mineral oil and other waste oil can get base oil and diesel as main production, quality can meet international standards.

Source of Waste

- Combustible Gas come from machine running(C1-C4 Alkane)
- Smoke Exhaust come from heating process, Organized emission from device area.

- Waste water produced by raw oil flocculation and sedimentation pretreatment tank

- Noise mainly generated by draft fan, raw oil pre-treatment configuration air compressor, raw oil pump, high temperature oil pump, circulating water pump, and raw oil and end production loading and unloading pump.

- Solid wastes produced by the proposed project are mainly smoke dust, waste catalyst and domestic garbage

Waste Process

- Non-condensable gas 100% fully recycle as heating fuel, after treated by three-stage desulfurization filtering device, fully enclosed safety water sealing tank and flame arrester
- Smoke Emission can be standard discharged, through below treatment: three-stage tower type spray desulfurization, filtration and dust removal equipment,

- All of waste water generated by the plant enters to sewage treatment workshop, and be neutralized, filtered and purified by weak alkali until it is pollution-free and recyclable

- Noise generated by our equipment,solved by below measure: choose the fan and pump with ultra-low noise and small operating vibration characteristics, adopting vibration reduction and sound insulation measures, soft connection of the fan inlet and outlet pipelines should be adopted to improve the Aerodynamic noise

- Soot, ash, and dust are collectively for drying, used as auxiliary materials for making bricks.
- Waste Catalyst can be regenerated and recycled

08

Safety Management

Safety Management

1. Design Basis

In order to implement the guiding spirit of National on the safe production of enterprises and ensure the health of employees, this project has fully considered the requirements of safe production and industrial hygiene, in our design strictly complied with the safety and health regulations. The main technical documents are as follows:

(1) «Hygienic standards for industrial enterprise design» GBZ 1-2010

(2) «Safety and health design for chemical enterprises» HG20571-2014

(3) «Classification and marking of commonly and hazardous chemicals» GB13690-2009

(4) «Fire protection design of petrochemical enterprises» GB50160-2008

(5) «Fire prevention regulation in architectural design» GB50016-2014

(6) «General rules for storage of common and hazardous chemicals» GB15603-1995

(7) «Configuration and design of building fire extinguishers» GB50140-2010

(8) «Design of electrical installations in explosion and fire hazards» GB50058-2014

(9) «Provisions on transportation design of chemical enterprises» GB50489-2009

(10) «Design of electrostatic grounding in chemical enterprises» HG/ T20675-1990

Safety Management

2. Technical Measures

(1) Hazardous waste shall be collected regularly and separately, all containers and packaging materials shall be compatible with the waste and strong enough. Meanwhile, distinctive and durable marks shall be sticked, strictly avoid reactions or explosion accidents happen between different wastes.

(2) Hazardous wastes transportation shall strictly comply with the provisions of national governing. Mixed transport of incompatible hazardous wastes is prohibited;Formulate reasonable and perfect plans for the hazardous waste collection and transportation, optimize transportation routes and collection time; Vehicles with hazardous waste shall be clearly marked and maintained regularly to ensure their good condition and safe driving to avoid accidents as far as possible.

(3) Formulate emergency measures and preventive measures for unexpected accidents during transportation, deal with unexpected accidents in time to reduce casualties and property losses.

(4) Once hazardous waste are stored in temporary warehouse, should classified registration and storage . Unclear records, missing records or excessive waste storage time are strictly prohibited.

(5) During pre-processing operation, strictly follow the relevant operating procedures to prevent accidents, which caused by weak sense of responsibility, should also formulate a series of emergency treatment measures.

(6) Full-time safety management person should be provided, and all staff should get safety education before starting work;The operator shall be equipped with safety helmet, clothing, gloves, shoes and other personal labor protection products.

(7) Exposed rotating part of the equipment should be equipped with safety shield, safety fence or protective baffle;

(8) Lightning protection and grounding measures are taken into account for electrical equipment. The safety of low-voltage power distribution system is designed according «low-voltage power distribution design ».

(9) Fortification of all structures and intercepting DAMS shall be conducted according to the basic seismic intensity of 7.

Safety Management

3. Industry hygiene

(1) Workers who touch with hazardous waste shall be provided with necessary labor protection;

(2) All operation rooms, office buildings and staff dormitories are equipped with air conditioners to ensure good operation and living environment;

(3) No wall in the waste water treatment workshop, which can enhance the ventilation effect and reduce the harm of acid fog in the workshop to human body.Other treatment workshop is equipped with half wall, good ventilation and lighting effect;

(4)Temporary storage warehouse and repair workshop shall be equipped with axial fan for ventilation,the laboratory shall be equipped with fume hood for ventilation;

(5)Arrange the layout drawing reasonably, living areas should be upwind of the pretreatment and landfill facilities to avoid the influence of air pollution sources;

(6) Staff canteen shall be designed and managed in accordance with the «food hygiene law» and relevant standards to ensure the food hygiene and safety for staff.

