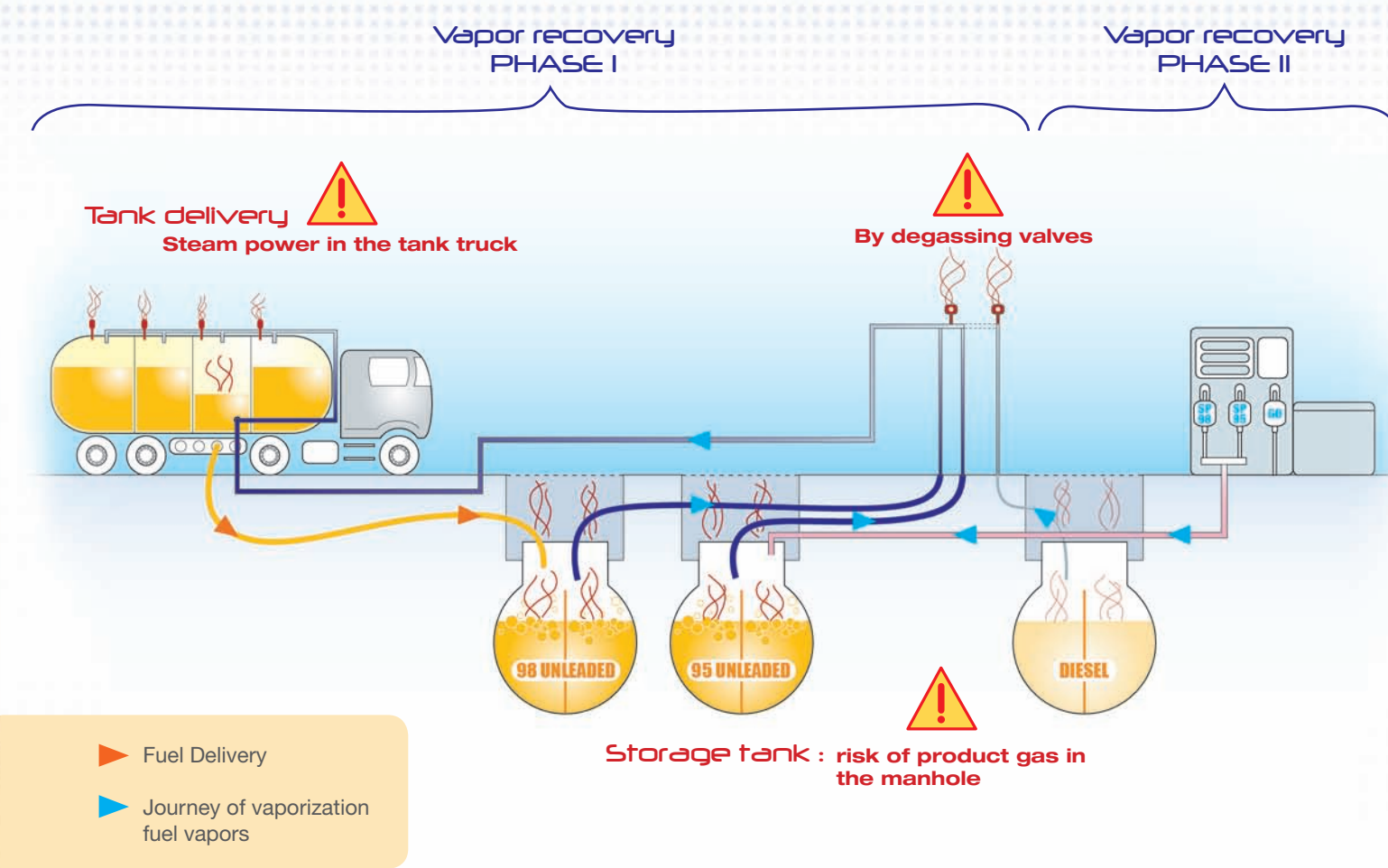




➔ Current situation at the station



➔ The emission of fuel vapors

During the deliveries, the quantity of delivered liquid chases away **an equivalent quantity in gas**. This one is loaded with **very volatile** gasoline particles. The regulations foresaw **the recovery of these gases by the delivery tank (PHASE I)**. During the distribution of fuel towards vehicles, the filling up also chases away **an equivalent quantity in gas than the provided quantity**. The regulations foresaw **the recovery of these gases which are sent back in one of the station tanks, then recuperate by the truck during the next delivery (PHASE II)**.



