USED LUBE OIL RE-REFINING

A SUCCESSFUL INVESTMENT

STP PRESENTATION

STP - Studi Tecnologie Progetti S.p.A.
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Oil recycling proves its worth

USED LUBE OIL RE-REFINING

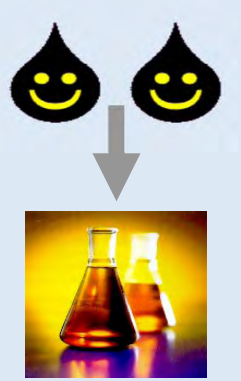
Re-refining of used lube oil is an economically attractive recycling method in terms of resources conservation and environment protection. It allows processing of hazardous material in a safe and effective way to recover an high quality oil product.

This result in a strong economic incentive for re-refining considering oil price.

Re-refining can produce base oils Group I and II or VGO that is a suitable feedstock to FCC or HDC Refinery Units.

Used lube oil is generally a mixture of different types and grades of used lube oils, coming from motor crankcases and industry users.

Used lube oil is made up of a multitude of small individual batches collected at garages, maintenance shops, transportation companies and industries and depends on local situation, seasonal consumption, collection source and organization.



2 liters of Used Lube Oil

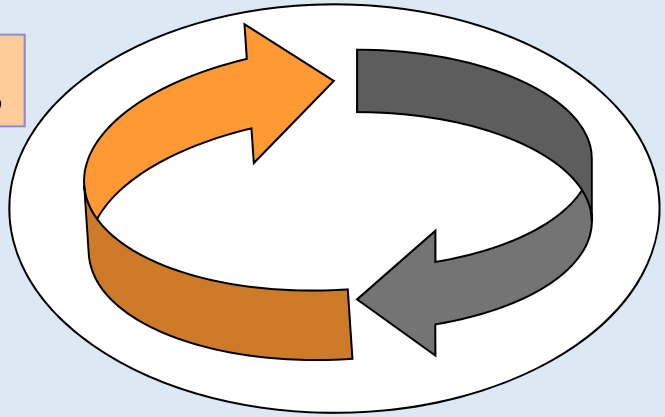
give

1,5 liters of Rerefined Oil

LUBE OIL LIFE CYCLE

Lube oil Production

Used Oil Re-Refining



Lube oil marketing

Lube oil user

Used lube oil Collection

USED LUBE OIL CYCLE

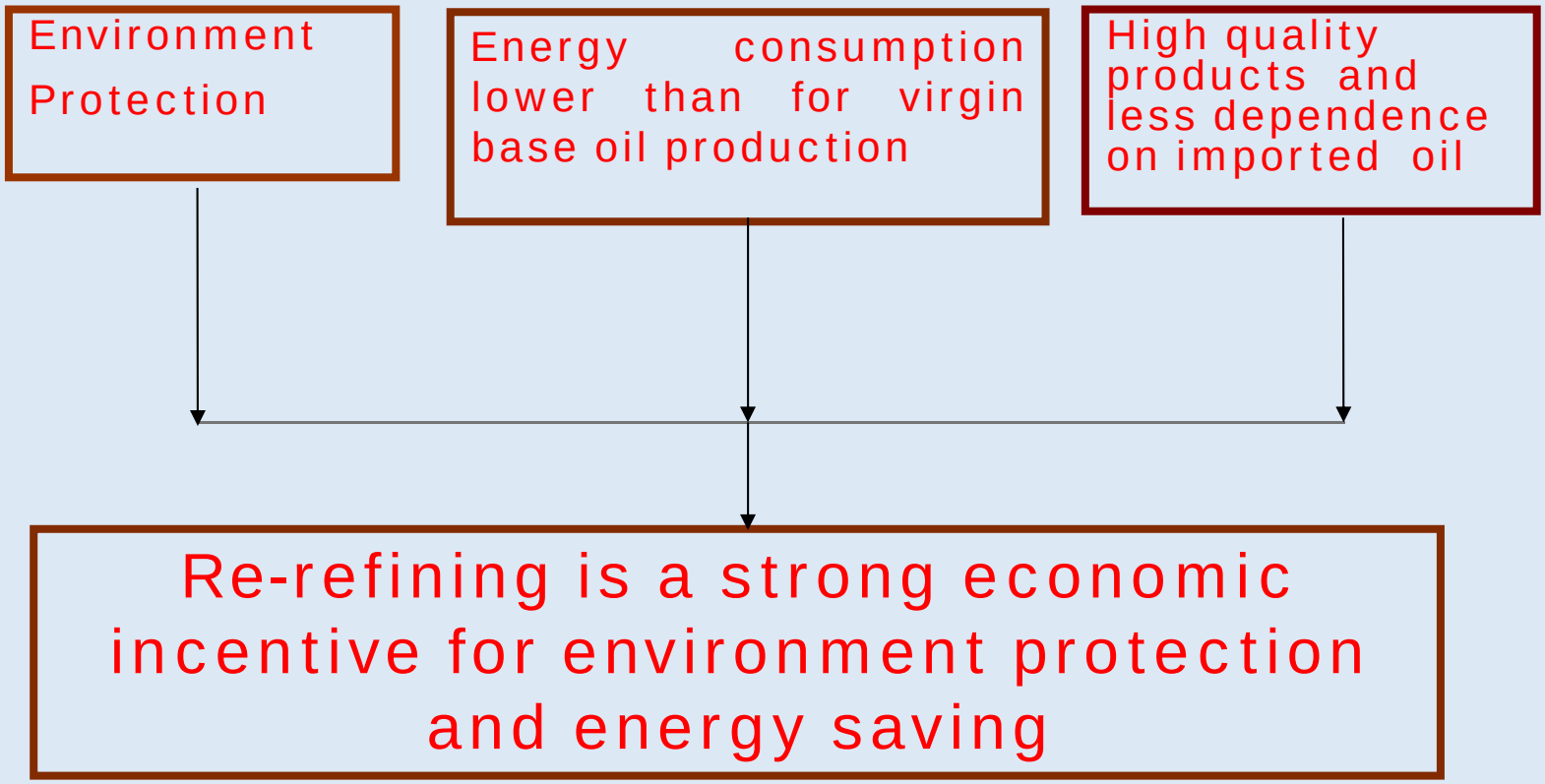
When refilling lubricant

in the engine….

used lube oil is collected and sent to re-refining…

to give Re-refined Base Oil for lubricants production

USED LUBE OIL RE-REFINING ADVANTAGES



USED LUBE OIL COLLECTION

Collection of used lube oil is the starting point for a succesfull Re-refining.

Re-refining depends on collection effectiveness and used lube oil availability.

Efficient collection facilities are a necessity for Re-refining in relation to:

- Availability of used lube oil (quantity)
- Composition of used lube oil (quality)

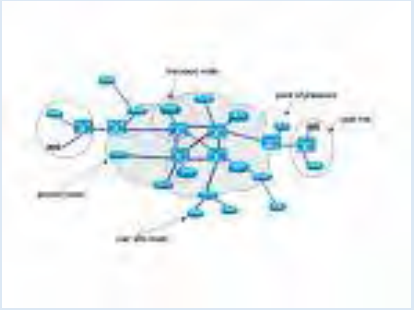
SUCCESS OF RE-REFINING

depends on the

COLLECTION SYSTEM

USED LUBE OIL COLLECTION STRATEGY

- Investigation on used lube oil providers
- Division of the territory in Areas and Sectors
- Storage capacity of collection centres
- Transport network and drivers formation
- Pre-selection tests
- Segregation of contaminants



USED LUBE OIL PRESELECTION TESTS

PCB / PCT, wt ppm	25 max
Cl, wt %	0.5 max
S, wt %	1.5 max
Saponification N°, mgKOH/g	20 max
Heavy fuel oil (drop test)	pass
Fatty acids (lux test)	pass

USED LUBE OIL RE-REFINING

Re-refining removes all the contaminants from used lube oil to recover base lube oil product.

During the last years many factors have obliged rerefiners to look for alternative Re-refining process, such as:

- increased use of additive packages in the formulation of lubricants and by consequence higher level of contaminants in the used oil
- increased amount of thermal degradation products due to longer mileage of the lubricants
- pollution problems related to the disposal of acid sludges and spent clay from the traditional acid/clay re-refining

Among the available today processes, STP Re-refining offers a low energy high yield operation, high quality products and absence of noxious wastes or by products.

STP is pioneer on Used Lube Oil Re-refining since 25 years.

STP has implemented several Re-refining Plants worldwide and is providing the last generation Re-refining Process based on unicum know-how.

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Advantages of STP Re-refining Process

- Continuous Plant operation
- High flexibility towards feedstock quality and composition
- High process yield. The lube oil recovery is more than 95% of the lubricant fraction present in the used oil.
- High separation selectivity, removal of contaminants and production of high quality base oils
- Low energy and low utility consumption
- High on-stream efficiency without corrosion, fouling, coking
- Environment safeguarding operation and no use of acid and clays
- Management of all odorous compounds to eliminate malodorous and toxic emissions
- Capital investment and operating cost highly competitive

STP Re-refining Process

STP Re-refining process removes all the contaminants from the used lube oil and recovers a distillate product as VGO or high quality base oil either API Group I by chemical finishing or API Group II by hydrofinishing.

STP Re-refining process does not release harmful or pollutant wastes to be disposed and is therefore environment friend.

Effluents are oily drains and oily process water sent to treatment before disposal and off gas from vacuum ejector sets routed to thermal oxidizer to prevent smelling.

API Definitions for Base Oils

Guidelines on Base Oil Quality Assurance and Base Oil Interchange classify base stocks into six **base stock groups** according to defined physical and chemical characteristics as follows:

Group I Base stocks containing less than 90 mass percent saturates and/or greater than 0.03 mass percent sulphur and having a viscosity index greater than or equal to 80 and less than 120.

Group II Base stocks containing greater than or equal to 90 mass percent saturates and less than or equal to 0.03 mass percent sulphur and having a viscosity idnex greater than or equal to 80 and less than 120.

API Definitions for Base Oils (cont'd)

Group III Base stocks containing greater than or equal to 90 mass percent saturates and less than or equal to 0.03 mass percent sulphur and having a viscosity index of greater than or equal to 120.

Group IV Base stocks are polyalphaolefins (PAO)

Group V All base stocks not included in Groups I, II, III, IV or VI.

Group VI Base stocks are polyinternalolefins (PIO)

The analytical methods used in the definition of the above base stock groups are:

PROPERTY	TEST METHOD
Saturate content	ASTM D 2007
Viscosity index	ASTM D 2270
Sulphur content	ASTM D 2622
	ASTM D 4294
	ASTM D 4927
	ASTM D 3120

STP Re-refining Process

Unit Operations

- Dehydration
- Gas oil removal
- Vacuum distillation
- Finishing and final fractionation

PROCESS DESCRIPTION

- **Dehydration:** used oil is preheated to remove water, gasoline, VOC, light contaminants (solvents, glycols, lighter organic). Water is sent to treatment and lights (gasoline) are used as substitution fuel.

- **Gasoil removal:** dehydrated oil is stripped under vacuum for light gasoil removal and flash point adjustment of lube oil.

- **Vacuum distillation:** oil from gasoil stripper is sent to vacuum distillation to recover vacuum distillate oil fraction from “heavier than” contaminants.

  Vacuum distillation is carried out under high vacuum conditions, high temperature and by thin film evaporator.

  Thin film evaporator achieves high selectivity and oil purification from metals, heavy polymers, carbon, dust.

PROCESS DESCRIPTION (cont'd)

Thin film evaporator is a vertical cylindrical shell enclosed in an heating jacket with an internal rotor distributing a thin layer of oil on the heated wall, by means of rotating blades.

By the action of rotor (electrically driven) high turbulence and back mixing occur in the thin layer of the oil film and product degradation at high temperature is avoided.

Main features of thin film evaporator are:

- short residence time in order of 10 seconds;
- high heat transfer rate through the film;
- efficient and regenerative cleaning of the contact surface

Cracking and fouling problems are avoided by keeping low residence time, low wall temperature and high flow turbulence.

Lube oil is recovered as distillate while heavy components, additives, metals and degradation products are concentrated in the bottom residue.

THIN FILM EVAPORATOR

❖ **OPERATING PRINCIPLE**

A Thin Film Evaporator consists of a cylindrical shell with internal rotor and external heating jacket

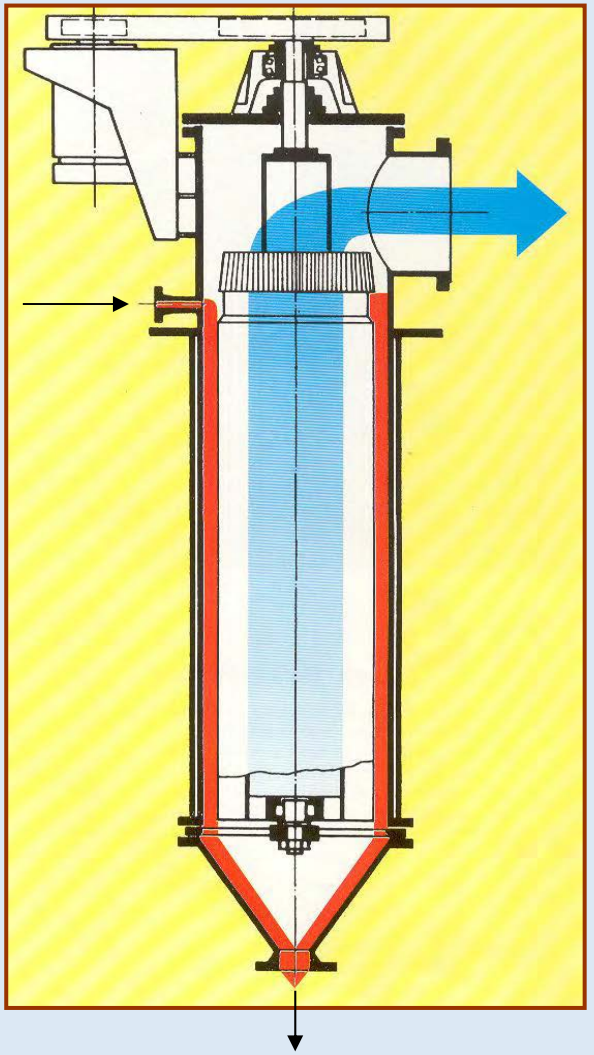
❖ **FEED**

The feed is distributed by the rotor blades and spread on the heated wall to form an highly turbulent thin layer.

❖ **PRODUCTS**

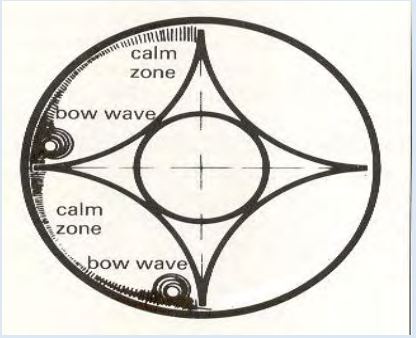
Oil fractions are evaporated and flow out up towards the top

Heavy components flow in a spiral path down to the bottom

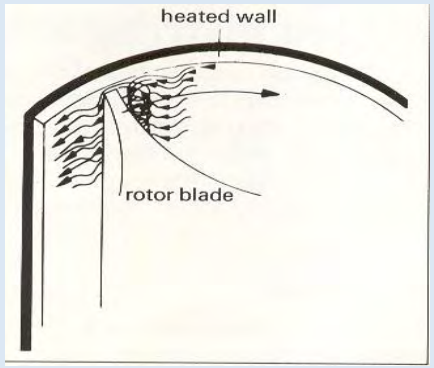


THIN FILM EVAPORATOR

FEATURES



- Short residence time and high turbulence in the film give high heat transfer coefficient and avoid overheating, cracking and fouling
- High evaporation rate is obtained by a simple pass
- High oil yield is achieved without degradation or polymerization of the oil
- High onstream factor and easy maintenance



PROCESS DESCRIPTION (cont'd)

- **Finishing and final fractionaction** : vacuum distillate is further finished to improve product quality.

Finishing is done by Chemical Reactor (VGO and Base oil API Group I) or Hydrofinishing (Base oil API Group II).

Hydrofinishing provides deep removal of further contaminants such as chlorinated, sulfurous, and oxygenated organic compounds and polyaromatic hydrocarbons.

Mild Hydrofinishing is also used to improve the colour of Bas oil API Group I.

Severe Hydrofinishing is required to produce Base oils API Group II.

Finished oil is then fractionated to produce light base oil and heavy base oil.

STP Re-refining Process Merits

- ✓ Eleven (11) Used Lube Oil Re-refining Plants implemented worldwide from 16,000 Ton/year to 120,000 Ton/year capacity
- ✓ Advanced vacuum system for high vacuum level stability, based on the combined use of steam ejectors and individual tubular condensers.
- ✓ High efficiency/low pressure drops structured packing in Vacuum Distillation and Final Fractionation, to reduce pressure drops and upgrade oil yield and product separation.
- ✓ Fixed blades Thin film evaporator to avoid coking and fouling.
- ✓ Special type of API pumps and instrumentation for critical services.

STP Re-refining Process Merits (cont'd)

- ✓ All pumps doubled to avoid plant shut down in case of pump failure.
- ✓ Full DCS/PLC plant automation for continuous operation.
- ✓ Indirect heating of heavy streams to prevent fouling.
- ✓ Special mechanical design for thermal flexibility, vacuum operation and fouling services.
- ✓ Use of antifouling to reduce maintenance and cleaning operation.
- ✓ Proprietary design of Base Oil Finishing for Group I and Group II

PRODUCTS CHARACTERISTICS

LIGHT GASOIL

Specific gravity at 15 °C	0.850
End point, °C	370
Viscosity, cst at 40 °C	3-5
Sulfur, wt%	0.45 (after Hydrofinishing: 50 – 100 ppm)
Colour	2.5 (after Hydrofinishing: L 1.0)
Cetane Index	50-55
Flash point, °C	80

Gasoil can be used as substitution fuel in the Plant or as light fuel oil in industrial fired heaters and/or boilers.

PRODUCTS CHARACTERISTICS

VGO

Distillation range, °C	370 - 550
Specific gravity at 15°C	0.868
Viscosity, cst @ 40°C	25-30
Flash point, °C	210 min
Sulfur, wt%	0.25
CCR, wt%	0.1 max
TAN, mgKOH/g	0.1 max
Ashes, wt%	0.2
Metals content, wt ppm	10 max

VGO is used as feedstock to FCC or HDC Refinery Units

USED LUBE OIL RE-REFINING

PRODUCTS CHARACTERISTICS

RE-REFINED BASE OILS

API GROUP II

Characteristics	Light Base Oil	Heavy Base Oil
Specific gravity at 15 °C	0.870	0.885
Viscosity, cst at 40 °C	25-32	85-95
Sulfur, wt%	<0.03	<0.03
Saturates, wt%	≥90	≥90
CCR, wt%	<0.01	<0.01
Colour	L 1.0	1.5
TAN, mg KOH/g	<0.01	<0.01
Flash point, °C	220	260
Pour point, °C	-3	-6
Metals, ppm	absent	absent

PRODUCTS CHARACTERISTICS

REREFINED BASE OILS

API GROUP II

Characteristics	Light Base Oil	Heavy Base Oil
VI	100	100
PCB, wt ppm	<1	<1
PCT, wt ppm	<5	<5
PNA, wt ppm	<1000	<1000
Cl, wt ppm	<1	<1
Cu corrosion	1a	1a
Noack evaporation loss	15.0	2.5
Saponification N°	<0.5	<0.5
Demulsification N°	10	10
Oxydation stability		
CCR increase, %	0.10	0.15
Viscosity ratio @ 40°C	1.09	1.1
Color stability	1.0	1.0

USED LUBE OIL RE-REFINING

PRODUCTS CHARACTERISTICS

RE-REFINED BASE OILS

API GROUP I

Characteristics	Light Base Oil		Heavy Base Oil	
	Mild Hydrofinish	Chemical Treatment	Mild Hydrofinish	Chemical Treatment
Specific gravity at 15 °C	0.870	0.870	0.885	0.885
Viscosity, cst at 40 °C	25-32	25-32	85-95	85-95
Sulfur, wt%	0.05	0.25	0.05	0.30
CCR, wt%	<0.01	0.05	<0.01	0.07
Colour	1.0	2.0	1.5	2.5
TAN, mg KOH/g	<0,01	0.03	<0.01	0.05
Flash point, °C	220	220	260	260
Pour point, °C	-3	-3	-6	-6
Metals, ppm	absent	L 10	absent	L 10

PRODUCTS CHARACTERISTICS

ASPHALTIC RESIDUE

Specific gravity at 15 °C	0.950 - 1.050
Viscosity, cst	
at 40 °C	10,000
at 100 °C	80
Sulfated ash, wt%	3-4
Sulfur, wt%	1-2
Penetration, mm/10 at 25 °C	200-400
Softening point, °C	15-20

Residue contains high quantity of polymers and metals and can be used for asphalt blending, production of paving asphalt, bitumen protective covering or as fuel in the cement factories.

OVERALL MATERIAL BALANCE

Used Lube Oil	**100**

PRODUCTS

Water and Light Ends	**7**
Light Gasoil	**5**
Lube Oil	**75**
Asphaltic Residue	**13**

Utilities Systems & Offsite facilities for Re-refining Unit

- Electric power system
- Steam system
- Cooling water system
- Compressed air system
- Sour Water Stripper
- Waste Water Treatment
- Thermal Oil System
- Thermal Oxidizer
- Hydrogen Plant (in case of Hydrofinishing)
- Fire fighting system
- Flare system (in case of Hydrofinishing)
- Used oil and Products storage and loading system

Utilities Consumption (per MT of Used Lube Oil)

	VGO or Base oil API Group I production	Base oil API Group II production
Electric power, Kwhr	25	65
Cooling water, m^3	50	75
Steam, Kg/hr	400	680
Fuel, 10^3Kcal (Thermal Oil System)	200	530
Chemical, Kg	7.5	-
Hydrogen, Nm^3	(Note 1)	100 (Note 2)

Note:

1 – Hydrogen consumption in case of Mild hydrofinishing is 35 Nm^3/Ton of distillate.

2 – Nm^3/Ton of distillate.

OPERATION STAFF

Operating labour requirements is depending on Plant operating philosophy, site location, Plant implementation within an existing complex.

Typical labor and technical staff requirement of the Re-refining Unit is as follows:

Plant Manager	1
Plant Operation:	
· Supervisor/Board person (1 per shift)	4
· Operators (2 per shift)	8
Maintenance/Workshop	
· Supervisors	1
· Workers	4
Laboratory	2
Total	20

The staffing estimate is provided as a guideline and is intended for preliminary assessment.

LAND AREA REQUIREMENT

The Used Oil Re-refining Unit is a very compact facility.