Safety Management

4. Fire Safety

Design Basis

*«Fire Protection Design of Buildings» GB50016-2014

*«Design of fire prevention in petrochemical enterprises» GB50160-2008

*«Rules for electrostatic grounding in chemical enterprises» HG/T20675-1990

*«Design of fire extinguishers in buildings» GB50140-2005

*Other existing laws and regulations

Design Philosophy

*Safety first

*Prevention First

*Production must be safe

*Safety for production

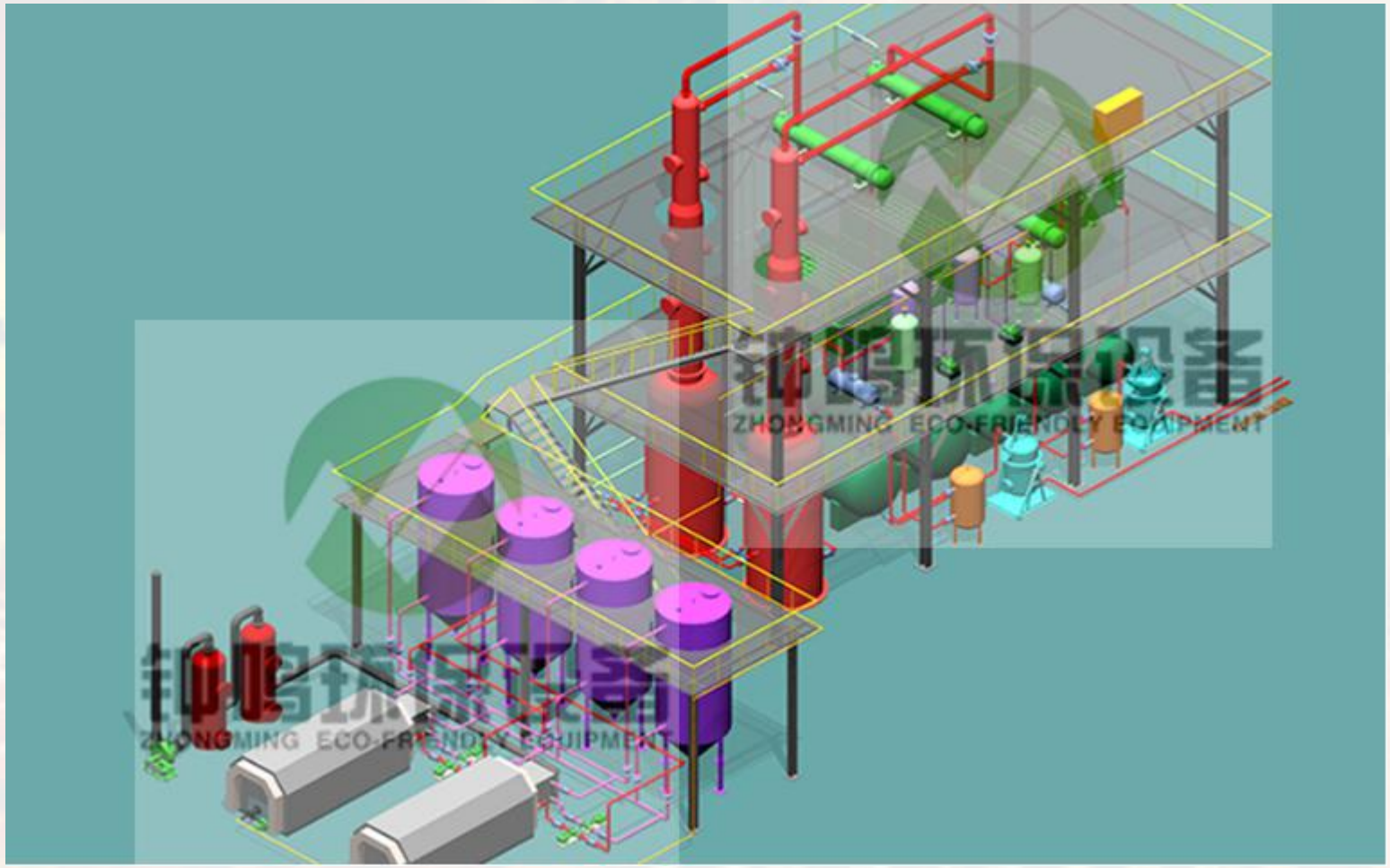
Fire Equipment

Water and foam fire protection system; Chemical fire: fire extinguisher and Other measures: fire passageway, electrical fire prevention, fire station, etc

09

3D Finish Drawing

3D Finish Drawing



This technology mainly based on the decomposition principle of polymer compounds, through professional crackers, primary distillation towers, high-efficiency atmospheric spiral fractionation towers, high vacuum decompression spiral rectification towers, stripping towers, catalytic reactors, condensers, solvent refining equipment,Coking catalyst tower and other patented equipment, unique design, national initiative, unique technology, one-step processing with comprehensive chemical and physical reactions for waste mineral oil, waste engine oil and other waste oil,produce Naphtha, diesel, other industrial fuel oils and by products.

10

Success Stories

Success Stories

Project Evaluation

Evaluation Conclusion

This project take used engine oil and other waste oil as raw material, adopt new advanced equipment, take advantage of new technology for recycling waste oil, convert waste to be energy. Not only reduce environment pollution, improve living environment, but also save energy, alleviate the shortage of resources.This project conforms to international industrial policy of resource conservation and comprehensive utilization, can also provide many employment opportunity, has good social benefits.

Note: It is also popular on the technology of extracting base oil from used engine oil, welcome further discussing.

11

Contact Us

Contact Us

Shangqiu Zhongming Eco-Friendly Equipment Co., Ltd

Address: Yilong Industry Park, West of Bayi Road, Liangyuan District, Shangqiu City

Tel: 0086 15237020017(Same for Whatsapp and Wechat)

Website: http://www.sqzhongming.cn

Mail: zhongminggroup@163.com

Tel: 0086-370-2940008 **Fax:** 0086-370-2288816