IFP is a world-class public-sector research and training center, aimed at developing the technologies and materials of the future in the fields of energy, transport and the environment. It provides public players and industry with innovative solutions for a smooth transition to the energies and materials of tomorrow – more efficient, more economical, cleaner and sustainable.

➔ Partners :

- ALFA LAVAL's core competences within heat transfer, separation, and fluid handling technologies are utilized in a large number of industrial and environmental protection processes.
- For over 50 years we have manufactured compressors and vacuum pumps. This long experience is offered to our customers today.
- The automatic monitoring system VAPORIX supplies information on the functional state of the active vapour recovery. As an automatic monitoring system for the active vapour recovery VAPORIX serves as protection for people and environment
- is the leader in the world for Inspection Verification and Certification, Optimgaz is inspected Verified and Certified by VERITAS
- offer control systems in the HVAC/R market continually striving to anticipate the needs of customers allowing them to achieve superior results through tailor made solutions
- Explorair is an independent laboratory specialised in on site analysis of gas effluents and air pollution, mainly in Organic Volatile Components field.
- Engineering office and management project in gaz station.

➔ Customers :

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- TOTAL and SHELL are International Oil Compagny

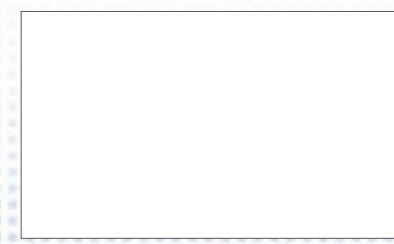
➔ Supports :

-
-

➔ Trophies and Awards :

- GEP, the French Oil and Gas Suppliers Council, is a not for profit association. GEP has been since 1953, the trade association for most of the companies registered in France and working for the oil and gas industry.

COVALTECH approached the **D.R.I.I.R.E** :
Governing body for the management of rules, standards, and regulations to implement on Petrol stations, to observe the decrees and orders of Parliament.



www.optimgaz.fr

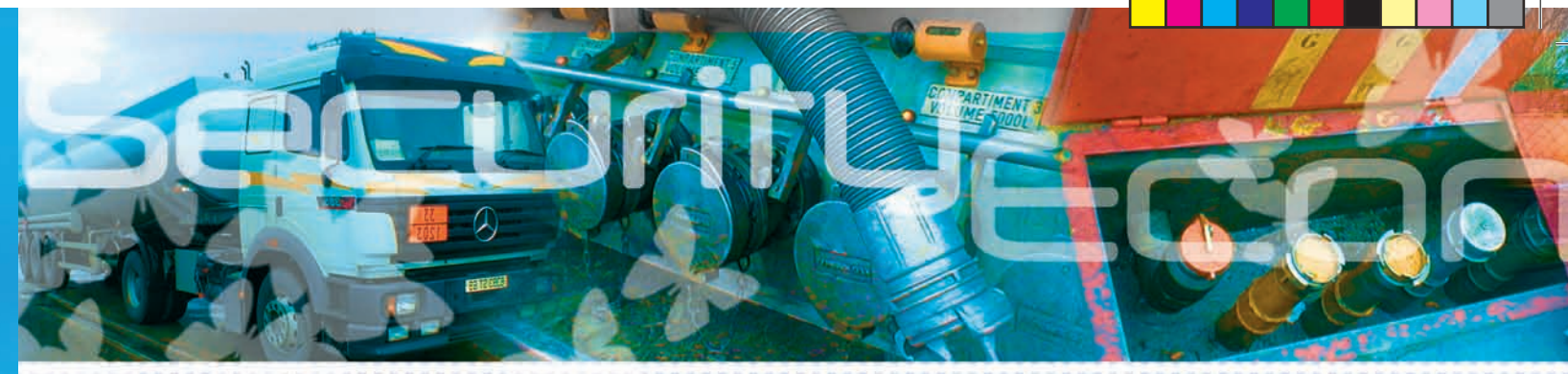
Le Lyon Ouest - 100, rue des Fougères - 69009 LYON - Tél. +33 (0)4 78 66 25 78 - Fax. +33 (0)4 78 66 25 38 - Email : covaltech@covaltech.com

*Liber Mund - photos credit : Liber Mund and Fotolia - 05/2009



Condensation of vapors in fuel service station

COVALTECH
presents



➔ Optimgaz from Covaltech : work for the environment protection

The last years climatic accidents, heat waves, hurricanes, floods and disorder of the climate in general are partially owed to the human activities. The pollution generated by our activities and our energy consumption obliges us to find some solutions to limit the effects of our excesses.

The World Health Organization and various international and national health organizations put in evidence the **harmfulness of the elements which compose fuels**. Some, among the BTEX, are classified carcinogenic.

The exposure of employees to benzene, may in the near future, cause diseases such as the one we know for asbestos.

The action contributes **OPTIMGAZ** to fight effectively against these nuisances.

➔ A new asset for your company and your customers

Regularly, **gas analyses by chromatography** can be made in situ. These analyses are the ones employed by all the laboratories, **their reliabilities and their relevances are indisputable**. These optional services will be followed by an environmental report which can be published. It represents **an asset and an axis of important communication for the retailer**, which make the difference with competitors.

The selling point can use the mention:
«Petrol Station equipped with a system of vapors recovery and condensation that preserves the environment developed in partnership with ifp»

Principle of functioning Optimgaz

The Optimgaz system presents **3 operating cycles**:

- 1st cycle during **the filling up of the station tanks**;
- 2nd cycle permanently during **the refueling of automobiles tanks**;
- 3rd cycle of **defrosting** with separation of water and hydrocarbons.

Equipped with **tubular heat exchangers**, the machine cools down gas at temperatures **allowing most of the V.O.C. to return into liquid phase**.

Fuels are rerouted towards the storage tanks.

The truck gets back **particularly cold gases distorted by V.O.C.**

This machine becomes perfectly integrated into the current configurations of gas stations. It anticipates the arrival of biofuels and their problems.

The Bio fuels

The will **to introduce biofuels on the market** is clearly shown by authorities. These biofuels have for objectives **to suggest openings for the agricultural world, to limit greenhouse gases, and to protect the resources in fossil fuels**.

Whether they are ETHANOLS or DIESTERS these two substitutes gives **difficulties in the phase of distribution**. Indeed these two products are **sensitive to water presence**.

E85 which is a mixture of 85 % of ethanol and 15 % of gasoline is not only more volatile than current fuels, but it absorbs the water (all the alcohols are miscible in the water).

The diester, which is a vegetable oil, has also a miscibility with water.

It is more advisable to make sure, for the distribution of products in compliance with the smooth running of engines, **to eliminate the water that is contained in the natural humidity of the air**.

During the distribution of products, the air from the outside comes to replace the volume of the sold liquid. This outside air is loaded with humidity. Outside temperature varies according to the weather. The temperature of the buried tank varies little, it borders 14 ° C.

The difference of temperature provokes the condensation of the water contained in the air.

With the machine **Optimgaz®**, the air from the outside pass by a **thermal heat exchanger maintained in cold**. The cold reclaims the air which is introduced into the tank. The air being dried up it cannot have any more condensation.

During the taming of the station in biofuels, **gases contained in tanks are chased away**, gases as for the other tanks are supposed to go through **a heat exchanger, the air is cleared of fuels and pollutants particles**.

Optimgaz, a communicating system

The machine communicates, **by its GPRS modem or by the internet network**, on informations related to its functioning.

The passed on data eases the implementation of **a preventive and even a predictive maintenance**.

For a performance optimization, the Optimgaz system is equipped with **a combined receiver «fuel counting and water / hydrocarbons separator»**.

Finally, **the combined receiver communicates remotely with the authorized persons**, the results of the tank return, for a performance optimization of and profitability.

Protecting the environment

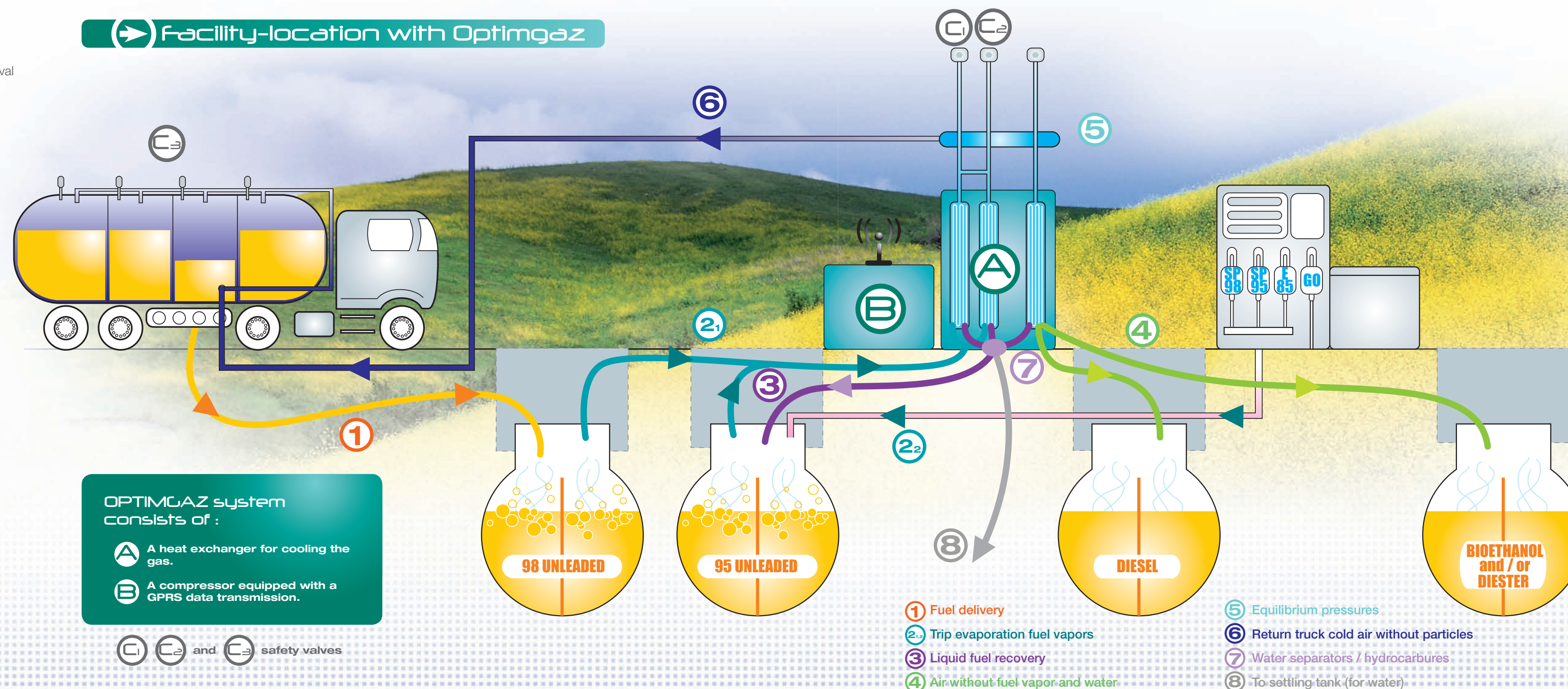
Although regulations already allowed to fight against the V.O.C. emissions, **the current devices are still perfectible**.

The **Optimgaz** system, in its process, **avoids the degassing by vents** due to the overpressures generated by the **PHASE II** recovery.

In spite of all the precautions taken by professionals, **accidental degassings might occur**.

Treated with the machine **Optimgaz®**, **the contents of the truck after delivery are cleaned of fuel particles**, so that it cannot have any significant V.O.C. emission there.

Facility-location with Optimgaz



Safety of the persons and the installations

> Safety for the hazardous materials transport:

Currently, without the gases treatment, **a truck that had recovered V.O.C. in station represents an important risk**, equivalent to 600 kg of dynamite (APTH source). The treated truck is not exposed any more to this risk. The residual quantity of V.O.C. is so weak that the **«triangle of the fire» is broken**.

> Safety on the site:

The vapour recovery **PHASE II** generates **overpressures in tanks** containing the gasoline. This overpressure sometimes provokes **emanations of gas** in manholes and sometimes even ascents of gas up to the employee area.

The machine **Optimgaz®**, in its process, **establishes a completed balance** between all the tanks of the station.

Then tanks gets on an atmospheric pressure. Therefore, if the waterproofnesses are correct, **V.O.C. gas heavier than air cannot present any risk**.

The staff and the customers will be much less exposed to benzene and aromatic, contained in the fuel. The technical staff, too, will be much less exposed to the dangers.

Optimgaz, the alliance of Safety, Ecology and Profitability

During every truck unloading, **the gas loaded with hydrocarbons vapors represents an important volume of fuel**. It is conceded by the profession that this volume represents **on annual average 3 liters for 1 000 liters** of delivered volume.

The measurements done with our prototype equipped with spectrometers «gas phase» have confirmed that **this value could be admitted**, and it rather represent the bottom of the range.

Knowing the price per liter is growing, **the recondensation is a significant source of profits proportional to the volume handled by the station**. The energy balance is particularly favorable because of the price per kWh compared to the fuel.