Typical layout area required for a 50,000 MTPY Re-refining Unit ISBL is as follows :

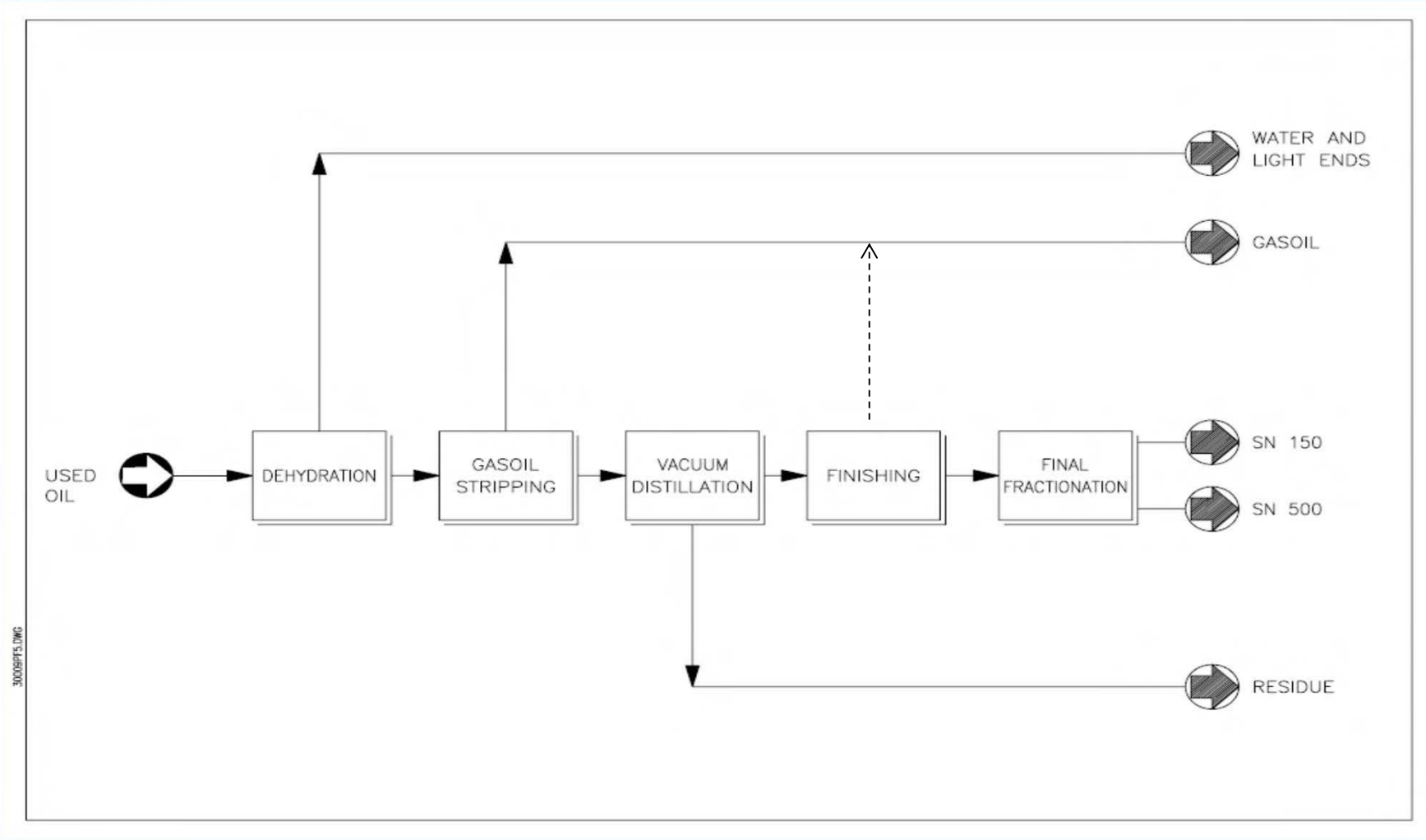
Production of Base Oil API Group I or VGO (without Hydrofinishing)	1,300 sq.mt
Production of Base Oil API Group II (with Hydrofinishing)	2,600 sq.mt

Used Lube Oil Re-refining

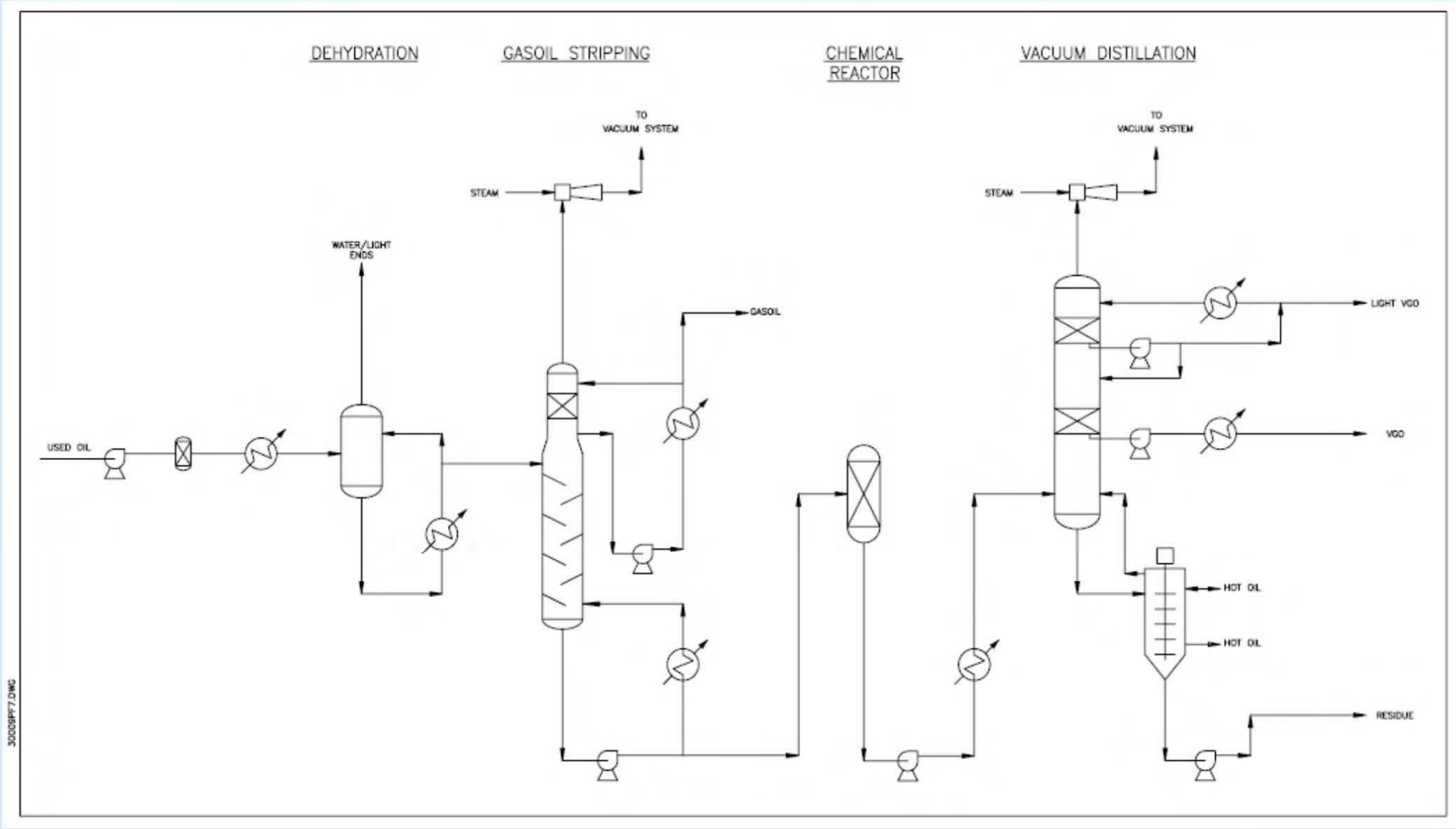
FLOW SCHEMES

Used Lube Oil Re-refining

Block Scheme

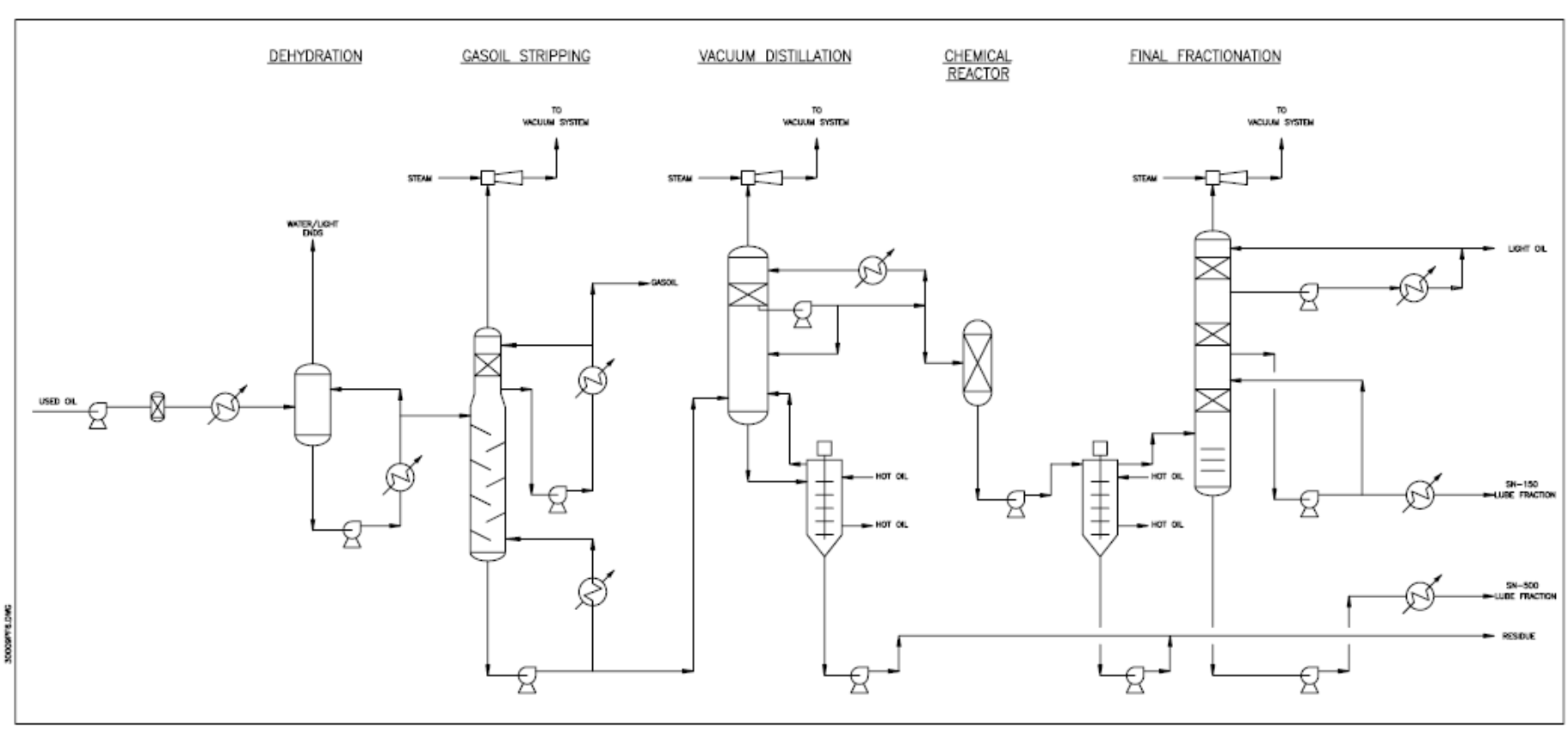


Used Lube Oil Re-refining
VGO production



Used Lube Oil Re-refining

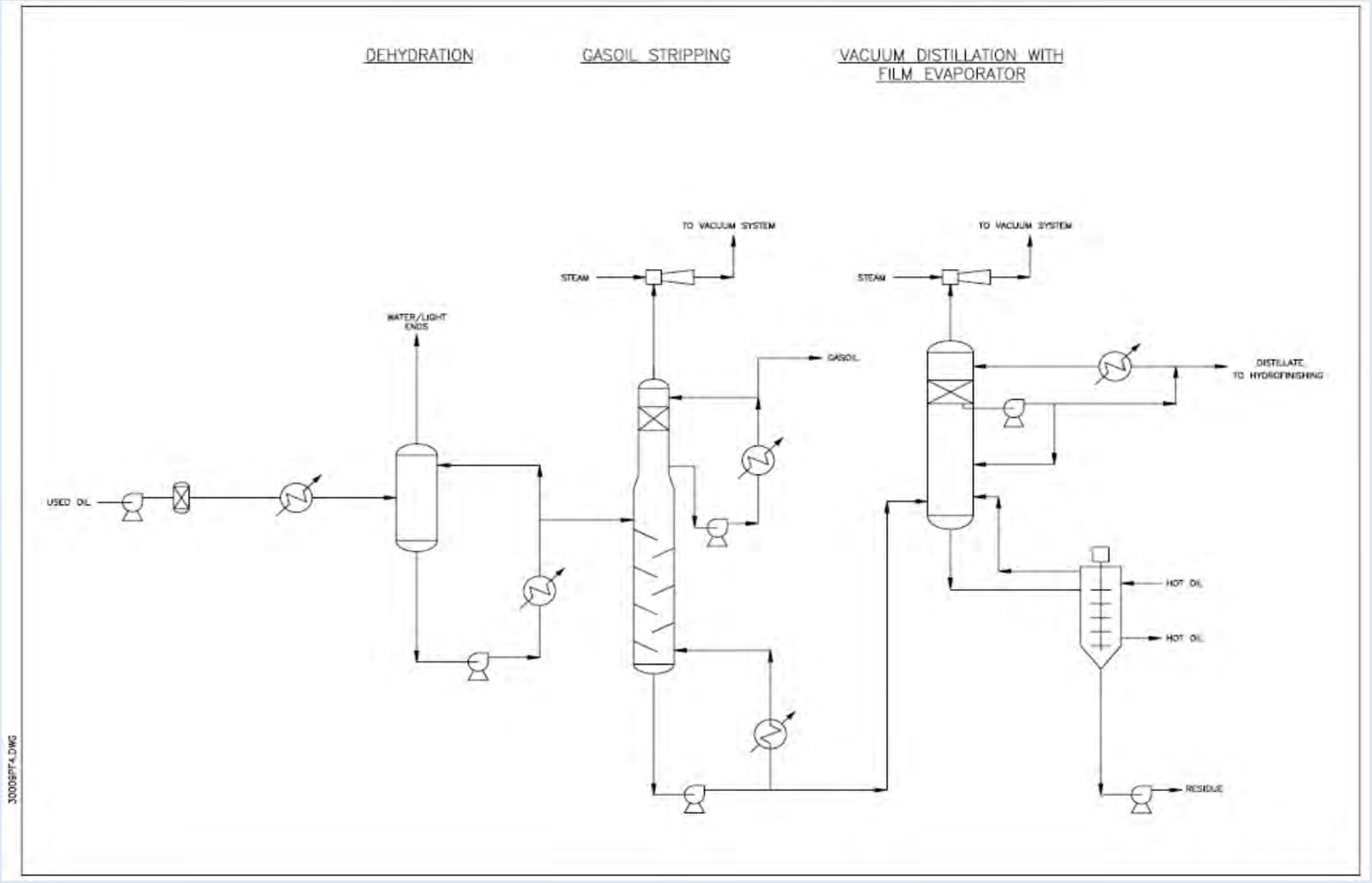
Base oil API Group I production (without Hydrofinishing)



USED LUBE OIL RE-REFINING

Used Lube Oil Re-refining

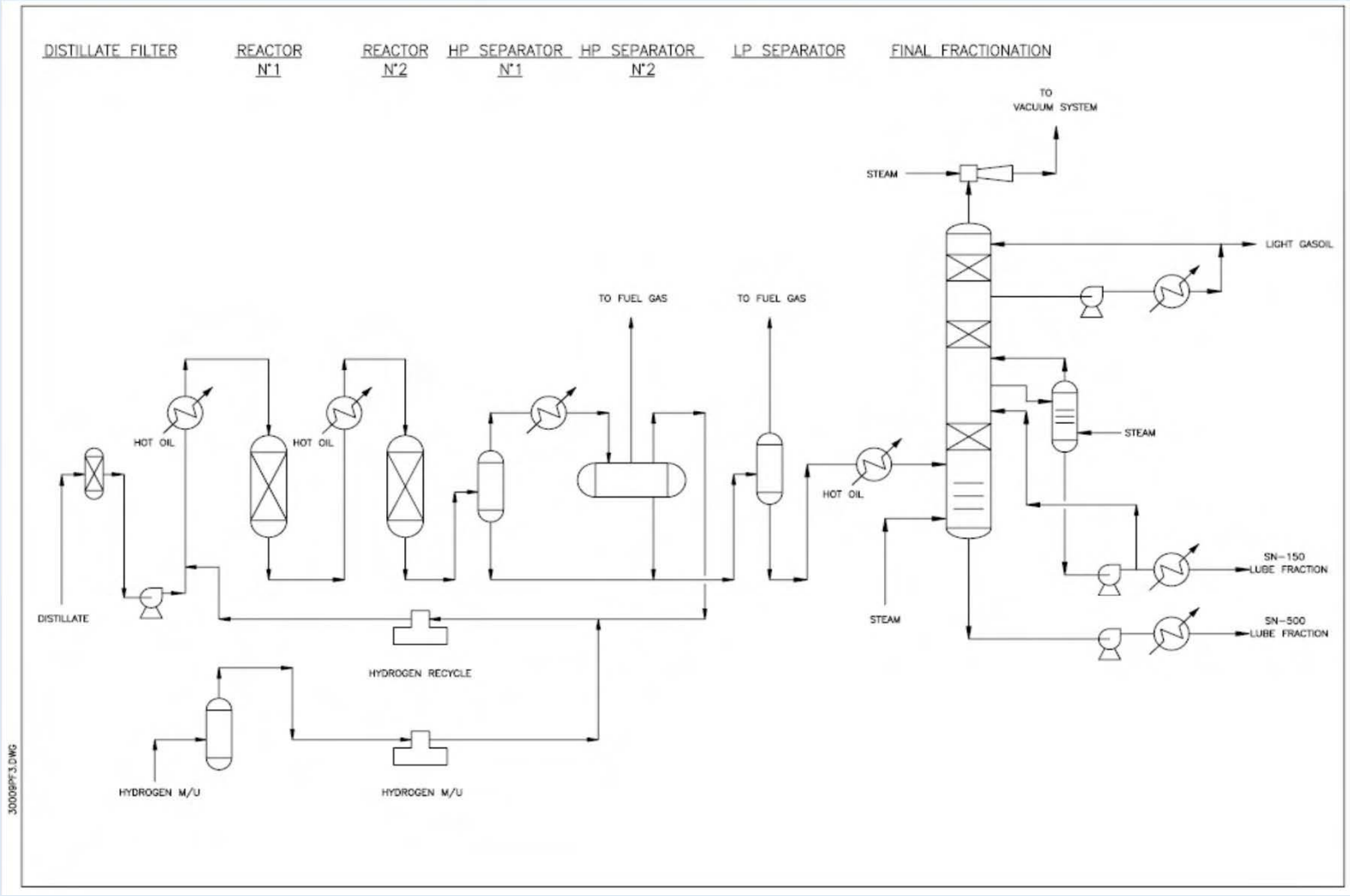
Base oil API Group II and API Group I (Mild Hydrofinishing)



USED LUBE OIL RE-REFINING

Used Lube Oil Re-refining

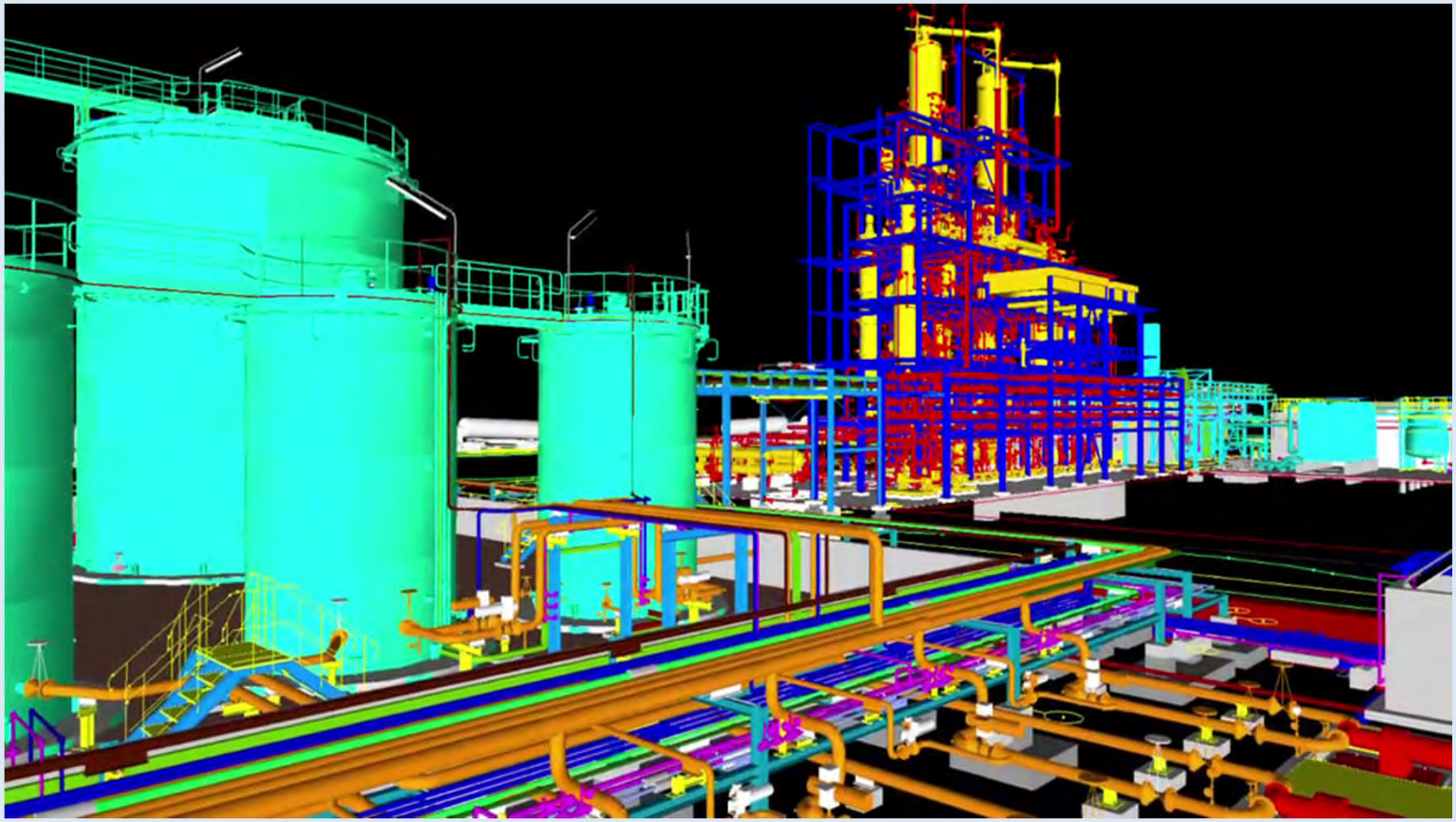
Base oil API Group II and API Group I (Mild Hydrofinishining)



USED LUBE OIL RE-REFINING

Used Lube Oil Re-refining

PLANT 3D MODELING



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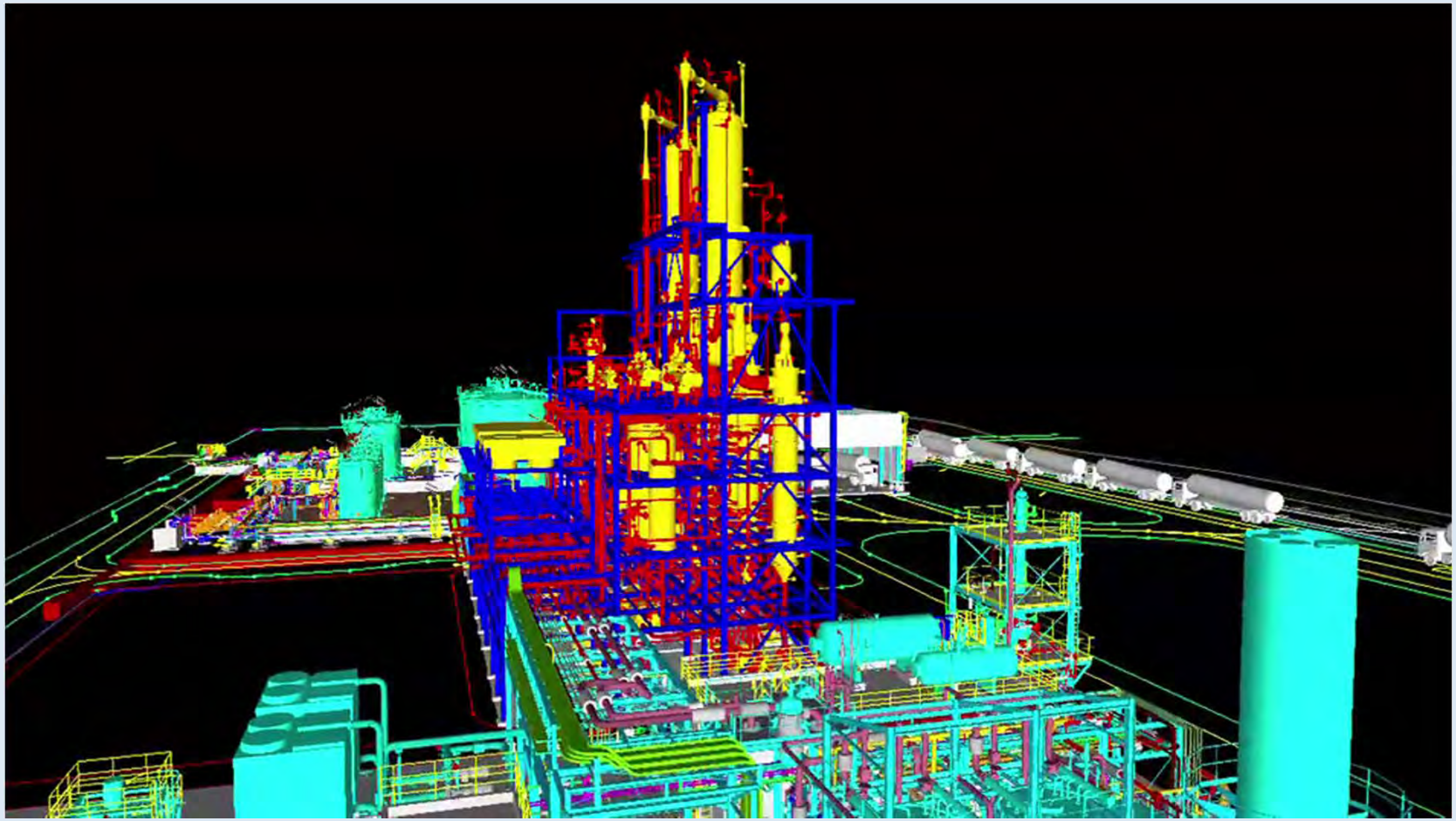

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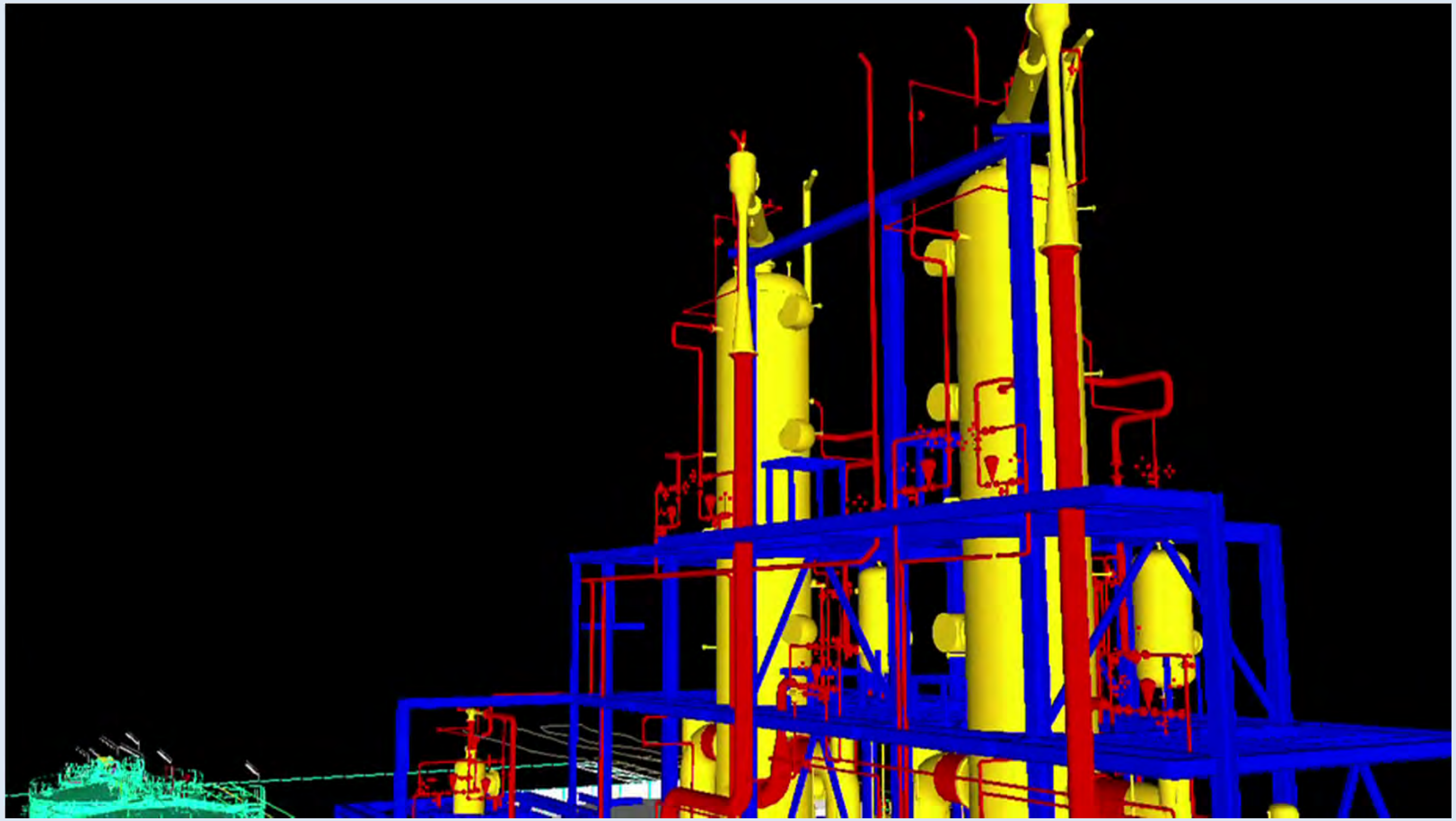

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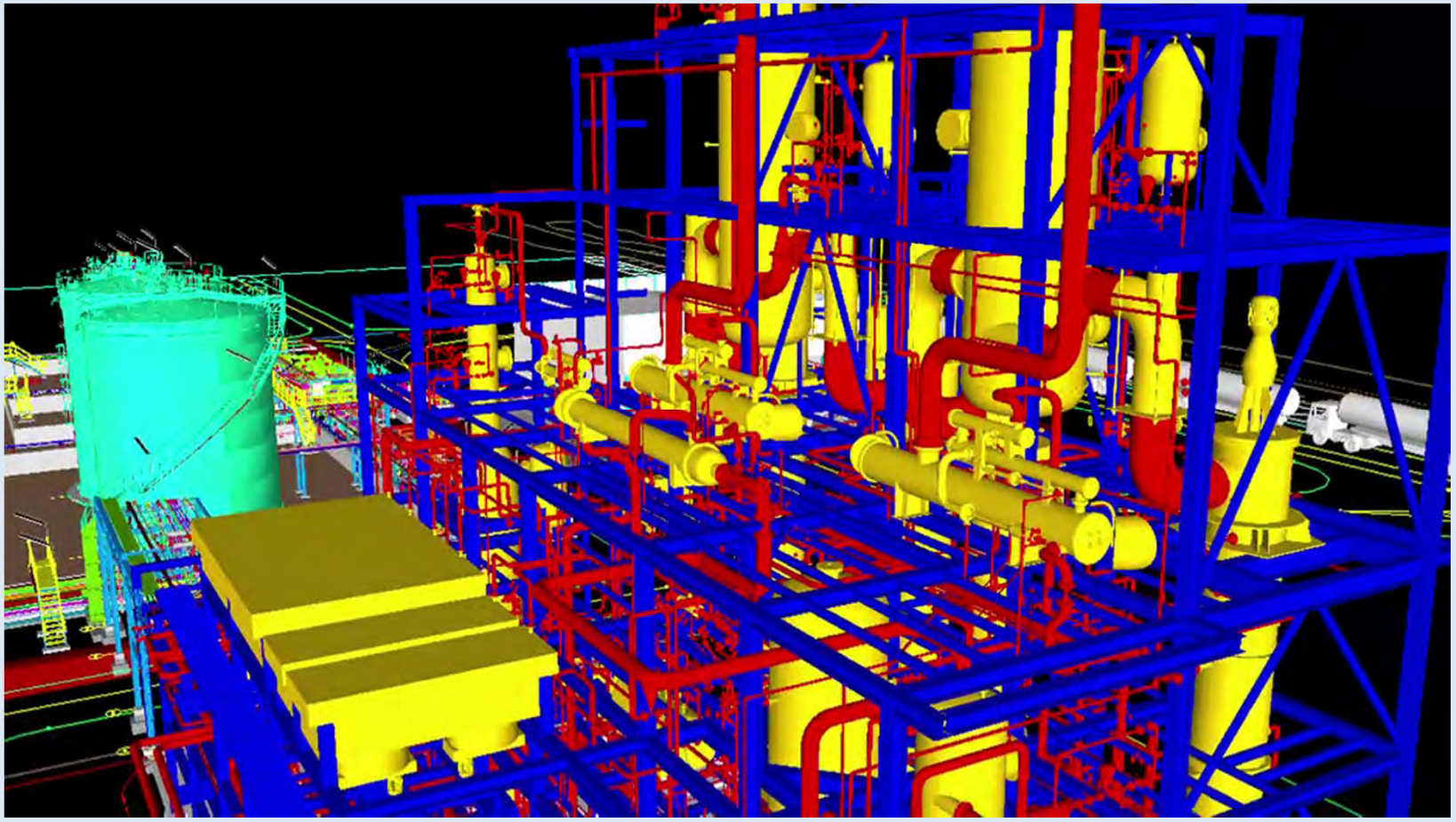

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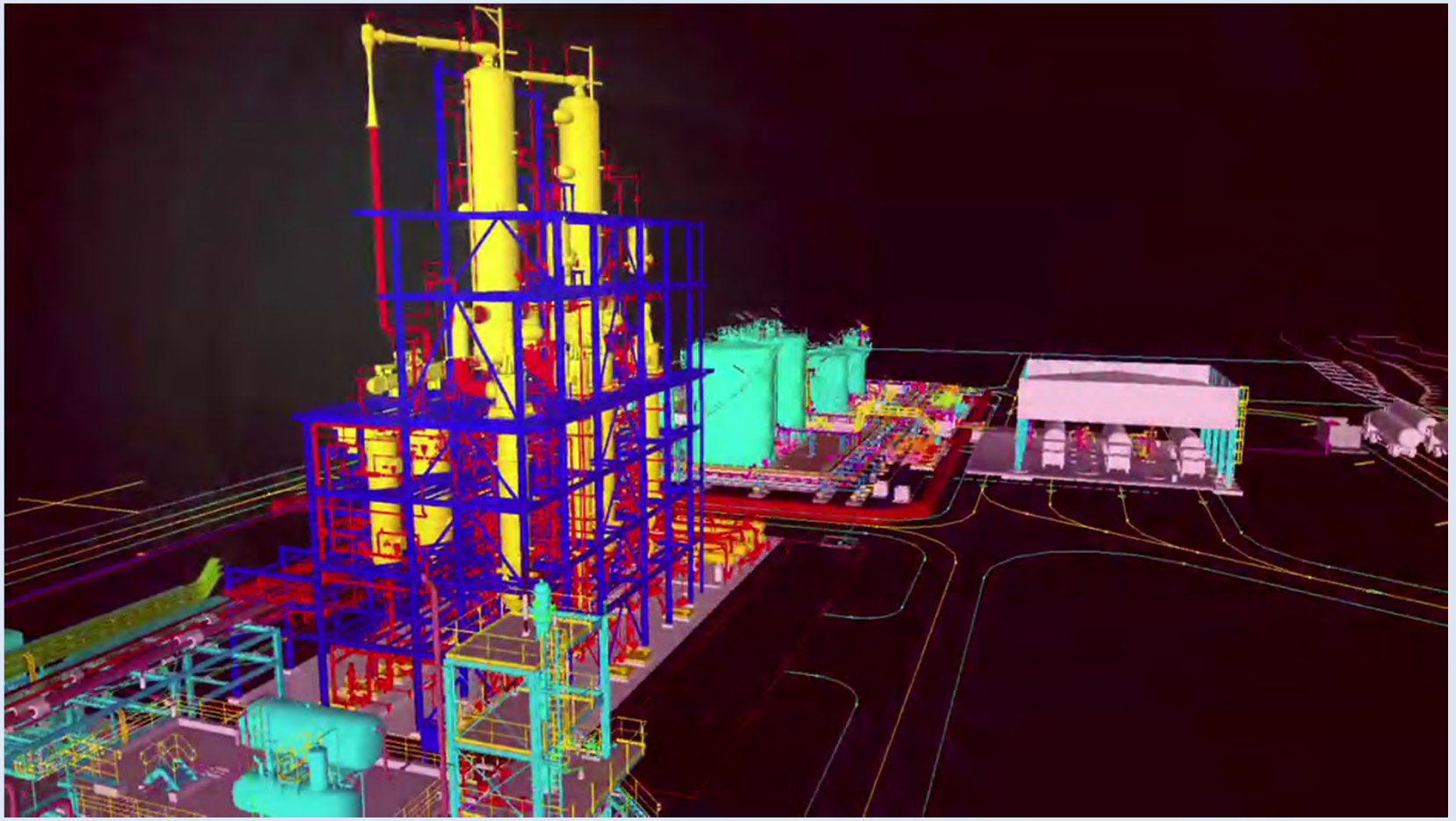

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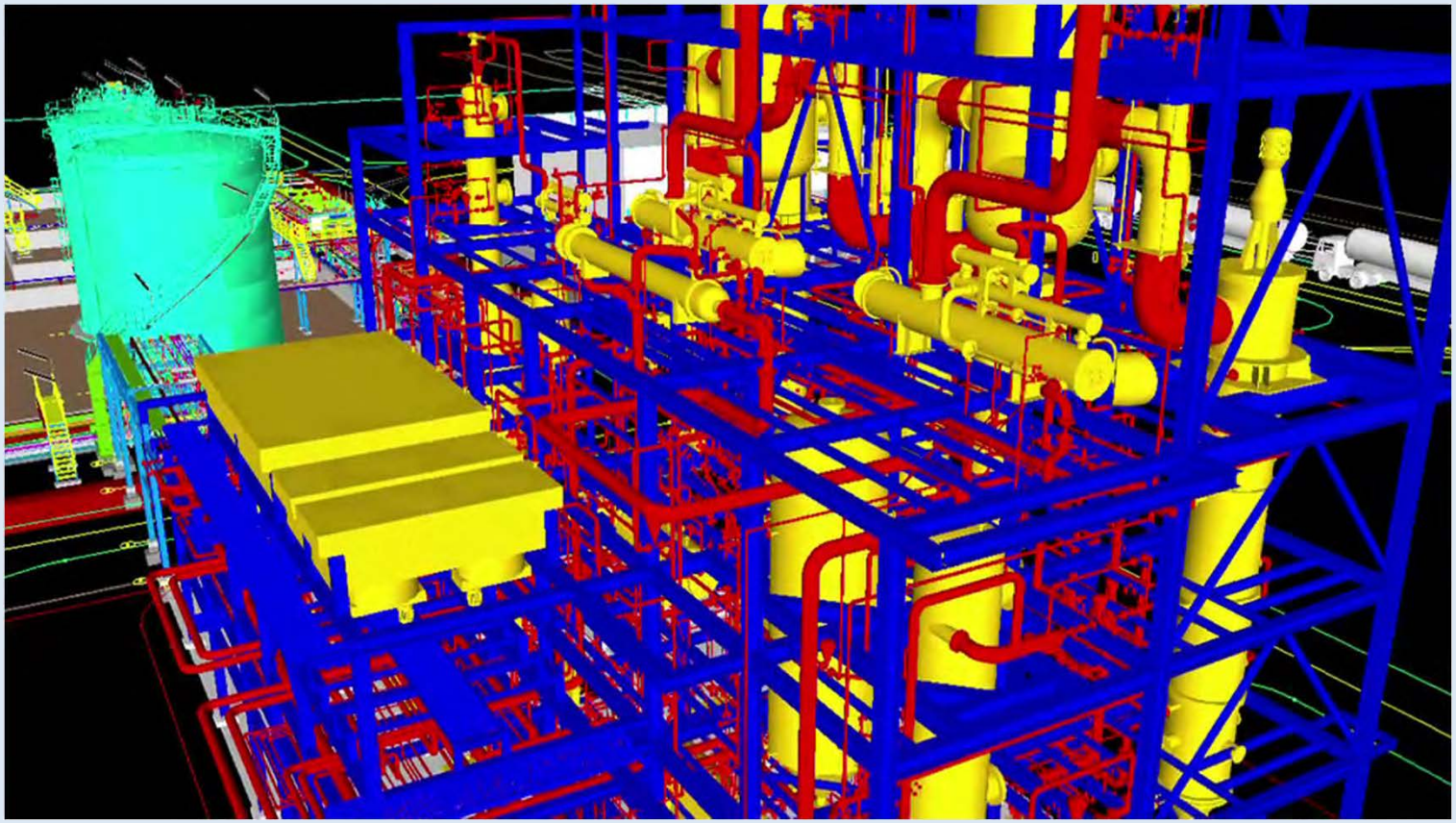

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STP REFERENCE PLANTS

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USED LUBE OIL RE-REFINING

Client: TOTAL / VEOLIA – OSILUB
Gonfreville L'Orcher – France

Capacity: 120,000 Ton/year

Year: Completed 2012

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Year: Completed 2012

USED LUBE OIL RE-REFINING

Client: VEOLIA ES CANADA
St. Hyacinthe, Quebec

Capacity: 60,000 Ton/year

Year: Completed 2013

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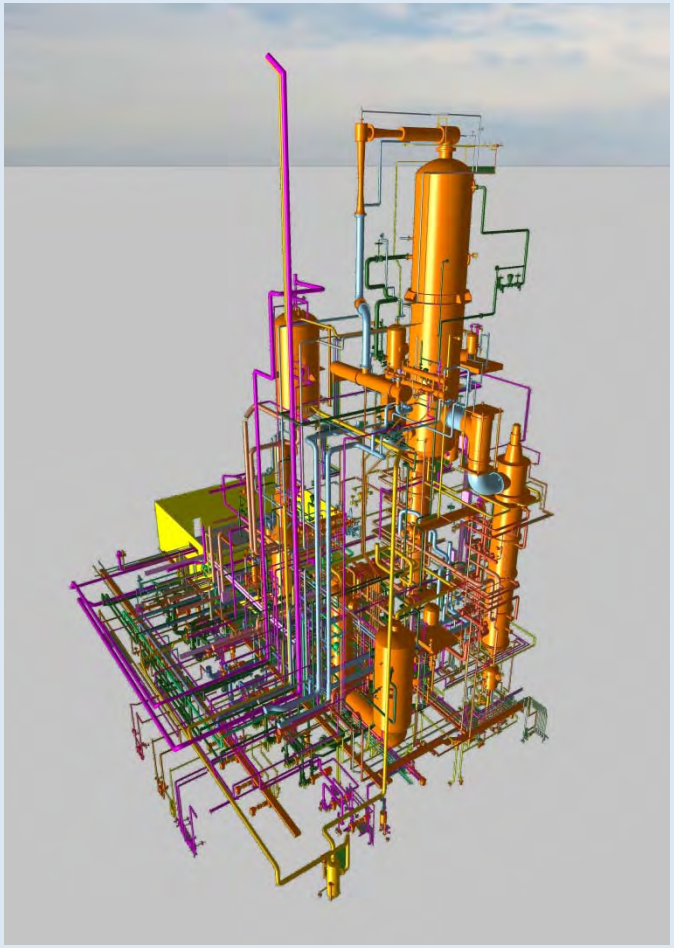
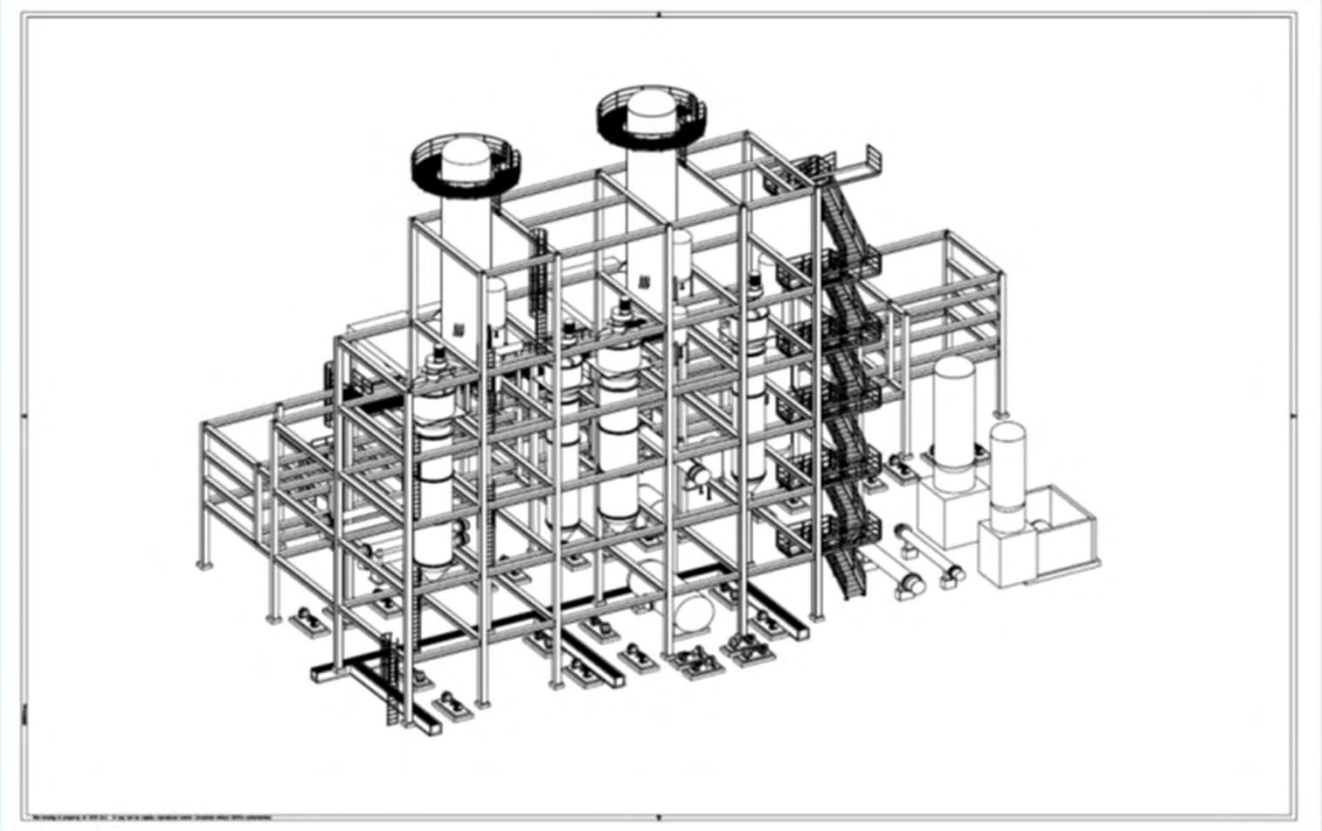


Client: KLOC KSCC
Ahmadi, Kuwait

Capacity: 33,000 Ton/year

Year: In progress - Completion 2014

USED LUBE OIL RE-REFINING



Client: ECOIL ITALIA

Capacity: 65,000 Ton/year

Year: In progress - Completion 2014

USED LUBE OIL RE-REFINING

Client: SIRAL S.p.A.
Nola, Italy

Capacity: 30,000 Ton/year

Year: Completed 2007

USED LUBE OIL RE-REFINING

Client: SIRAL S.p.A.
Nola, Italy

Capacity: 30,000 Ton/year

Year: Completed 2007

USED LUBE OIL RE-REFINING

Client: SIRAL S.p.A.
Nola, Italy

Capacity: 30,000 Ton/year

Year: Completed 2007

Client: SIRAL S.p.A.
Nola, Italy

Capacity: 30,000 Ton/year

Year: Completed 2007

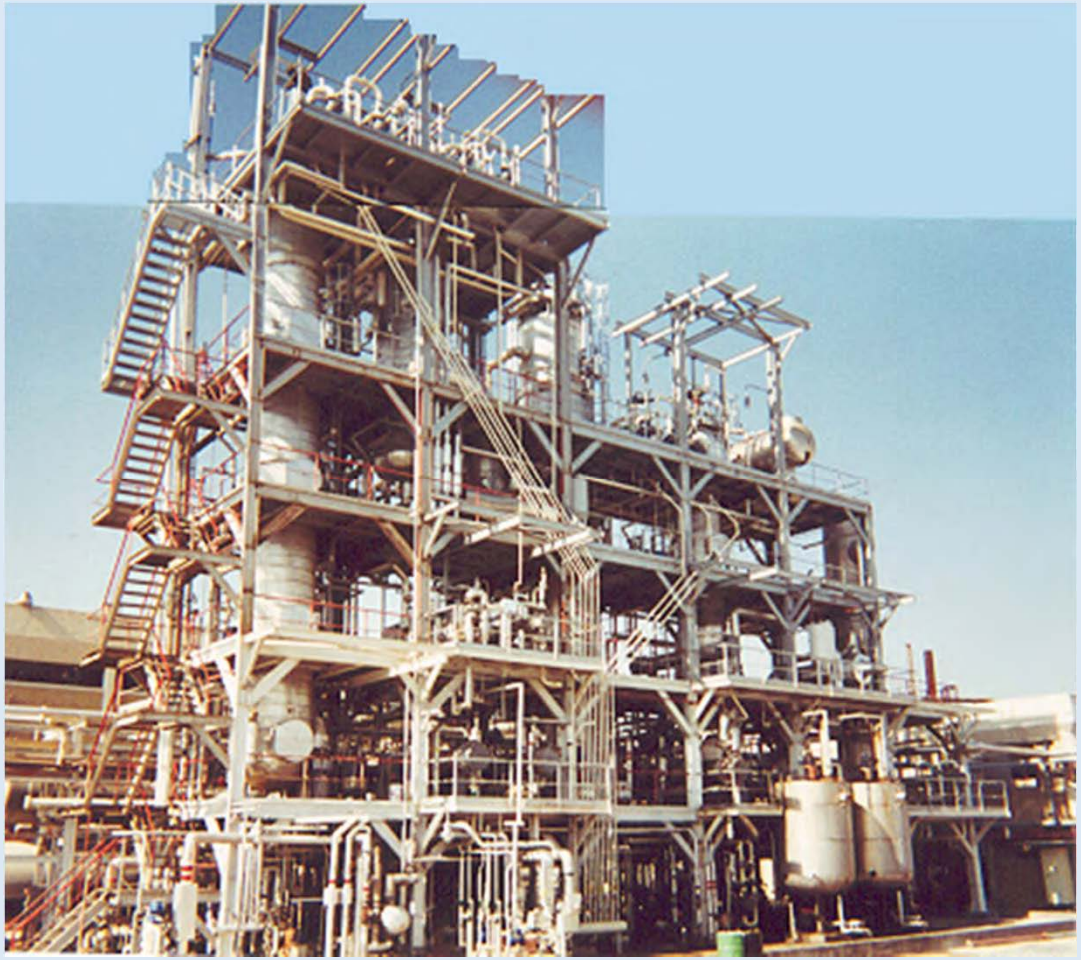
USED LUBE OIL RE-REFINING

Client: KLOC Kuwait Lube Oil Company
Ahmadi, Kuwait

Capacity: 27,000 Ton/year

Year: Completed 2000

USED LUBE OIL RE-REFINING



Client: KLOC Kuwait Lube Oil Company
Ahmadi, Kuwait

Capacity: 27,000 Ton/year

Year: Completed 2000

USED LUBE OIL RE-REFINING

Client: KLOC Kuwait Lube Oil Company
Ahmadi, Kuwait

Capacity: 27,000 Ton/year

Year: Completed 2000

USED LUBE OIL RE-REFINING

Client: SOTULUB Société Tunisienne de Lubrifiants
Bizerte, Tunisia

Capacity: 20,000 Ton/year

Year: Completed 1999

USED LUBE OIL RE-REFINING

Client: GROUPO LWART
Lencois Paulista, Brazil

Capacity: 60,000 Ton/year

Year: Completed 1998

USED LUBE OIL RE-REFINING

Client: GROUPO LWART
Lencois Paulista, Brazil

Capacity: 60,000 Ton/year

Year: Completed 1998

USED LUBE OIL RE-REFINING

Client: RAMOIL
Naples, Italy

Capacity: 30,000 Ton/year

Year: Completed 1996

USED LUBE OIL RE-REFINING

Client: SOTULUB Société Tunisienne de Lubrifiants
Bizerte Tunisie

Capacity: 16,000 Ton/year

Year: Completed 1989

USED LUBE OIL RE-REFINING

Client: SOTULUB Société Tunisienne de Lubrifiants
Bizerte Tunisie

Capacity: 16,000 Ton/year

Year: Completed 1989

USED LUBE OIL RE-REFINING

Client: EKVE/LPC
Aspropyrgos, Greece

Capacity: 25,000 Ton/year

Year: Completed 1985

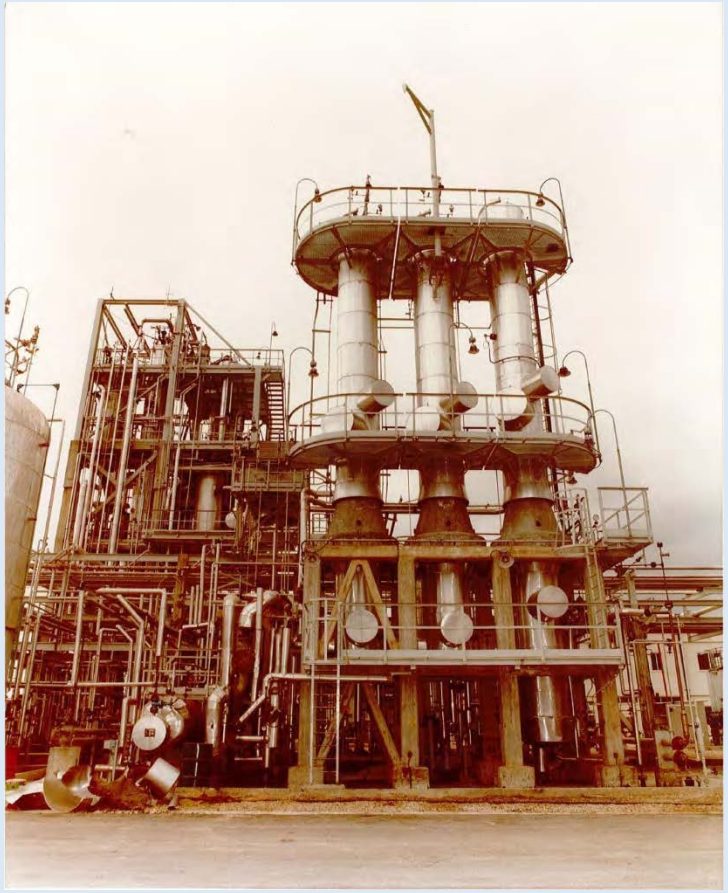
USED LUBE OIL RE-REFINING

Client: EKVE/LPC
Aspropyrgos, Greece

Capacity: 25,000 Ton/year

Year: Completed 1985

USED LUBE OIL RE-REFINING



Client: EKVE/LPC
Aspropyrgos, Greece

Capacity: 25,000 Ton/year

Year: Completed 1985

Carlo G. Lombardi

Carlo G. Lombardi is the Chief Executive Officer and Managing Director of STP, Studi Tecnologie Progetti S.p.A..

Carlo has more than 30 years experience in design and implementation of Used Lube Oil Re-refining Plants and is a recognized worldwide leading expert of Used Lube Oil Re-refining and one of the pioneer of the Re-refining technology based on thin film evaporator and hydrofinishing process.

Carlo has published several papers on Used Lube oil Re-refining and is lecturer at the Industrial Chemistry Institute of Chemical Engineering College, Rome University.

./..

… Carlo G. Lombardi

Carlo contribution to Re-refining research and development includes:

- Pilot testing for the application of thin film evaporator to Used Lube Oil Re-refining at HABERLAND Co., Dollbergen, Germany, year 1980
- Implementation of the first industrial Re-refining plant based on Film Evaporator at EKVE/LPC Industries, Aspropyrgos, Greece, year 1983 - 1985
- Cooperation with the Italian “Consortium of Used Lube Oil” to set up the procedures and regulations for the specification and collection of the Used Lube Oil in Italy, year 1984
- Cooperation with Tunisian Authorities to the assessment of regulation and quality specification of used lube oil and re-refined lube oil in Tunisia, year 1987
- Cooperation with REDOIL Italy, partner of Chall-Oils USA, for the formulation of finished lubricants from re-refined oils including Motor Oil, Transmission Fluids, White Oils, Industrial Oils, year 2005
- Cooperation with AGIP PETROLI, Italy, on lubricants production, marketing and selling, year 2006.

STP Publications and Conferences on Used Lube Oil Re-refining:

- *A successful waste management investment*, UNEP-BIMTECH International Expert's Workshop on Destruction Technologies for Waste Oils, New Delhi, India, November 2011.
- *A re-refining eco-friendly technology*, Indian Institute of Petroleum (IIP) Workshop on Used Oil Recycling, Dehradun, India, November 1999.
- *Modification of existing re-refining units and realization of new modular units*, NORA Conference and Trade Show, Palm Springs, USA, November 1999
- *The hidden asset*, Fifth Conference on Spent Lube Oil Re-refining, Las Vegas, USA, September 1982.
- *The used lube oil: a resource not to underevaluate*, Chemical Industries Magazine, Italy, February 1982.

USED LUBE OIL RE-REFINING

UNITED NATIONS ENVIRONMENT PROGRAMME

UNEP

Our ref: 65 — 11 November 2011

Dear Mr. Lombardi,

I am pleased to advise that UNEP's International Environmental Technology Centre has undertaken a project to develop a Compendium of Destruction Technologies for waste oils. The compendium will include both technologies for waste oil recycling as well as destruction technologies for non-recyclable oils through converting it into fuel and/or incinerating it. The objective is to assist developing countries with information on destruction technologies and to enable them to assess different technologies in order to select the one suitable for their local conditions.

We are working with Birla Institute of Management and Technology, India, on this project. Apart from the Compendium, we will also develop interactive software to facilitate the technology selection process. A draft version of the compendium and the interactive software will soon be ready.

In order to enrich the work with the knowledge and inputs from international experts, we are organizing an International Experts Workshop in New Delhi, India, from 30 November to 2 December 2011. Noting your expertise and experience in the field of waste management, we would like to invite you as an expert to the workshop and request you to provide your valuable inputs. Please confirm your attendance to Mr. Surya Prakash Chandak, Senior Programme Officer, Email: surya.chandak@unep.org with copy to Ms. Kazuko Uwasu, Programme Assistant, Email: kazuko.uwasu@unep.org.

The detailed agenda of the Workshop is attached. The venue of the workshop will be Hotel Clarion Collection (formerly Qutab Hotel) Unit of Edenpark Hotels Pvt. Ltd. Shaheed Jeet Singh Marg, New Delhi 110016. Upon receiving your confirmation, we will send you the draft compendium which will be discussed in the meeting.

In the light of STP's status as a large multinational company, we look forward to your early confirmation and participation in the workshop.

Sincerely yours,

Matthew Gubb
Director

Mr. Carlo Gustavo Lombardi
CEO/Managing Director
STP Studi Tecnologie Progetti S.r.l.
Piazzale Enzo Tarantelli, 97
00144 - Roma, Italy
E-mail: cglombardi@stpitaly.eu

Attachment: Agenda of the workshop

Division of Technology, Industry and Economics
International Environmental Technology Centre (IETC)
2-110, Ryokuchi koen, Tsurumi-ku, Osaka 538-0036, Japan, Tel: +81.6.6915.4581; Fax: +81.6.6915.0304
E-mail: info@unep.org / URL: http://www.unep.or.jp

UNEP International Expert's Workshop, New Delhi - India

BIMTECH
BIRLA INSTITUTE OF MANAGEMENT TECHNOLOGY

UNEP

UNITED NATIONS ENVIRONMENT PROGRAMME
UNEP-DTIE-IETC
In collaboration with
Birla Institute of Management Technology (BIMTECH)

International Experts' Workshop on
Destruction Technologies for Waste Oils

Certificate of Participation

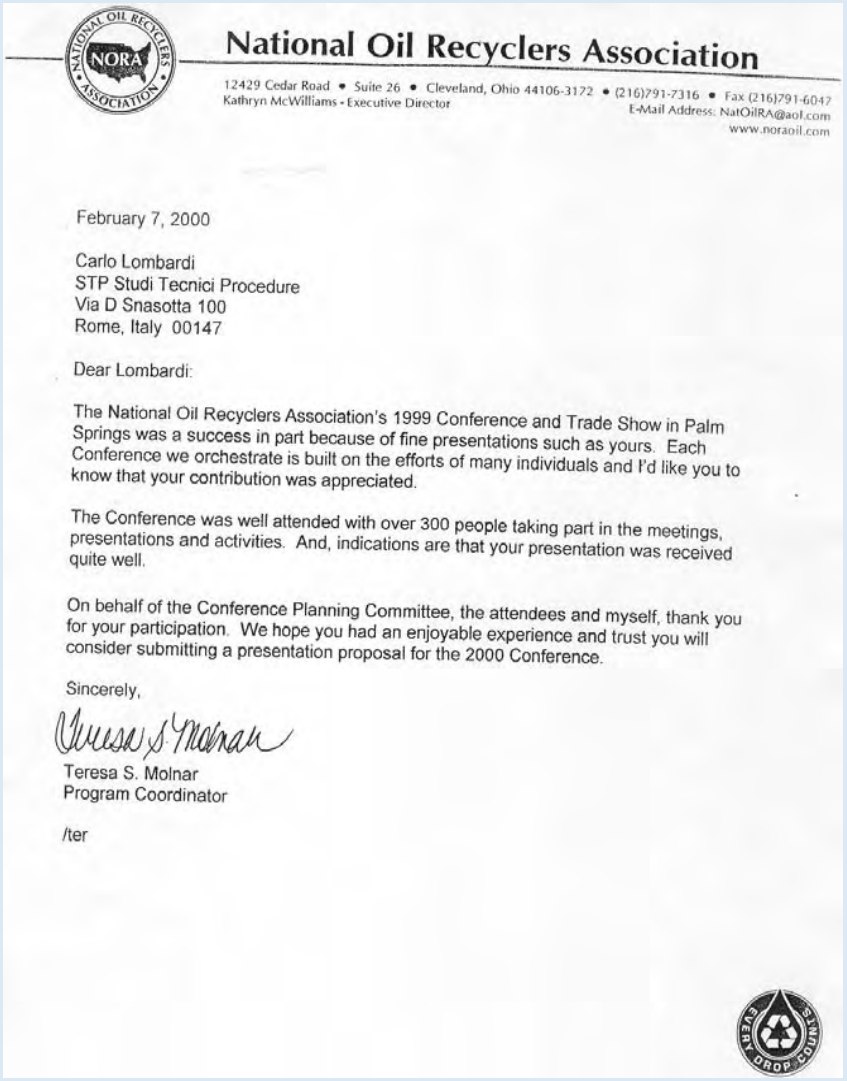
This is to certify that Mr./Ms. Carlo Gustavo Lombardi has participated in International Workshop of experts for reviewing the draft manuscript of **"Destruction Technologies for Waste Oils"** held in New Delhi – India, during 30th Nov. 2011 to 2nd December 2011 in India, and has contributed in modifying the document. The workshop was organized by the United Nations Environment Programme UNEP-DTIE-IETC in collaboration with Birla Institute of Management Technology, Greater Noida – India.

Dr. H. Chaturvedi
Director, BIMTECH

USED LUBE OIL RE-REFINING

STP attendance to **NORA** Conference

at Palm Springs (USA)



National Oil Recyclers Association

12429 Cedar Road • Suite 26 • Cleveland, Ohio 44106-3172 • (216)791-7316 • Fax (216)791-6047
Kathryn McWilliams - Executive Director
E-Mail Address: NatOilRA@aol.com
www.noraoil.com

February 7, 2000

Carlo Lombardi
STP Studi Tecnici Procedure
Via D Snasotta 100
Rome, Italy 00147

Dear Lombardi:

The National Oil Recyclers Association's 1999 Conference and Trade Show in Palm Springs was a success in part because of fine presentations such as yours. Each Conference we orchestrate is built on the efforts of many individuals and I'd like you to know that your contribution was appreciated.

The Conference was well attended with over 300 people taking part in the meetings, presentations and activities. And, indications are that your presentation was received quite well.

On behalf of the Conference Planning Committee, the attendees and myself, thank you for your participation. We hope you had an enjoyable experience and trust you will consider submitting a presentation proposal for the 2000 Conference.

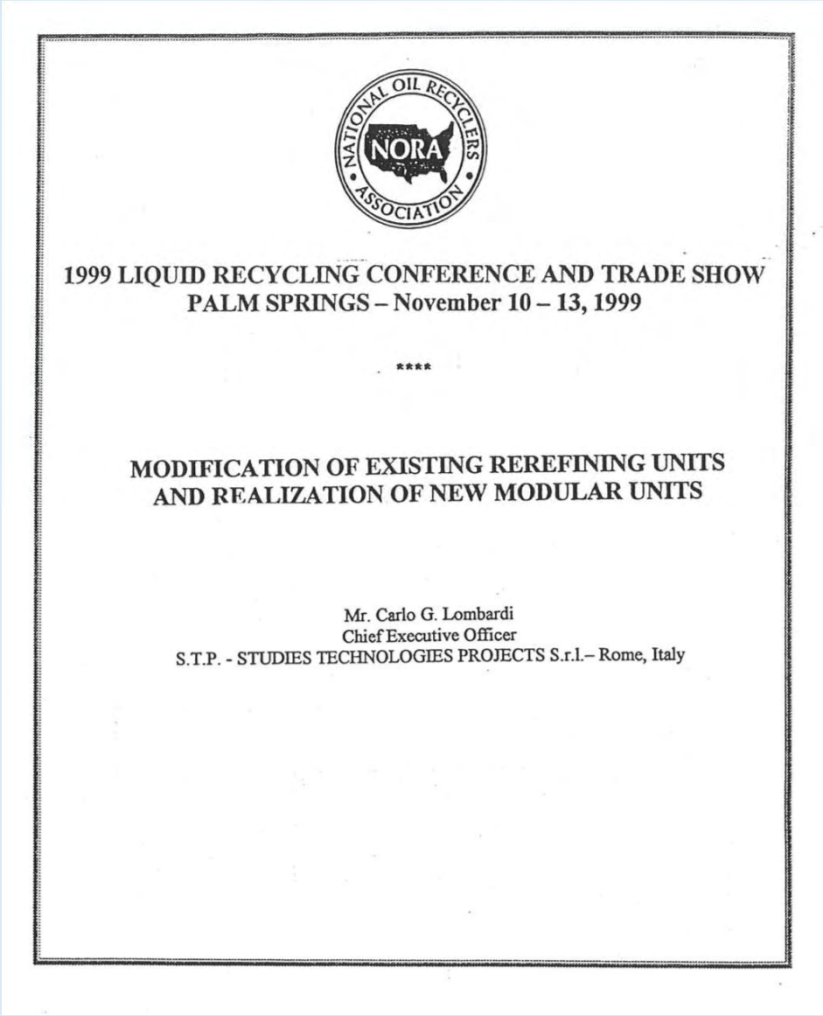
Sincerely,

Teresa S. Molnar
Program Coordinator

/ter

USED LUBE OIL RE-REFINING

STP attendance to **NORA** Conference at Palm Springs (USA)



1999 LIQUID RECYCLING CONFERENCE AND TRADE SHOW
PALM SPRINGS – November 10 – 13, 1999

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MODIFICATION OF EXISTING REREFINING UNITS AND REALIZATION OF NEW MODULAR UNITS

Mr. Carlo G. Lombardi
Chief Executive Officer
S.T.P. - STUDIES TECHNOLOGIES PROJECTS S.r.l.– Rome, Italy

CONTACT US

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00144 – Rome, Italy

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Fax. ++39-06-52201078

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Web Site: www.stpitaly.eu