

(in)VOLVED

(in)FORMATIVE

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(in)FLUENT

(in)GENIOUS

**Inspiring
innovation**

(in)volve

(in)TERNATIONAL

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INVENTEC, THE SUCCESS STORY OF AN SME

A . INVENTEC A DEHON GROUP COMPANY

Inventec is part of the Dehon group. The group, a family company created in 1874, was first specialized in refrigerants filling and distribution.

Nowadays, the group with its 3 companies is dedicated to:

- Refrigeration, air conditioning and heating with **Climalife**;
- Car care with **SMB Auto**
- High Technology with **Inventec**.

It's products technical performances, Its market responsiveness and its continuous research for sustainable solutions are the reason why the Dehon Group is leader on these 3 fields of activities in Europe.

The Dehon group generated a 160 million Euros turnover in 2013 and works with more than 500 employees all around the world (Asia, Europe, Americas).



Christine Lagarde, former French Minister of Finance and Economy during opening of Inventec Shanghai facilities

INVENTEC
PERFORMANCE CHEMICALS

climalife®

SMB
UNE DISTANCE D'AVANCE

B . THE SUSTAINABLE DEVELOPMENT : values deeply entrenched in our roots

During the World Exposition in Shanghai, in October 2010, Inventec, decides to go further and to implement a continuous sustainable ecoconception⁶ approach. While maintaining our solutions at a high level of technical and economical performance, we also define our products by their key impact parameters on health and environment.

If our engineers improve, significantly, 1/3 of the parameters without degrading any of the other, we give after approval of third party bureau Veritas , the Greenway « label » to this product. If we do not improve further the product within the next 5 years, we take the label off.

GREENWAY

⁶ cf. glossary p. 10

Some Key dates :

- 1995 : CFC⁴ ban, 5 years earlier than expected
- 1996 : Electronics go No clean
- 2000 : Highly contaminated SF₆⁵ recycling (gas used as an isolator)
- Since 2002 :
Active participation to the REACH⁷ regulation implementation
- 2004 : Ban of lead in electronics
- 2007 : Nobel Price awarded to Al Gore and IPCC (Intergovernmental Panel on Climate Changes) where Patrice Rollet¹, Inventec's Managing Director is actively participating.
- 2012 : Greenway launch in Bry-sur-Marne, France
- 2014 : Greenway launch in Bilbao, Spain
- 2015 : AMTECH acquisition in the USA



Chantal Jouanno, former French Secretary of State for Environment visiting one of our french production units during the launch of SME support program for REACH implementation

C . INVENTEC : OUR MISSION

Managed by Patrice Rollet¹, Inventec employs more than 100 people and owns 9 production sites (Bry-Sur-Marne and Saint Priest in France, Bergen op Zoom in Netherlands, Yverdon in Switzerland, Kuala Lumpur in Malaysia, Shangai in China, and Guadalajara in Mexico, Deep River, USA). All these production sites are certified ISO 9001 and are involved in a continuous improvement of their environmental performances. Inventec's objective is to develop and commercialize products and services for high technology industries while ensuring:

- **The technical Performance** of our products and services through a permanent innovation (one new product per quarter),
- **Environmental and health Protection** by substituting dangerous substances and implementing sustainable use of products,
- **Proximity** of our experts and their process know how.

Inventec proposes products and services for :
electronic assembly, precision cleaning, surface treatment, for formulation of foams and aerosols, for chemical and pharmaceutical synthesis.
These applications are dedicated to a wide range of industries:

aeronautics, automotive, electronics, food processing, energy, medical, pharmaceutical and optical industries.

Inventec is one of the leading companies in chemical innovation and in sustainable application of these innovations protecting health and environment.

Over 2,500 substitutions of chemicals have been realised in highly technical processes in Europe, Asia and North America. This concerns areas as diverse as the cleaning of luxury watches, decontamination of liquid oxygen pipes in the aeronautics industry, lead-free soldering, foam expansion, aerosol formulation etc... All these substitutions allowed to reduce considerably the risks linked to products and their use.

Our product and service offer is organised by 3 business units:

BU Surface Technologies: For cleaning, finishing or protecting various surfaces (metal, plastic, composite...)

BU Electronics: For assembling components on printed circuits

BU Fine Chemicals: For the formulation of aerosols, foam expansion and pharmaceutical or chemical synthesis



¹ cf. biography p. 9

⁵ cf. glossary p. 10

⁴ cf. glossary p. 10

⁷ cf. glossary p. 11

INNOVATIVE PRODUCTS AND SERVICES

The Surface Technologies Business Unit

Within the BUST we are formulators and developers of chemical products for precision cleaning dedicated to aerospace, defense and transportation markets as well in micro and high precision industries. As a distributor, the BUST provides its customers with gas blends, in order to modify metal surfaces, improve process in the treatment of water and food.

We are able to offer a cutting-edge chemistry, anticipating regulatory constraints (Reach⁷, F-Gas II⁸, VOCs³).



Some product examples

- Nowadays the composites have taken a very important place in the manufacturing of products in different markets; and its complex compositions makes harder the preparation and the cleaning of parts during or after the manufacturing. Inventec thanks to its R&D team has developed a large range of degreasing and stripping products PROMOCLEAN™, products with LOW COVs or WITHOUT COVs to be used in a manual process as well in aqueous or vapour phase process. They are compatible with several substrates and can eliminate all kind of pollutants.
- Inventec was the first company to launch a solvent to substitute

HCFC for the aeronautics market, dedicated to the removal of contaminants in oxygen and hydraulics fluid pipes of Airbus A340 and A380 planes. Today, this critical application is one of our most common process in our expertise, the application has been extended to other areas such as gas distributors who clean their installation and tools in contact with oxygen or in the military market for cleaning tanks of trucks.

- TOPKLEAN™ Organic, a unique biobased degreaser for vacuum cleaning machines, has been labeled GREENWAY™.

Service Example

Pyrostop Ecoprogram

Sulphur Hexafluoride or SF₆ is a dielectric gas to protect switch and circuit breakers of medium and high voltage. We offer materials to monitor and analyse the SF₆ in your facilities as well as recovery and filling equipments to do your own maintenance of the circuit breakers. Product analysis, control and maintenance of packaging and design and implemen-

tation of SF₆ installations are also some of our main services.

In the concern to ensure environmental sustainability, we provide you with the collecting of your degraded SF₆ that is recovered. Thanks to our patented recycling process, we put back the SF₆ to the specification of IEC 60376 standards in order to allow you to use it again in switch gears.



³cf. glossary p. 10

⁷cf. glossary p. 11

⁸cf. glossary p. 11

⁹cf. glossary p. 11

The Electronic Business Unit



As one of the top 5 producers of specialities for Electronic Assembly Inventec is the unique company in developing, and supplying all range of soldering², cleaning and coating materials for the assembly of printed circuit boards and semiconductors. Our products deliver a balanced added value integrating reliability, sustainability and compatibility, key elements for high end electronics.

The markets we mainly serve are automotive, aerospace, LED lighting, semiconductor, energy.

Our formulations are targeted to go beyond the technical performance required by industry standards and legislations (ROHS⁸, VOCs³, REACH⁷), in order to contribute more to sustainable development.

Some application examples

- In Automotive, electronics plays a key role for the integration of safety, comfort, control and tele-matic functions and innovations. These electronic control units follow overall electronics trends such as miniaturization, lead free and some are located under the hood being exposed to severe thermal shocks. ECORELTM solder paste provides an excellent chemical and mechanical reliability for solder joints. Moreover ECORELTM solder paste is formulated to match the high production rate of automotive assembly lines and is available worldwide
- In aeronautics, the printed circuit boards have to be totally free of flux residue to avoid any risk of corrosion and achieve the best adhesion with protective conformal coatings. The residues of solder paste are totally removed with a high performance compatible cleaner, TOPKLEANTM EL 20 in a

vapour phase machine process. The cleaning, rinsing and drying of the parts is done in a fast cycle

One of our brands: ECORELTM solder paste.

EcorelTM solder paste meets the increasing number of challenges in the electronics industry due to both the evolution of the technology itself, and new legislations. Halogen free, lead free, embedded technologies, hybrid assembly, miniaturization, thermal cycling, compatibility, production rate and other requirements are covered under the performance of our solder pastes for different applications including surface mount technology (SMT, package on package (PoP), jet printing, wafer bumping and die attach.



ELECTRONIC PRODUCT
RANGE



²cf glossary p. 10 ⁷cf part 2 p. 11
³cf glossary p. 10 ⁸cf part 2 p. 11



The Fine Chemicals Business Unit

Inventec's fine chemical offer concerns the Aerosol markets (flammable or non flammable spray gas), foam (liquid or gas expansion agents) and intermediates for synthesis.

Relying on its know-how, the fine chemical BU proposes:

- Formulation, packaging, storage and distribution of spray gases, solvents and expansion agents
- Tailor-made products and/or services
- R&D service available for our customers to analyse, study and also supply samples
- Services linked to the use of our products such as engineering services (implementation of storage and distribution of gases and flammable liquids ...), follow-up and regulation monitoring and also security audits of our customers' installations, HSE training etc...
- Logistic adapted to the transportation of our hazardous products delivered in bulk and/or packaged (tanks, containers, drums, bottles, etc, ...)
- The recovery and treatment of our used products and other hazardous wastes (used or contaminated chemical products, end of life packaging, purge fluids, sample lots). This activity gives priority to the valorization and recovery.

To ensure its worldwide development, the Fine Chemical BU relies on its dedicated sales teams in the European Inventec subsidiaries and in many industrial sites featured with the equipments and authorizations required for handling and implementing any hazardous product blends.

Recently, we have been ensuring the marketing development of our expansion agents (pentanes and blends) from our new filling and storage platform located in Bergen op Zoom, Netherlands. These new installations reinforce our presence in Northern Europe, in Eastern countries and in the UK. This allows us to be among the 2 most important pentane suppliers for the foam market in Europe.

These industrial sites are also offering services (blends, packaging, and storage) to our customers and sometimes suppliers.

OUR SERVICE SOLUTIONS

Inventec provides many services based on expertise acquired over 40 years in high technology markets. This know-how includes our local experts advices, all over the world.

The services we are offering enhance our product offers, always with the same spirit of respecting environmental regulations and ethics.



Ecoconception

The Fine Chemicals Business Unit proposes the following services:

• Engineering services:

- Audit and implementation of gas and liquid storage,
- Facilities audit and installation for waste products treatments,

• Process services:

Definition and optimization of processes: studies, prescription, implementation, follow up and control,

• «ECO» services:

Product life cycle management through the used product analysis, recovery, regeneration or destruction.

Inventec also provides customized advices, especially for classified installations and end-of-life product recycling.



SOME KEY FIGURES

Inventec in

7

key points

- **100 employees**, 1/3 are engineers
- **60 million euros turnover** in 2013
- **50%** of the turnover is generated outside France
- **More than 10% of the Turnover is invested in Research & Development**
- **10 subsidiaries** all around the world
- **10 production sites** on 3 continents (Europe, America, Asia)
- **40 years of experience** in high tech fields

PATRICE ROLLET'S BIOGRAPHY



Patrice ROLLET is graduated from the French Engineer School, Ecole des Mines (1977) and got a University of Chicago MBA in 1980. From 1980 to 1987, he held different positions in production and marketing fields for Nestlé™. He joined the Dehon Group in 1988. Since 2002 he is Managing Director of **INVENTEC** (Performance Chemicals of Dehon Group) and SMB (car care products).

Patrice ROLLET is involved in many environmental issues: Montreal Protocol, VOC³, Kyoto Protocol, ROHS regulation on lead ban, REACH etc.

He is also a member of several health/environmental committees of professional associations:

In France : FIEEC (electrical and electronics equipment) GIFAS (aeronautics) and UIC (french chemical federation),

In Europe and US : FECC (chemical distribution), IPC (electronic association) in USA and ICC (worldwide).

He also actively participated to French national debates on environmental Protection (known as «Grenelle de l'Environnement») and he was a member of the IPCC experts committee on climate changes from 2002 to 2007. He regularly speaks at symposiums on regulations trends, on substitution processes and on technical and economical aspects of change management, and on essential role of SME's to green up the supply chains.

GLOSSARY

2 - Soldering

Soldering is a heat process for strong bondings of materials. In electronics, it is used to assemble components on printed circuit boards, or different elements, while ensuring the electrical conductivity.

3 - Volatile Organic compounds (VOC)

Volatile Organic compounds (VOC) are a wide range of products. They are either gas or liquids, easily evaporable under normal temperature and pressure conditions (20°C and 105Pa), such as benzene, acetone, perchloroethylene, etc. Some are considered as carcinogenic for human beings, such as trichloroethylene.

Europe committed in reducing VOC emissions by 20% between 1999 and 2010. These commitments were legalized on 23rd of October 2001 by a directive setting national maximal limits for VOC emissions to be fulfilled by 2010. The 1999 VOC solvent directive also tops up these rules for surface treatment applications in particular for some atmospheric polluting substances.

4 -Chlorofluorocarbons (CFC) Hydrochlorofluorocarbons (HCFC)

CFC are chemical substances incorrectly and commercially named Freon. They are colorless, odorless, non-flammable, non-corrosives in gaseous or liquid state, they are not intrinsically toxic but some of their decomposition products can be dangerous for the ozone layer. These products were used as refrigerants in the 1930's and as propelling gases for aerosols, as raw material for the organic elements synthesis, as expansion components for plastic foams. CFCs are responsible for the ozone layer depletion. The ozone layer protects earth at upper atmosphere (stratosphere) level, absorbing high energy ultraviolet rays. This depletion contributes to increase the risks of skin cancers and the greenhouse effect.

In Europe, since December 31st 1994, CFC cannot be sold anymore and have to be collected and destroyed since 1st of January 2002. Some of their substitutes, HCFC, HFC are also under regulation. HCFC are totally banned as solvents or expansion foams by the Montreal Protocol and HFC emission are submitted to the F-Gas regulation.

5 - Sulfur Hexafluoride (SF6)

SF₆ is used as an electrical insulator for high voltage circuit breakers and for magnesium production. Worldly speaking, their emissions are low but the huge potential in terms of greenhouse effect led to rigorous actions in order to reduce emissions at any stage of production and use. Up to now there is no substitute for electrical applications.

Efficient control and containment are necessary to limit emissions which are submitted to the F-Gas regulation.

6 - The «Ecoconception»

The environmental friendly approach consists in, among other things, improving the existing packaging (product packaging and also transport packaging) to reduce the environmental impacts. Thanks to ecoconception, the company is rooted in sustainable development.

7 - Reach (Registration, Evaluation, Authorization, Chemicals)

Reach is an European regulation for chemical compounds. Since 1st of June 2007, it controls the production, importations and use of these chemical substances in Europe in order to better protect health and environment. REACH also promotes alternative testing methods to animal testing, Europe free trade and could boost competitiveness and innovation.

For each substance, the REACH steps are as follows:

Registration, Evaluation and in a few cases Authorization/ restriction CE n° 1907/2006.

The implementation of the REACH regulation is a real challenge for SME in particular.

8 - ROHS Directive

The ROHS directive regulates, in electronic and electrical equipments, the use of 6 substances: lead, mercury, hexavalent chrome, cadmium, PBBs and PBDEs.

From 1st of July 2006, this directive defines the maximal concentration of these compounds: 0.1% for lead, mercury, hexavalent chrome, PBBs and PBDEs per weight and 0.01% for cadmium.

9 - F-GAS II

The European Union established the Regulation (EU) N° 517/2014 on fluorinated greenhouse gases. Published in the Official Journal of 20 May 2014, the text «F-GAS II» replaces Regulation (EC) N°842/2006.

The objective of this regulation, **applicable by 01/2015**, is to protect the environment by reducing emissions of fluorinated greenhouse gases.