

Company presentation

Chromatotec®

Agenda

- Company overview
- Markets & Products
- Technology
- Sales & Conclusions

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- **Company overview**
- Markets & Products
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Worldwide Presence

Saint-Antoine (33), France

- Chromatotec Group Holding
- airmotec AG SAS: sales, R&D
- Chromatotec®: cust. & admin. services

Virsac (33), France

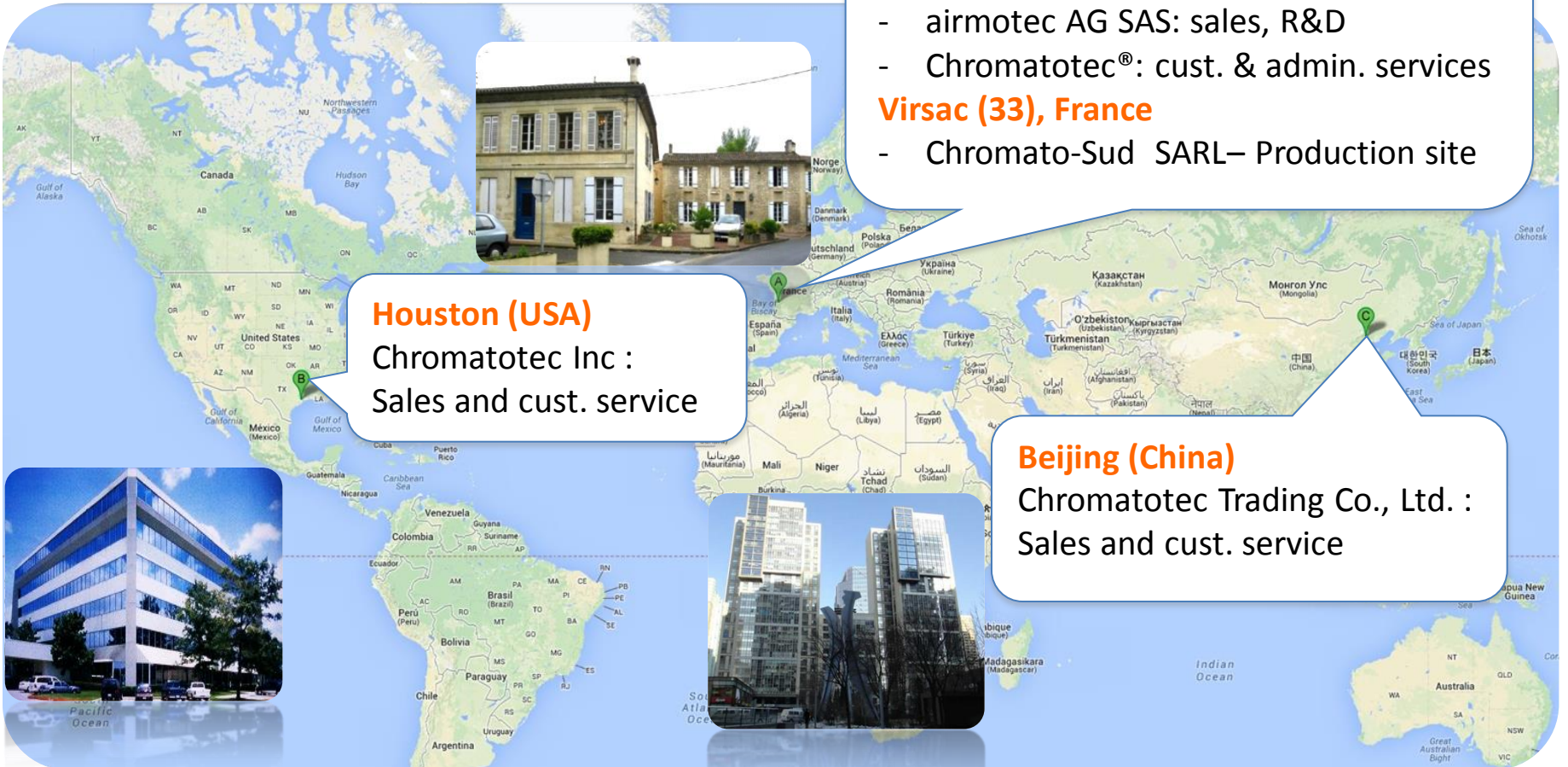
- Chromato-Sud SARL– Production site

Houston (USA)

Chromatotec Inc :
Sales and cust. service

Beijing (China)

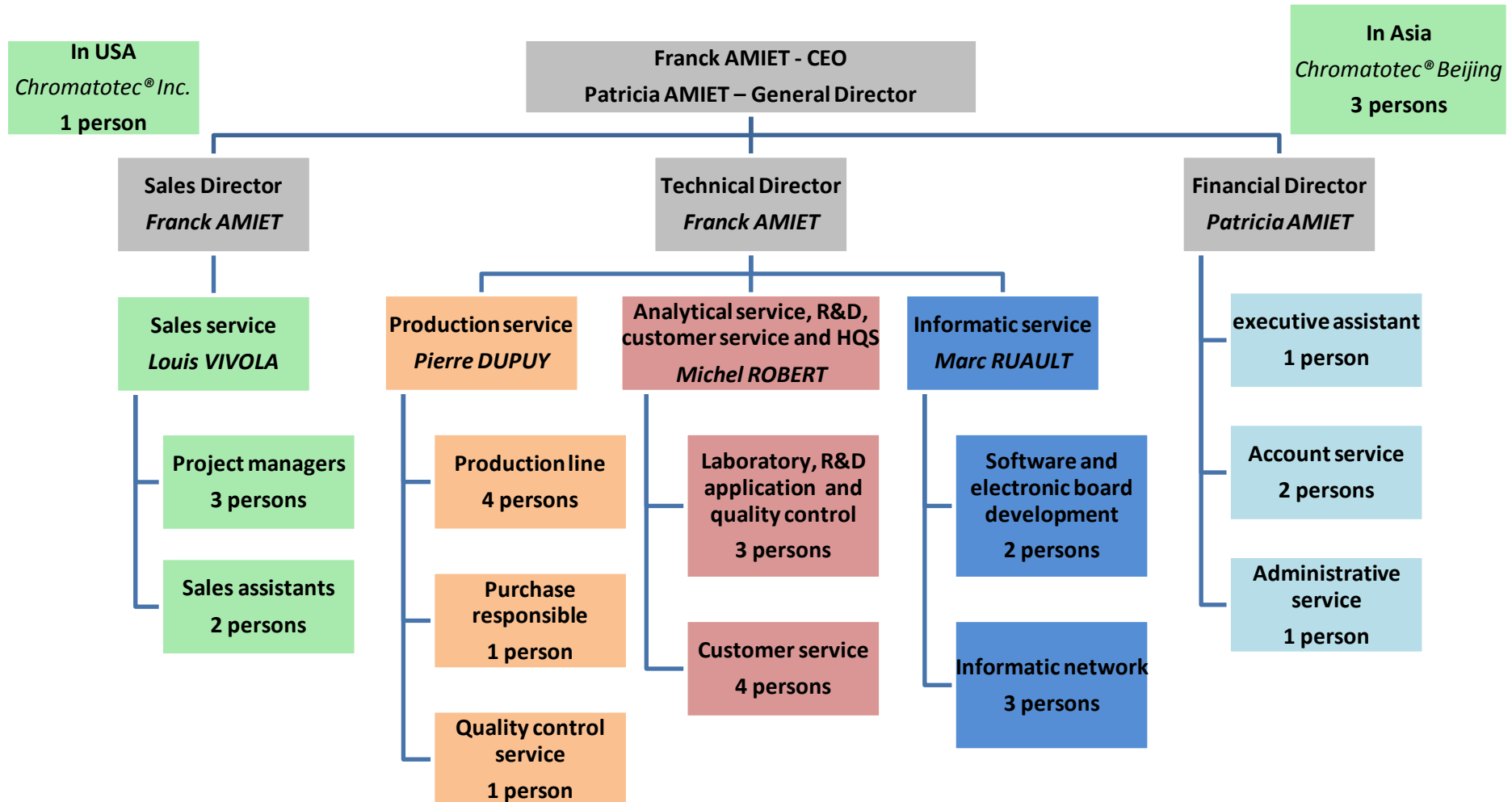
Chromatotec Trading Co., Ltd. :
Sales and cust. service



Chromatotec team

- Five companies in 2014
- Departments
 - IT dept. (Software development)
 - Production dept. (French Quality - Made in France)
 - Quality control and R&D dept.
 - Commercial dept.
 - Customer depart.
 - Administrative dept.

Chromatotec Group – Organization chart



Sales team organization

Sales Director

Franck Amiet

Sales service manager

Louis Vivola

Beijing office responsible

Didier (Xiaoming) Wang

Sales assistants:

-Eléna Dubâa

-Yan Pascoli

Customer service assistant

Céline Ostermann

Project managers

- Jean-Philippe Amiet

- Damien Bazin

- Mickaël Gézat


Sales team organization



List of spoken languages in our company:



About us

- 
- 2013** mCerts certification for VOC analysis **EN 14662-3**
Establishment of a **Chinese subsidiary**, Chromatotec® in Beijing
 - 2012** **Trap GC/MS analyzer** for industrial or laboratory application
 - 2010** Purge and Trap cabinet for VOC analysis in water.
 - 2008** **Chroma S** for sulfur detection (FPD detector)
 - 2005** **New office in Beijing** : Mr Wang Xiao Ming as support in China
 - 2002** **Production site** Airmotec AG SAS moved from Switzerland to Virsac - **France** (33))
Launching of **Air Toxic range** with new PID detection in ambient air and industrial hygiene (Low cost instruments). Installation of cabinets in explosion proof areas.
 - 2001** **AirmOzone** and **VistaCHROM** development
Establishment of an American subsidiary, **Chromatotec Inc in Houston**
 - 1996** **New headquarters** for Chromatotec Group in **Saint Antoine near Bordeaux** (France - Europe)
with laboratory and workshops
 - 1992** Chromato-Sud produce the gas analyzers
 - 1990** Creation of **Airmotec AG SAS**, Switzerland (Instruments dedicated to the analysis of ambient air - technology coming from the Swiss pharmaceutical industry).
 - 1986** Foundation of the firm **CHROMATO-SUD** by the current managers in BORDEAUX

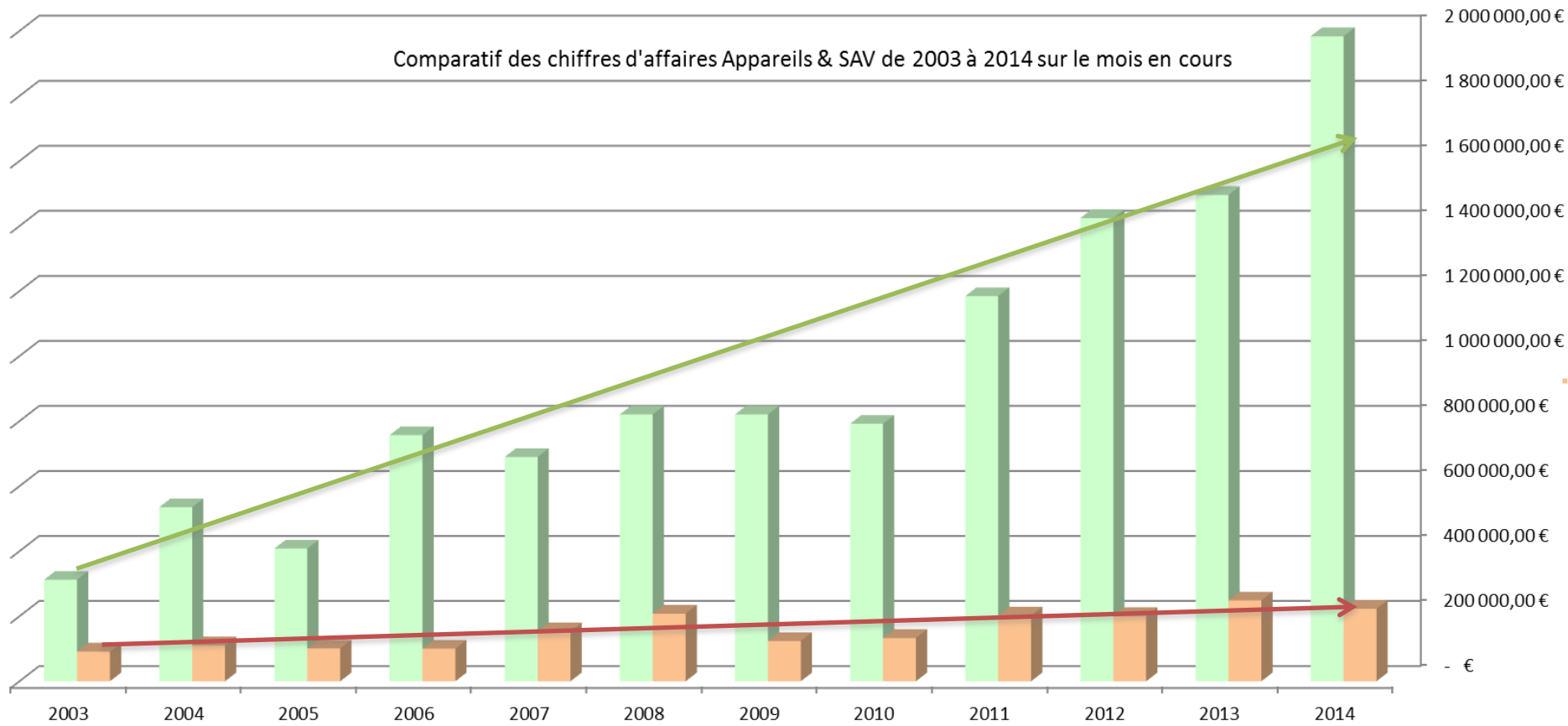
Certificates

- ✓ Worldwide recognition with certifications relating to the relevant standards, performed by : TÜV (1996), CNR (2006), ASTM (2009), PA China (2010), *mCERTS* (2013)
- ✓ US EPA use Chromatotec solutions (2009).



- ✓ EN 14662-3 (2013): Method to establish the performance criteria for the measurement of Benzene concentration using an automated sampling pump with in-situ gas chromatography.
 - Laboratory and on-site tests have been passed successfully by the NPL
 - Benzene and 12 other VOCs have been tested
- ✓ **airmotec/Chromatotec® : Unique manufacturer with EN 14662-3**
 - En 14662-3: compulsory for ambient air monitoring in Europe

Orders for instruments



2003/2014 Turnover comparison **Instruments** and **After sales service** for current month

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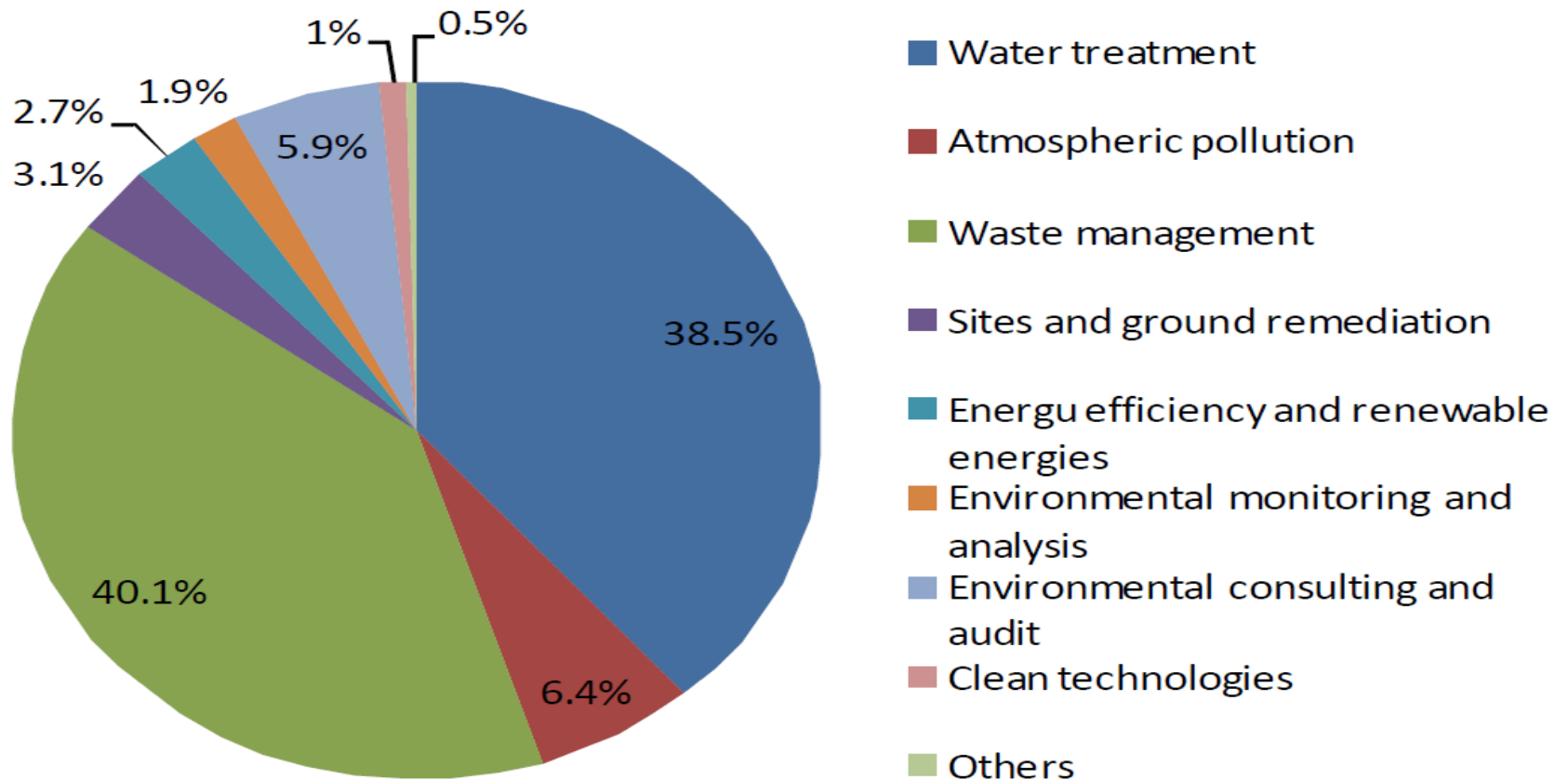
Air Quality

Global context

- 7 millions of people die every year from Air pollution (OMS source)
- June 27, 2014 - Nairobi : 160 members of the ONU have decided to put Air Quality as top priority.
- United Nations Environmental Program (UNEP) currently estimates at **€1,400 billion** or 2.5% of global Gross Domestic Product (GDP) the market
- It is expected to expand swiftly over the coming years, at a rate of around 10% annually.



Global context



Main markets

- Main markets areas
 - Ambient and industrial air areas
 - Pure gas, natural gas and biogas plants
 - Waste Water Treatment Plants
- Specific pollutants
 - Sulfur compounds (H_2S , SO_2 , mercaptans, sulfurs...)
 - Volatil Organic Compounds (including BTX)
 - Permanents gases (He , Ar , H_2 , O_2 , N_2 , CH_4 ...)



Figures and targetted markets

Sales repartition:

- More than 100 analyzers sold per year
- More than 90% at Export / around 10% in France

Targetted markets:

- Ambient Air
- Industrial Air
- Emission CEMS
- Water Surveillance
- Gas Process
- Pure gases
- Natural gases

Markets

- **Ambient Air**
- Industrial Air
- Emission CEMS
- Water Surveillance
- Gas Process/ Natural gases
- Pure gases

Ambient Air

Market overview

Outdoor Air Quality Monitoring

- Emergence and growth of this market has been largely driven by government intervention :
 - regulation
 - pricing policies.
- Despite persistently strong lacks, the growing awareness of environmental issues is giving rise to increasingly proactive policies, spurred in the recent past by the green stimulus plans.



Ambient Air

Challenges

- Health preservation
- Greenhouse effect reduction
- Market rules
 - ✓ Decided by governments
 - ✓ More and more compounds
- Market's requirements is looking for
 - ✓ Precise and reliable measurements
 - ✓ Certified instruments (according to the legislation)
 - ✓ Fully automatic instruments with remote control



Ambient Air

Targetted pollutants

- VOCs (including BTX)
 - Concentration range: ppb or ppt
 - BTEX analysis (Benzene, Toluene, Ethylbenzène, Xylenes)
 - Ozone precursors analysis (C_2 - C_{12})
 - Methane and non-methane analysis (NMTHC)
 - Terpenes analysis (limonene, α and β -pinene)
- Sulfur and odorants compounds
 - Sulfurs : H_2S , SO_2 , Mercaptans, DMS, DMDS, DES
 - NH_3



Ambient Air

Our solutions

- **BTEX** (Option 1,3-butadiène / Styrene)
 - **airmoVOC BTEX (FID)**
 - Carrier gas: H₂
 - Compounds trapping into 1 phase trap
 - Head column pressure control with piezo valve
 - **airTOXIC (PID)**
 - Carrier gas: N₂
 - Compounds trapping on 1 phase trap
 - Self cleaning of the lamp
- **CH₄/NMTHC** speciation
 - **chromaTHC (FID)**
 - Carrier gas: H₂
 - Sampling loop



airmoBTX 1000 (5U)

Ref: A31022



chromaTHC (4U)

Ref: A24000

Ambient Air

Our solutions

- **Ozone**

PAMS : 31, 56 or 58 compounds

PAMS + TO14 : 88 compounds

– airmOzone cabinet

- **airmoVOC C₂-C₆ (FID)**

- Light hydrocarbons analysis, from C₂ (ethane) to C₆ (benzene)
- Compounds trapping in cold atmosphere on 3 phases trap (Peltier cooler)
- Sample dried with Permapure
- Carrier gas: H₂

- **airmoVOC C₆-C₁₂ (FID)**

- Hydrocarbons analysis from C₆ (hexane) to C₁₂ (dodecane)
- Compounds trapping at room temperature into 1 phase trap
- Carrier gas: H₂



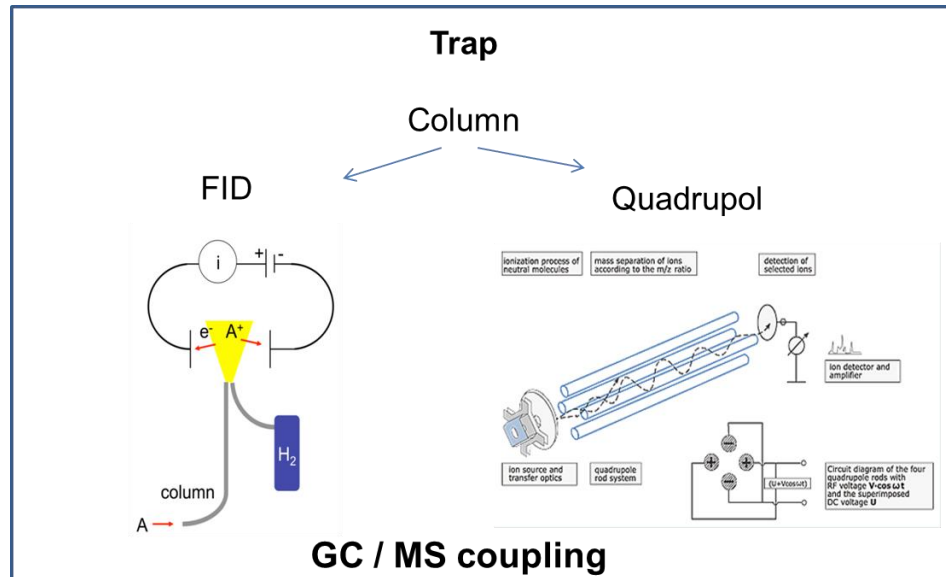
*airmOzone cabinet
(33U)*

Réf: A52000
22

Ambient Air

Our solutions

- VOCs
- Ambient air monitoring or water analysis (method 502.2):
 - Trap GC/MS (FID)
 - airmoVOC MS (ppt and ppb levels) (method 524)



Ambient Air

Some references – VOCs

ST microelectronics (FR)

>>GC-MS



École des mines Alès (FR)



Units in China (CN)

>> AirmOzone



US EPA (USA)



Markets

- Ambient Air
- **Industrial Air**
- Emission CEMS
- Water Surveillance
- Gas Process / Natural gases
- Pure gases

Industrial ambient air

Market overview

- Prevent from process contamination
- Solvent contamination
- Reagent contamination



People protection

Industrial ambient air

Challenges

- Market needs:
 - Reliable instruments
 - Easy to use
 - Efficient and high reactivity from after sell services
 - Profitable



Industrial ambient air

Targetted Pollutants

- Clean room
 - Volatile organic compounds
 - Solvents
- Industrial hygiene
 - Toxic compounds used and emitted during fabrication process – e.g. : Epichlorhydrine
- Waste water treatment plants
 - Sulfur compounds analysis
 - Standard method for online measurement of sulfur compounds in natural gas and gaseous fuels
ASTM D7493 – 08
 - Nitrogen compounds analysis

Industrial ambient air

Benefits

- Reference instruments for all kind of instruments
 - VOCs
 - Sulfur
- Turnkey solution designed for industrial use
 - Easy, our solutions donot required engineers skills to operate it on a daily basis
- For many application, the use of our instrument can be very profitable
 - ST Microelectronics case study

Targetted markets

- Ambient Air
- Industrial Air
- **Emission CEMS**
- Water Surveillance
- Gas Process / Natural gases
- Pure gases

Emission CEMS

Market overview

- Automotive emission gas
 - Volatile Organic Compounds - BTEX
 - CH_4 /NMTHC
- Combustion gas: Control Emission Monitoring
 - CH_4 /NMTHC
- Paper plant
 - Sulfur compounds (H_2S , CS_2)
- Odors: 'bad smell'
 - Sulfur compounds
 - NH_3 and amines



Targetted markets

- Ambient Air
- Industrial Air
- Emission CEMS
- **Water Surveillance**
- Gas Process
- Pure gases
- Natural gases

Water Surveillance

Overview

- Raw source water
- Surface water
- Rain water
- Drinking water
- Pure water production



Water Surveillance

Our solutions

- Purge & Trap method
 - Volatile Organic Compounds – BTEX
 - Option FID MS

Chromatotec® advantages:

- Turnkey solutions
- Lots of experience in gas analyses
- Certified instruments for VOCs



Targetted markets

- Ambient Air
- Industrial Air
- Emission CEMS
- Water Surveillance
- **Gas Process / Natural gases**
- Pure gases

Gas Process

Turnover analysis

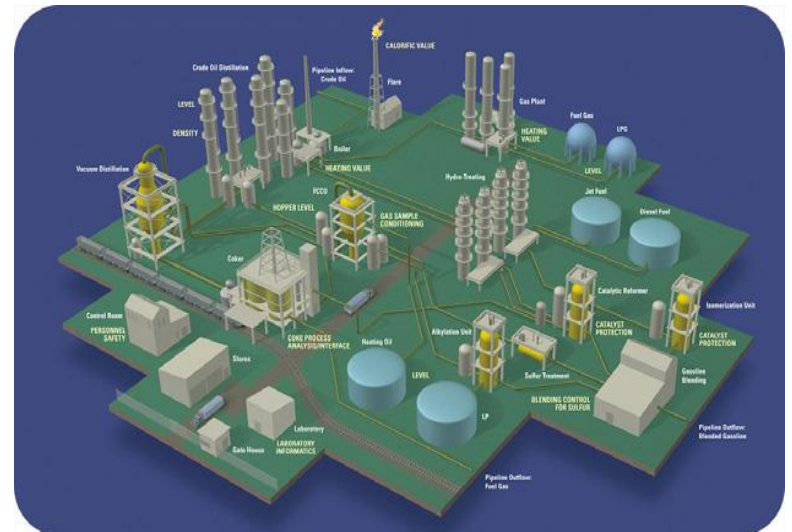
- Only 13% of Chromatotec® of sales
- Need to adjust the solution according to Market needs
- Need to valorize instrument to allow industries to calculate ROI



Gas Process

Targetted pollutants

- Factory protection and process optimization
 - Chlorine compounds
 - Volatile Organic Compounds
- Incinerators
- Combustion
 - O_2 , CO_2 and CH_4 analysis



Gas process

Our solutions

- Det HCT (FID)
 - Continuous online measurement
 - No column, no sampling loop
- Det NH3 (UV spectroscopy)
 - With Xenon lamp
 - Measurement every minutes
- Det TS(FPD)
 - Continuous online measurement
 - No column, no sampling loop
- Det QMS
 - With Quadruple technology



*NH3 analyzer
Ref: D27000*

Natural gas process & LPG

Overview

– Odorization (THT, H₂S, Mercaptans) Deodorization

- General company for natural gas
- Natural gas transportation
- Natural gas storage
- LPG company

– Explosive atmosphere:

- *Class 1, Div 2, Group C&D*



Natural gas process & LPG

Challenges

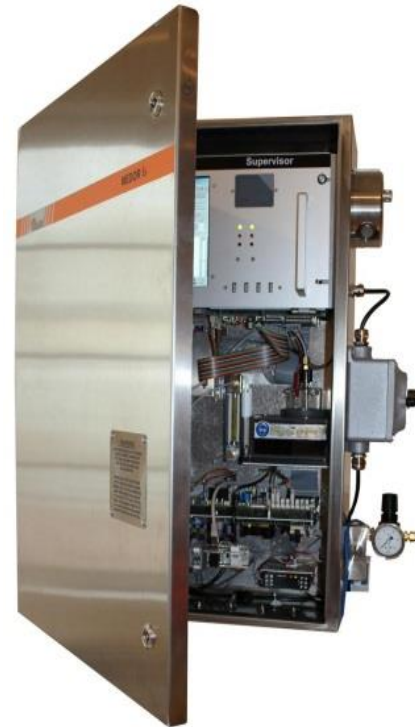
- Sulfur compounds analysis: ppb level
 - Mercaptans (Me-SH, Et-SH...)
 - Sulfurs (DMS, DMDS...)
 - H_2S
 - SO_2
 - CS_2 , COS (Chroma S only)
 - Chroma S or TRS MEDOR



Natural gas process & LPG

Our solutions

- Chroma S or TRS Medor
- Sulfur compounds analysis:
ppm level
 - Mercaptans
 - H_2S
 - THT
 - Chroma S, TRSMEDOR or energyMEDOR
 - TOS, TS
- Odorants and/or toxic compounds



*THT MEDOR Ex
Class 1 – Div 2 – Group
C&D*

Natural gas process & LPG

Challenges

- Sulfur compounds analysis:

- **Chroma S**

- Flame photometric detector
- Carrier gas: Air
- Sampling: Loop



Chroma S
Ref: C51022

- **TRSMEDOR**

- Electrochemical detection
- Carrier gas: Air
- Sampling: Loop



TRSMEDOR
Ref: M52022

- **energyMEDOR** – *natural application*

- Electrochemical detection
- Carrier gas: Air
- Sampling: Loop



energyMEDOR
Ref: M42022

Natural gas process & LPG

Some references

- Some references for Chromatotec®'s sulfur analyzers:

—PGE (USA)

—Air Liquide (France)

—KGC (Korea)



Targetted markets

- Ambient Air
- Industrial Air
- Emission CEMS
- Water Surveillance
- Gas Process / Natural gases
- **Pure gases**

Pure gases

Targetted pollutants

- Pure gas manufacturer company (purity 4.0) or ultra pure (purity 6.0)
- Food industry – CO₂ production for gaseous beverage
- Quality control of pure gas
 - Sulfur compounds
 - Volatile Organic Compounds - BTEX
 - CH₄/NMTHC
 - permanent gases (Ne, He, Ar, H₂, O₂, N₂, CH₄...)



Pure gases

Our Solutions

- Impurities in Pure gases
 - chromArgon (TCD)
 - Carrier gas: Argon
 - Sampling loop
 - chromaTCD (TCD)
 - Carrier gas: Helium
 - Sampling loop
 - chromaDID-He (DID)
 - Carrier gas: Helium
 - