

References per type of intervention

1. ATEX → removal by suction of explosive gas mixtures
2. Specialized studies
3. Modification of existing units
4. Incinerators / heat recuperation systems
5. DeNOx incinerators with heat recovery / DeNOx burners / LedeNOx systems
6. Solid waste incinerators
7. Metal Fiber Burner
8. Ground flare systems
9. Elevated flare systems / Flare tips
10. Biogas flare systems
11. Inspection, maintenance, miscellaneous
12. Incinerators built with the cooperation of some engineers of the Europem team, especially Mr. M. Perrot.

The Europem crew has executed the engineering, fabrication, installation and start-up of the projects mentioned here below.

1. ATEX : treatment of explosive gas mixtures (zone 0, 1 &2)

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>INDUSTRY APPLICATION</u>	<u>SCOPE OF SUPPLY</u>
Lawter Chemicals	Lokeren, BE	Basic components for ink. 400 liter/h of hydrocarbons + water 7.000 Nm ³ /h waste vapors (air, N ₂ , Hydrocarbons : zone 1 application)	Design, engineering, fabrication, erection, start-up of extraction system for explosive gas mixture + incinerator with thermal oil heat Recuperation.
Lawter Chemicals (Now Hexion Chemicals)	Kallo, BE	Basic components for ink. 400 liter/h of hydrocarbons + water 7.000 Nm ³ /h waste vapors (air, N ₂ , Hydrocarbons : zone 1 application).	Design, engineering, fabrication, erection, start-up of extraction system for explosive gas mixture + incinerator with thermal oil heat Recuperation.
Lawter Chemicals (Now Hexion Chemicals)	Waterford, IRL	Basic components for ink. 400 liter/h of hydrocarbons + water 7.000 Nm ³ /h waste vapors (air, N ₂ , Hydrocarbons : zone 1 application).	Design, engineering, fabrication, erection, start-up of extraction system for explosive gas mixture + incinerator with thermal oil heat Recuperation.
Fabelta (DOMO)	Zwijnaarde, BE	Textile industry 50.000 Nm ³ /h air with solvents. (zone 2 application) .	Design, engineering, fabrication, erection, start-up of extraction system for explosive gas mixture + catalytic incinerator and additional energy recuperation (air preheaters).
UCB	Drogenbos, BE	Chemical industry 5.000 Nm ³ /h air + N ₂ + acrylates + solvents. (zone 1 application)	Design, engineering of removal system (by suction) of explosive gas mixture.

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>INDUSTRY APPLICATION</u>	<u>SCOPE OF SUPPLY</u>
EOC	Evergem, BE	(Petro)chemical industry 1.500 Nm ³ /h air + N ₂ + acrylates. (zone 1 application)	Design, engineering, fabrication, erection, start-up of extraction system of explosive gas mixture + modification incinerator.
LBC	Rotterdam, NL	Ship terminal : loading and unloading of ships, storage tanks, railway wagons	Study, HAZOP, engineering and specification of treatment systems.
NAFTA	Antwerpen, BE	Ship terminal : loading and unloading of ships and storage tanks : 750 Nm ³ /h air + N ₂ + hydrocarbons. (zone 2 application) .	Study, HAZOP, design, engineering, fabrication, erection and start-up of extraction system of explosive gas mixtures + vertical incinerator.
Tebodin Engelhard	Den Haag, NL De Meern, NL	Engineer & Contractor Manufacturing of catalysts for car industry and chemical industry : 4.000 Nm ³ /h air loaded with silicon containing hydrocarbons. (zone 2 application) .	Study, engineering, fabrication, erection, start-up of extraction system of explosive gas mixture + vertical incinerator.
Oiltanking	Antwerpen, BE	Ship terminal : loading and unloading of ships, railway wagons, storage tanks : 1.000 Nm ³ /h air + N ₂ + hydrocarbons (20 different products). (zone 0 application)	Study, HAZOP, engineering, fabrication, erection, start-up of extraction system of explosive gas mixtures + vertical incinerator.
ADPO	Antwerpen, BE	Ship terminal : loading and unloading of ships, railway wagons, trucks, storage tanks : 2.000 Nm ³ /h air + N ₂ + hydrocarbons (60 different products). (zone 0 application)	Study, HAZOP, engineering, fabrication, erection, start-up of extraction system of explosive gas mixtures + horizontal incinerator with waste heat boiler.

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>INDUSTRY APPLICATION</u>	<u>SCOPE OF SUPPLY</u>
ADISSEO/RHODIA	Rôche de Condrieu, FR	Chemical plant (vitamines for animal foods) : 20.000 Nm ³ /h N ₂ + hydrocarbons. (zone 1 application)	Study, HAZOP, engineering, fabrication, erection, start-up of vertical natural draft incinerator.
J-TEC / Katoennatie Dupont Chemicals	Antwerpen, BE	Engineer + Contractor Handling + storage of air loaded with silicon containing hydrocarbons. vertical incinerator. (zone 2 application) .	Study, HAZOP, engineering, fabrication, erection, start-up of
GTS Industries (Dillinger Hütte) (Arcelor)	Duinkerken, FR	Steel industry. 38.000 Nm ³ /h air loaded with solvents from steel painting. (zone 2 application) .	Study, HAZOP, engineering, fabrication, erection, start-up of extraction system of explosive gas mixture + RTO (Regenerative Thermal Oxidizer) system.
Wacker Chemie	Burghausen, D	Chemical industry. 150 Nm ³ /h of hydrocarbons + acetylene. (zone 2 application) .	Study, HAZOP, engineering, fabrication, start-up of Metal Fibre Burner .
Adisseo	Commentry, FR	Chemical industry (vitamines for animal foods) : 2.500 Nm ³ /h N ₂ + hydrocarbons (Zone 1 application)	Study, HAZOP, engineering, fabrication, erection, start-up of a vertical natural draft incinerator with waterseal.
Petrol Lavori	Trieste, IT	Vapors coming from cleaning 100.000 m ³ oil storage tanks : 10.000 Nm ³ /h of air + hydrocarbons. (Zone 0 application)	Study, HAZOP, engineering, fabrication, erection and start-up of a mobile elevated Air-Assisted flare system.
VOPAK (under construction).	Antwerpen, BE	Chemical tank farm. The vapours are a mixture of air / nitrogen and hydrocarbons, and within the explosion limits. (Zone 0 application) Flow rate up to 450 Nm ³ /h.	Study, HAZOP, engineering, fabrication, installation and start-up of ATEX zone 0 skid and Metal Fibre Oxidizer.

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>INDUSTRY APPLICATION</u>	<u>SCOPE OF SUPPLY</u>
Tiense Suiker / Biowanze (under construction)	Wanze, BE	Treatment of breathing losses during barge loading of ethanol. (Zone 0 application) . Bioethanol production plant.	Study, HAZOP, engineering, fabrication, installation and start-up of a zone 0 skid and Metal Fibre Oxidizer.
Sita Ecoservice	Almelo, NL	Treatment of breathing losses and vapours Coming from barge loading activities (Zone 0 application). Waste treatment plant.	Study, HAZOP, engineering, fabrication, installation and start up of a zone 0 skid and a vertical downward firing incinerator, that was connected to an existing steam boiler.
2. Specialized studies			
ARCO Chemicals (Lyondell)	Rotterdam, NL	Ethylene Oxide plant. Air + EO.	Study, design, engineering of catalytic incinerator + air preheaters.
SE & C (now Jacobs) Slovnaft	Amsterdam, NL Bratislava, SK	Engineer & Contractor. Crude oil refinery. Two 105 m / 48" steam - assisted flare systems. One 80 m / 20" H2S flare.	Study, engineering, calculations For heat radiation, immission, Noise, pressure drop, smokeless Capacity, combustion efficiency, KO drums, water seals with varying water levels, design and specification of instrumentation.
NAM	Groningen, NL	Natural gas exploration. One 30 m / 20" flare system.	Study, engineering.
Bayer	Antwerpen, BE	Chemical industry.	Modification steam boilers : feasibility study and engineering.

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>INDUSTRY APPLICATION</u>	<u>SCOPE OF SUPPLY</u>
IWT	Brussels, BE	Flemish Technological Centre	Feasibility study NOx abatement and engineering of a "LedeNOx" DeNOx incinerator system.
INEOS	Zwijndrecht, BE	Chemical plant.	Study and engineering for emission improvement, revamping of existing combustor, capacity handling.
Praxair	Westerlo, BE	Industrial gases.	Study, engineering, layouts for Re-design of the scrubber park.
Fabelta	Zwijnaarde, BE	Textile plant.	Study, engineering : flow measurements, definition of solvent concentration, re-design and expansion of ductwork.
Scaldis	Kluisbergen, BE	Oil production for human food.	Study, project engineering, procurement, site coordination for extraction system for explosive gases, and for an incinerator with waste heat boiler.
LBC	Rotterdam, NL	Ship terminal : loading and unloading of ships, storage tanks, railway wagons	Study, HAZOP, engineering and specification of treatment systems.
Caldic	Rotterdam, NL	Fertiliser plant. Existing incinerator.	Study, HAZOP, ATEX, specification of treatment systems: extraction system of explosive gas mixtures. HAZOP.
VOPAK	Antwerpen, BE	Ship terminal : loading and unloading of ships, storage tanks.	Study, HAZOP, engineering and specification of treatment systems.

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>INDUSTRY APPLICATION</u>	<u>SCOPE OF SUPPLY</u>
Sibelco	Dessel, BE	Upgrading plant for sand (cristobalite Production).	Study, measurements, specifications for DeNOx process of calcination incinerator.
Tractebel AGT	Brussels, BE Antwerpen, BE	Engineer & Contractor Storage terminal for butane and propene (LPG).	Stability study of existing guy wired flare stack : study, measurements and conclusions.

3. Modification of existing units.

FINA (now Total)	Antwerpen, BE	Crude oil refinery. Two 100 m / 48" flares.	Study, complete revision, rebuilding, start-up.
Cockerill Sambre (now Carsid-Arcelor)	Charlerloi, BE	Steel plant, metallurgy. One 70 m / 78" flare.	Study, de-mounting, transport, rebuilding, start-up.
FINA Chemicals	Antwerpen, BE	Petrochemical plant. One 30 m / 4" flare.	Study, complete revision, rebuilding, start-up.
Jalla	Armentières, FR	Textile plant. Modernisation and automation of four steam boilers and two thermal oil boilers.	Study, modification, automatic safeguarding and controlling (APAVE), automation resulting in automatic steam production and distribution.
Dow Chemicals	Terneuzen, NL	Petrochemical plant. Process heater burners, furnace Revamp.	Design, engineering, fabrication, erection, start-up.
Rhône Poulenc	Kallo, BE	Carbon disulfide plant, sulphur plant.	Study, engineering, modification of tailgas incinerator.

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>INDUSTRY APPLICATION</u>	<u>SCOPE OF SUPPLY</u>
Cockerill Sambre (now Arcelor)	Seraing, BE	Steel industry, metallurgy.	Study, engineering, modification for flame monitoring on boiler burners.
BP Chemicals	Antwerpen, BE	Petrochemical plant.	Design, engineering for modification of steam boiler resulting in the combustion of waste vapors.
EOC	Oudenaarde, BE	(Petro)chemical plant. Modification of incinerator with combustion system for 1,3-butadiene.	Design, engineering, fabrication, erection, start-up.
Praxair	Westerlo, BE	Industrial gases. Modification of existing incinerator burner : additional waste water injection.	Study, design, engineering, fabrication, erection.
EOC	Oudenaarde, BE	(Petro)chemical plant. Modification of incinerator burner : additional waste water injection.	Design, engineering, fabrication, erection, start-up.
Proviron	Oostende, BE	Chemical plant. Modification of incinerator burner : additional waste water injection.	Study, design, fabrication, erection, start-up.

4. Incinerators / heat recuperation systems

Distrigas (now Fluxys)	Loenhout, BE	Natural gas distribution.	Design, engineering, fabrication, erection, start-up of one gas incinerator.
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Kaneka Chemicals	Westerlo, BE	Petrochemical plant.	Design, engineering, fabrication, erection, start-up of one vertical gas incinerator.
EOC	Oudenaarde, BE	(Petro)chemical industry 1.500 Nm ³ /h air + N ₂ + acrylates.	Design, engineering, fabrication, erection, start-up of extraction system of explosive gas mixture + modification incinerator.
EOC	Evergem, BE	(Petro)chemical industry 1.500 Nm ³ /h air + N ₂ + acrylates.	Design, engineering, fabrication, erection, start-up of extraction system of explosive gas mixture + modification incinerator.
Lawter Chemicals	Lokeren, BE	Basic components for ink. 400 liter/h of hydrocarbons + water 7.000 Nm ³ /h waste vapors (air, N ₂ , Hydrocarbons).	Design, engineering, fabrication, erection, start-up of extraction system for explosive gas mixture + incinerator with thermal oil heat Recuperation.
Lawter Chemicals (Now Hexion Chemicals)	Kallo, BE	Basic components for ink. 400 liter/h of hydrocarbons + water 7.000 Nm ³ /h waste vapors (air, N ₂ , Hydrocarbons).	Design, engineering, fabrication, erection, start-up of extraction system for explosive gas mixture + incinerator with thermal oil heat Recuperation.
Lawter Chemicals (Now Hexion Chemicals)	Waterford, IRL	Basic components for ink. 400 liter/h of hydrocarbons + water 7.000 Nm ³ /h waste vapors (air, N ₂ , Hydrocarbons).	Design, engineering, fabrication, erection, start-up of extraction system for explosive gas mixture + incinerator with thermal oil heat Recuperation.

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>INDUSTRY APPLICATION</u>	<u>SCOPE OF SUPPLY</u>
Neste Chemicals	Evergem, BE	Petrochemical plant.	Design, engineering, fabrication, erection, start-up of one gas / liquid incinerator with waste heat boiler.
Fabelta (DOMO)	Zwijnaarde, BE	Textile industry 50.000 Nm ³ /h air with solvents.	Design, engineering, fabrication, erection, start-up of extraction system for explosive gas mixture + catalytic incinerator and additional energy recuperation.
UCB	Drogenbos, BE	Chemical industry 5.000 Nm ³ /h air + N ₂ + acrylates + solvents.	Design, engineering of removal system (by suction) of explosive gas mixture.
ADPO	Antwerpen, BE	Ship terminal : loading and unloading of ships, railway wagons, trucks, storage tanks : 2.000 Nm ³ /h air + N ₂ + hydrocarbons (60 different products).	Study, HAZOP, engineering, fabrication, erection, start-up of extraction system of explosive gas mixtures + horizontal incinerator with waste heat boiler.
Ideco – Balta	Tielt, BE	Wall paper production.	Study, design, engineering, Fabrication, erection, start-up of extraction system for waste air, one RTO (Regenerative Thermal Oxidizer). Hot water production + water piping, chiller for ice water production. Air preheating + ductwork to existing production machine. Re-location of existing incinerator, noise study and noise insulation of existing incinerator.

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>INDUSTRY APPLICATION</u>	<u>SCOPE OF SUPPLY</u>
Van den Broek	Utrecht, NL	Waste air coming from sludge drying plant. 2.200 Nm ³ /h air loaded with organic components.	Design, engineering, fabrication, erection, start-up of two dual fuel incinerators for waste air treatment.
Albemarle	Amsterdam, NL	Chemical plant. Waste gas stream coming from production : N ₂ + benzene.	Design, engineering, fabrication, erection, start-up of one vertical incinerator with double shell (integrated preheater).
Sita Ecoservice	Almelo, NL	Treatment of breathing losses and vapours Coming from barge loading activities (Zone 0 application). Waste treatment plant.	Study, HAZOP, engineering, fabrication, installation and start up of a zone 0 skid and a vertical downward firing incinerator, that was connected to an existing steam boiler.

5. DeNOx-incinerators with heat recovery / DeNOx burners / LedeNOx systems

Cockerill Sambre	Charlerloi, BE	Steel industry, metallurgy. Waste gas and waste liquid containing NH ₃ .	Design, engineering, fabrication, civil works, erection, start-up of one De-Nox incinerator with waste heat boiler.
Bekaert Fibre	Zwevegem, BE	Metal fibre production. Existing incinerator for air loaded with HNO ₃ .	Study, engineering, revamping, optimisation, capacity increase of existing DeNOx incinerator with waste heat boiler.
BEFS	Brussels, BE	DeNOx incinerators for steel plant.	Design, engineering, fabrication of two DeNOx burners for installation on the incinerators.

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>INDUSTRY APPLICATION</u>	<u>SCOPE OF SUPPLY</u>
Carsid	Charlerloi, BE	Steel industry, metallurgy. Upgrading existing DeNOx incinerator.	Design, engineering and fabrication of three DeNOx-incinerator burners.
Gebroeders Van Pollaert (Now Rendac)	Gent, BE	Treatment plant for slaughterhouse waste. Air loaded with organic hydrocarbons and NH3. LedeNOx system. (2 x).	Design, engineering, fabrication, Erection, start-up of two LeDeNOx incinerators with air preheaters and waste heat boiler.
Arnout	Ichtegem, BE	Treatment plant for slaughterhouse waste. Air loaded with organic hydrocarbons and NH3. LedeNOx system.	Design, engineering, fabrication, Erection, start-up of one LeDeNOx incinerator with air preheaters and waste heat boiler.
Technigras	Hulshout, BE	Treatment plant for slaughterhouse waste. Air loaded with organic hydrocarbons and NH3. LedeNOx system.	Design, engineering, fabrication, Erection, start-up of one LeDeNOx incinerator with air preheaters and waste heat boiler.
SEVA	Moeskroen, BE	Treatment plant for slaughterhouse waste. Air loaded with organic hydrocarbons and NH3. LedeNOx system.	Design, engineering, fabrication, Erection, start-up of one LeDeNOx incinerator with air preheaters and waste heat boiler.

6. Solid waste incinerators

Machiels	Leuven, BE	Medical waste treatment plant. 1.500 kg/h solid toxical waste, and 1.000 liter/h liquid waste.	Design, engineering, fabrication, erection, start-up of one rotary kiln incinerator with flue gas treatment. Automation (PC visualisation) and optimisation.
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<u>CUSTOMER</u>	<u>LOCATION</u>	<u>INDUSTRY APPLICATION</u>	<u>SCOPE OF SUPPLY</u>
7. Metal Fibre Oxidizer (MFO)			
Wacker Chemie	Burghausen, D	Chemical industry. 150 Nm ³ /h of hydrocarbons + acetylene. (zone 2 application).	Study, HAZOP, engineering, fabrication, start-up of Metal Fibre Oxidizer.
VOPAK (under construction).	Antwerpen, BE	Chemical tank farm. The vapours are a mixture of air / nitrogen and hydrocarbons, and within the explosion limits. (Zone 0 application) Flow rate up to 450 Nm ³ /h.	Study, HAZOP, engineering, fabrication, installation and start-up of ATEX zone 0 skid and Metal Fibre Oxidizer.
Tiense Suiker / Biowanze (under construction)	Wanze, BE	Treatment of breathing losses during barge loading of ethanol. (Zone 0 application) .	Study, HAZOP, engineering, fabrication, installation and start-up of ATEX zone 0 skid and Metal Fibre Oxidizer.
8. Ground flare systems			
Elf-Atochem (now Total Fina)	Vlissingen, NL	Petrochemical plant.	Design, engineering, fabrication, erection, start-up of one ground flare system for gas. Dimensions : diameter 2 m x height 12 m.
BP	Waalwijk, NL	Natural gas terminal	Design, engineering, fabrication, erection, start-up of one ground flare system for gas. Dimensions diameter 20 m x height 20 m.

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>INDUSTRY APPLICATION</u>	<u>SCOPE OF SUPPLY</u>
Containercare	Antwerpen, BE	Tank cleaning. Vapors coming from tank cleaning.	Design, engineering, fabrication, erection, start-up of one mobile ground flare system for gas. Dimensions : diameter 1,2 m x height 10 m.
Petrogas	Al Jubail, SA	Petrochemical plant.	Design, engineering, fabrication of one gas ground flare. Dimensions : L 12 m x W 6 m x H 14 m.
Rutgers – VFT	Evergem, BE	Petrochemical plant. 200 Nm ³ /h waste gas (benzene) coming from production.	Design, engineering, fabrication, erection of one gas ground flare. Dimensions : diameter 1,5 m x height 12 m.
Rutgers – VFT	Evergem, BE	Petrochemical plant. 1.500 Nm ³ /h of hydrogen and xylene gas.	Design, engineering, fabrication, erection of one gas ground flare. Dimensions : diameter 2 m x height 12 m.
Neste Chemicals	Evergem, BE	Petrochemical plant. Waste gas : CO, formaldehyde.	Design, engineering, fabrication, erection, start-up of one gas ground flare. Dimensions : diameter 1,5 m x height 12 m.

9. Elevated flare systems / Flare tips

Esso	Rotterdam, NL	Crude oil refinery.	Erection and start up of two 120 m / 48" flare systems.
Fina	Antwerpen, BE	Crude oil refinery.	Study, complete revision, rebuilding and start-up of two 100 m / 48" flare systems.

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>INDUSTRY APPLICATION</u>	<u>SCOPE OF SUPPLY</u>
SE & C Slovnaft	Amsterdam, NL Bratislava, SK	Engineer & Contractor. Crude oil refinery. Two 105 m / 48" flare systems; One 80 m / 20" H2S flare.	Design, engineering, fabrication and supply of two steam assisted flare tips. Supply of process engineering for the flare systems, water seals and KO drums.
Solvay	Antwerpen, BE	Petrochemical plant.	Design, engineering, fabrication, erection, start-up of one 70 m / 60" air-assisted flare system.
Cockerill Sambre	Charlerloi, BE	Steel industry, metallurgy.	Study, de-mounting, transport, rebuilding, start-up of one 70 m / 78" flare system.
Praxair	Westerlo, BE	Industrial gases. Butadiene gases.	Design, engineering, fabrication, erection, start-up of one 10 m / 10" air- assisted flare system.
KTI (now Technip) Eurostill (now Koch)	Zoetermeer, NL Europoort, NL	Engineer & Contractor. Crude oil refinery.	Design, engineering, fabrication, erection, start-up of one 70 m / 24" guy wired steam assisted flare system with integrated water seal.
Schelde E & C Arbre	Antwerpen, BE Leeds, GB	Engineer & Contractor Petrochemical plant.	Study and advise, for one 15 m / 20" flare.
NAM	Groningen, NL	Natural gas terminal.	Study and advise for one 30 m / 20" flare.
Fina Chemicals	Antwerpen, BE	Petrochemical plant.	Study, complete revision, rebuilding, start-up of one 30 m / 4" flare system.

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>INDUSTRY APPLICATION</u>	<u>SCOPE OF SUPPLY</u>
Air Liquide	Bergen-op-Zoom, NL	Industrial gases plant.	Design, engineering, fabrication, erection, start-up of one 40 m / 24" self-supporting flare system with integrated KO drum.
Cockerill Sambre	Charlerloi, BE	Steel plant, metallurgy.	Study, engineering, fabrication of one 30 m / 20" flare system for cokes gas.
Vinamul	Geleen, NL	Petrochemical plant.	Design, engineering, fabrication, erection, start-up of one 10 m / 30" air-assisted flare system.
Akzo Nobel Chemicals	Rotterdam, NL	Specialty gases plant.	Design, engineering, fabrication, erection, start-up of one 10 m / 20" air-assisted flare system.
Degussa	Antwerpen, BE	Petrochemical plant.	Design, engineering, fabrication, erection, start-up of one 22 m / 30" air-assisted flare system.
Noordgastransport	Groningen, NL	Processing plant for natural gas.	Design, engineering, delivery of one 24" air-assisted flare tip with combustion air fan and automatic smokeless combustion controls.
Degussa	Antwerpen, BE	Petrochemical plant.	Design, engineering, fabrication, start-up of one 35 m / 20" self-supported flare system with integrated mol seal.

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>INDUSTRY APPLICATION</u>	<u>SCOPE OF SUPPLY</u>
Belgian Refining Corp.	Antwerpen, BE	Crude oil refinery. Revamp existing 80 m / 48" flare. (Phase 1).	Design, engineering, fabrication, erection, start-up of one steam assisted flare tip and mol seal, combination pilot burners and HI ignition panel. Supply of temporary emergency flare system. Specialized hoisting works (replacement of old flare tip and mol seal by new equipment). Verification of vertical alignment, tensioning of guy wires.
Eval Europe	Zwijndrecht, BE	Petrochemical plant.	Design, engineering, fabrication of one 20" steam-assisted flare tip and pilot burners.
AGT	Antwerpen, BE	Gas terminal for LPG	Vertical alignment of existing flare Stack. Tensioning of guy wires.
Degussa Carbogal	Sines, Portugal	Carbon Black Plant. 70.000 Nm ³ /h of very low calorific flare gas.	Design, engineering, fabrication, erection, start-up of one 70 m high derrick structure supported flare stack with special designed flare tip for smokeless combustion and flame stability for the combustion of very lean flare gas.

CUSTOMER

LOCATION

INDUSTRY APPLICATION

SCOPE OF SUPPLY

Belgian Refining Corp.

Antwerpen, BE

Crude oil refinery.
Revamp existing 80 m / 48" flare.
(Phase 2)

Supply of temporary emergency flare system. Supply and installation of spare pilot burners, revision of original pilot burners.
Supply and installation of new flare 360° platform at elevation 72 m.
Cleaning and conservation (with grease) of the flare guy wires (3 levels, up to 75 m elevation).

Eval Europe

Zwijndrecht, BE

Petrochemical plant.

Demounting of original flare tip, for revision. Installation of spare flare tip and pilot burners. Assistance with flare start-up.

10. Biogas flare systems

Pfizer

Waterford, IRL

Chemical plant.

Design, engineering, fabrication, erection, start-up of one biogas ground flare. Dimensions : diameter 2 m x height 12 m.

Sébastien Artois

Armentières, FR

Brewery.

Design, engineering, fabrication, erection, start-up of one biogas ground flare. Dimensions : diameter 1,5 m x height 12 m.

BPN

Armentières, FR

Design, engineering, fabrication, erection, start-up of one biogas flare.

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>INDUSTRY APPLICATION</u>	<u>SCOPE OF SUPPLY</u>
Rhône Poulenc	Kallo, BE	Carbon disulfide plant, sulphur plant.	Design, engineering, fabrication, erection, start-up of one biogas flare.
Proteïne Technologies	Ieper, BE	Food addition plant.	Design, engineering, fabrication, erection, start-up of one biogas flare.
Algist Bruggeman	Gent, BE		Design, engineering, fabrication, erection, start-up of one biogas flare.
Waterschap Groot Salland	Groot Salland, NL	Water treatment plant.	Design, engineering, fabrication, erection, start-up of one biogas flare.
Aquafin	Sint Truiden, BE	Water treatment plant.	Design, engineering, fabrication, erection, start-up of one biogas flare.
Waterschap Limburg	Limburg, NL	Water treatment plant.	Design, engineering, fabrication, erection, start-up of one biogas flare.

11. Inspection, maintenance, miscellaneous

Rhône Poulenc	Kallo, BE	Carbon disulfide plant, sulphur plant.	Design, engineering, fabrication, erection, start-up of 16 process heater burners with preheated combustion air.
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Hoechst Cellanese	Maastricht, NL	Petrochemical plant.	Design, engineering, fabrication, erection, start-up of two steam turbines and air fans.
Grace-Silica	Puurs, BE		Design, engineering, fabrication, erection, start-up of two burners with custom made control system.
Borealis	Zwijndrecht, BE	Petrochemical plant.	Flare tip inspection, flare tip replacement.
Cockerill Sambre (now Carsid)	Charlerloi, BE	Steel industry, metallurgy.	Engineering and site works : incinerator maintenance.
UCB	Drogenbos, BE	Chemical plant.	Translation and interpretation of specifications, site works.
Eval Europe	Zwijndrecht, BE	Petrochemical plant.	3 x inspection flare stack.
ADPO	Kallo, BE	Ship terminal : loading and unloading of ships, railway wagons, trucks, storage tanks : 2.000 Nm ³ /h air + N ₂ + hydrocarbons (60 different products).	3 x maintenance of existing incinerator with waste heat boiler.
Praxair Westerlo, BE	Industrial gases.	Repair of existing incinerator.	
Oiltanking	Antwerpen, BE	Ship terminal.	Maintenance of existing incinerator.
Carsid	Charlerloi, BE	Steel industry, metallurgy.	Repair of existing incinerator.
Carsid	Charlerloi, BE	Steel industry, metallurgy.	Repair of incinerator burner.

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>WASTE</u>	<u>USER</u>	<u>DESCRIPTION</u>
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12. Incinerators built with the cooperation of some engineers of the Europem team, especially Mr. M. Perrot.

Badger N.V.	Antwerpen, Belgium		Petrochim	TO + 2 chambers
Litwin France	Burgas, Bulgaria	Acrylonitrile waste	Neftochim	Vertical incinerator + stack
Badger N.V.	Atwerpen, Belgium	Polyethylene Polymere	Polyolefins N.V.	Vertical incinerator + stack
F.W.F.	Porto, Portugal	Asphalt fumes	Sacor	Vertical incinerator + stack
Badger	Pitesti, Roumania	Acrylonitrile	G.I.P.	Vertical incinerator + stack
CMP/McKKEE	Sterlmitamak, USSR	Chlorinated hydrocarbons	Techmashimport	Vertical incinerator + water quench
Litwin	Morocco	Asphalt fumes	Sebima	Vertical incinerator + stack
F.W.F.	Antwerpen, Belgium	Tail gas H2S	S.I.B.P.	Vertical incinerator
F.W.I.	Barcelone, Spain	Tail gas H2S	DASA	Vertical incinerator
Litwin	Schwedt, Germany	Acrylonitrile	P.C.K.	Vertical incinerator
Konam	Rotterdam, Netherlands	Sludges	Konam	Vertical incinerator
C.E.C.	Seixal, Portugal	NH3 Vapours	Seixal	Vertical incinerator
Speichim	Schwarzheide, Germany	Polyurethane	VEB	Down firing incinerator + Water quench + venturi

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John Zink Sarl	Argenteuil, France	Test furnace	John Zink Sarl	Horizontal incinerator
Technip	Oufa, Former USSR	Tail gas H2S	Machinoimport	Vertical incinerator
Litwin / Ensa	Schwedt, Germany	Acrylonitrile	P.C.K.	Vertical incinerator + stack
Comprimo	Kallo, Belgium	CS2 / H2S	Progil	Vertical incinerator + stack
F.W.F.	Chalampé, France	Terephtalic acids	Rhone Poulenc	Vertical incinerator + stack + Quench tower
Technip	Fos Sur Mer, France	Acid gas	Esso	Horizontal incinerator
U.C.B.	Gent, Belgium	Amines	U.C.B.	Vertical incinerator + stack
Rochim	Pitesti, Roumania	Acrylonitrile	G.I.P.	Vertical incinerator + stack
Gaz Integral	Frontignan, France	Tail gas	Mobil Oil	Vertical incinerator
Tebodin NV	Middelburg, Netherlands	Organic wastes	Hercules NV	Vertical incinerator + stack
CEC	Sluiskyl, Netherlands	NH3 vapours	ACZ	Horizontal incinerator
John Zink Cy	Puertollano, Spain	Salt brine	Montoro	Down firing incinerator + Water quench + Venturi + stack
Rhone Poulenc	Roussillon, France	Salt brine	Rhone Poulenc	Down firing incinerator + Water quench + Venturi + stack
Orogil	Le Havre, France	H2S / Sol + phenol waste	Chevron Chemical	Vertical incinerator + stack

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CFR	Le Havre	Asphalt fumes	CFR / Total	Vertical incinerator + stack
Huiles Goudrons & Dérivés	Port St Louis, France	Aqueous waste + phenol	Gedemer	Horizontal incinerator + Firetube boiler
Romchim	Pitesti, Roumania	Acrylonitrile		Vertical incinerator + stack
Esher Wyss	La Semouse, France	Black liquors	Sveif	Down firing incinerator + venturi
Serete	Port-de-Bouc, France	Salt brine	Chevron Chemical	Down firing incinerator + Quench + venturi
CTIP	Feluy, Belgium	Carbon dust	Chemviron	Horizontal incinerator
Technip	Sinès, Portugal	Tail gas H2S	Petrosul	Horizontal incinerator + Firetube boiler
Badger	Baroda, India	Acrylonitrile	IPCL	Vertical incinerator + stack
Cocei	Grzibow, Poland	Tail gas H2S	Polimex Cekop	Horizontal incinerator
Speichim	Péage de Roussillon, France	Salt brine+ polluted air with mercaptan	AEC Rhone Poulenc	Down firing incinerator + watertube boiler + electrostatic precipitator
Huertey	Chalampé, France	Salt brine	Rhone Poulenc Butachemie	Down firing incinerator + quench + liquid separator
Delattre / otto	Bakar, former Yougoslavia	NH3 vapour	Sisak	Lownox incinerator + Firetube boiler

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CLE / Powergas	Orenbourg, former USSR	Salt brine	Machinoimport	Down firing incinerator + air quench + stack
CLE / Speicim	Estarreja, Portugal	Organic wastes	Amoniaco Portugues	Vertical incinerator + watertube boiler
Rhodia Nordeste	Camaçari, Brasil	Salt brine + polluted air + Mercaptan	Unirhodia	Down firing incinerator + quench +venturi
Technoimport	Burgas, Bulgaria	Chlorinated hydrocarbons	Neftochim	Vertical incinerator + firing boiler Conditioning tower HCl concentration
Procofrance	Nohammedia, Marocco	Tail gas H2S	Samir	Vertical incinerator + stack
Industria Export / Procon	Zerga, Jordan	Asphalt fumes	Jopetrol / TSEP	Vertical incinerator + stack
Comprimo N.V.	Antwerpen, Belgium	H2S	Belgisch Petroleum	Vertical incinerator + stack
Spie Batignolles	Gresik, Indonesia	NH3	Petrokimia	Vertical incinerator + stack
Technip	Umm Said, Qatar	H2S	Qatar, Petrochemical	Vertical incinerator + stack
Pcuk / Ctl	St. Avoild, France	Pulluted air acrylic acid + Acrolein	Norsolor CDF Chimie	Horizontal incinerator + firetube boiler + economiser
Rhone Poulenc	Chalampé, France	Brine + HC waste cont. H3PO4 + metals	Rhone Poulenc	Vertical incinerator + watertube boiler + electrostatic Precipitator.
Mac Kee Tractionel / Bruxelles	Feluy, Belgium	Gaseous H2S liquid water + alcohol	Edwin Cooper Ethyl corporation	Vertical incinerator + stack
ACZ	Sluiskyl, Netherlands	NH3 vapours	Acz De Carbonisation	Horizontal incinerator + stack

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UCB	Gent, Belgium	Pollutedair / amines	Virchem	Vertical incinerator + stack
Otto	Gent, Belgium	NH3 vapours	Sidmar	Lownox horizontal incineraton + Firetube boiler
Dow Chemical	Terneuzen, Netherlands	Chlorinated waste vinyl Chloryde	Dow Chemical	Vertical incinerator + quench + conditioning tower
Irsid	Maizières-les-Metz, France	Postcombustion electric Furnace	Irsid	HIV burner
Solvay	Jemeppe sur Sambre	Solids + liquid waste	Solvay	Horizontal incinerator
Speichim	Navoi, former USSR	Flue gas pre-heater Phosalone	Techmashimport	Vertical incinerator
Davy Mc Kee	Lisboa, Portugal	Terephtalic acids	Petroquimica	Vertical incinerator
Sert	Thulin, Belgium	Gaseification flue gas	IDGS	Vertical incinerator with Counter rotation burner
Entrepose	Kamishlie, Syria	Tail gas H2S	Syrian Petroleum	Vertical incinerator
Speichim	Volograd, former USSR	Tail gas preheater H2S	Techmashimport	Horizontal air heater
Speichim	Volograd, former USSR	Liquid waste + acrolein Gas	Techmashimport	Horizontal incinerator + firetube boiler
Degremont	Liege, Belgium	NH3 vapours	Cockerill	Horizontal incinerator + Lownox burner
Technip	CPC Taoyuan, Taiwan	Tail gas H2S	CTPI	Vertical incinerator

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Tpao	Dodan, Turkey	Lean gas H ₂ s selexol	Tpao	Vertical incinerator
Sefc Protecna	Bacchus works Utah, USA	HCN gas + carbon	Hercules	Vertical incinerator
Solvic	Tavaux , France	Chlorinated hydrocarbon gas	Solvic	Horizontal incinerator + firtube boiler
Comprimo	Albania	Tail gas H ₂ S	Abay	Horizontal gas
J.Z.Europe	Brussels, Belgium	Burner for NH ₃	Ased Marley	Aurostable Vertical incinerator
CLE	Astrakhan, former USSR	Sludges	Machinoimport	Rotary kiln
Air Liquide	Chalon s/Saone, France	PH ₃ SiH ₄ ASO ₃	Alphagaz	Special burner
Lummus	Kaduna, Nigeria	Tail gas	Nigerian Nal Petroleum corp.	Vertical incinerator
Norsolor	St. Avold, France	Polluted air acrylic acid + Acrolein	Norsolor	New burner for higher capacity
Snea (P)	Abidos, France	Polluted air HCN	Soficar	Vertical incinerator + Watertube boiler
UCB Bruxelles	Gent, Belgium		UCB	New natural draft burner
CFR Total	Gonfreville, France	Bitumous vent gas	CFR Total	New burner
CDF Chimie	St Avold, France	Flue gas acrolein acrylic	Norsolor	Catalytic incinerator unit with Heat exchangers
Orogil	Gonfreville, France	Tail gas H ₂ S + organics	Orogil	New burner

<u>CUSTOMER</u>	<u>LOCATION</u>	<u>WASTE</u>	<u>USER</u>	<u>DESCRIPTION</u>
YPF Techint	Lujan de Cuyo, Argentina	Salt brine	YPF	Down firing incinerator + Quench + venturi
Gepem	Villeurbanne, France	HCN vent gas	Carbone Industrie	Vertical incinerator
Petrokimia	Gresik, Indonesia	NH3 vent gas	Petrokimia	Vertical incinerator + stack
Technip	Astrakhan II, former USSR	Sludges	Machinoimport	Rotary kiln
Chimcomlect	Burgas, Bulgaria	Oily sludges + solids	Neftochim	Sludge concentration treatment + Rotary kiln + watertube boiler + Electrstatic precipitator
HBL	Carling, France	NH3 vapours	HBL	Horizontal incinerator + firetube boiler + Stack
CDF Chemie	St Avold, France	Lean gas containing acrolein	Norsolor	Catalytic incinerator unit + recovery Exchanger
Carbone Industrie	Pueblo, USA	Polluted air with HCN	Goodrich	Vertical incinerator
PCAS Couterne, France	Salt brine with chlorine	PCAS		Down firing + quench + packed column
Norsolor	St. Avold, France	Lean gas containing Acrolein	Norsolor	Quench process for higher waste flow
Carbo Chimica (JZ Italy)	Porto-Marghera, Italy	Ammonia aqueous waste + Vent gas	Carbo Chimica	Vertical incinerator + 2 chambers + boiler
Radici Chimica (JZ Italy)	Novara, Italy	Organics + H3P04 + Aqueous	Radici Chimica	Incinerator Ionox + watertube boiler + electrofilter

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Eurotechnica (JZ Italy)	Gela, Italy	Gaseous HCN Ossamide	Enichem	Buner for vertical incinerator
Rhone Poulenc	Chalampé, France	Tars with H3P04 + metals	Rhone Poulenc	Burners natural gas
SEP	Le Haillan, France	Gaseous HCN Maleic Lean gas	SEP	Vertical incinerator
Foster Wheeler Italy	Rotterdam, Netherlands	Lean gas	Exxon	Catalytic incinerator + recovery Exchanger
Foster Wheeler	Fos , France	Salted waste	Arco	Down firing + quench + venturi
Solvic	Tavaux, France	Chlorine waste	Solvic	Burner + heat exchanger new waste Disposals
Spie Batignolles	Tianjin, P.R. of China	Gas + acrolein	Cntiec	Horizontal incinerator + boiler
SAPS	Olen, Belbium	Solvents CL/BR/F H2S Hydrocarbons	Ucar	Horizontal tower cooling chamber + stack
Norsolor	St. Avoild, France	Lean gas containing Acrlein	Nosolor	Revamping + 20% oversizing
Technicas Reunidas	Fushun, P.R.of China	Bleed catalyst	Fushun detergent Chemical plant	Vertical incinerator + quench + venturi + separator
SEP	St. Médard, France	Gaseous waste + HCN	SEP	Incinerator + stack + duct
Foster wheeler (JZ Italy)	Esfahan, Iran	Organic liquid and Gaseous wastes	NPC	Combustion chamber + vertical incinerator + stack

Soltraco-Solvay	Jemeppe, Belgium	Chlorinated and HCl Gaseous wastes	Solvic	Vertical incinerator + boiler Recuperator condensor + column
Esso Suisse	Bale, Suisse	Petrol vapours	Esso	Petrol vapours recovery unit
Vinithai-Tractebel	Ma Ta Phut, P.R.o.China	Chlorinated wastes	Vinithai	Vertical incinerator + condensor + column extractor + stack
Bechtel-Technip	Qatar	Tail gas DSO	QGPC	Horizontal incinerator
OTM	Abidos, France	Airpolluted by HCN	Soficar	Horizontal incinerator + Column + extractor
Petkim	Aliaga, Turkey	Acrylonitrile	Petkim	Vertical incinerator combustion Chamber + stack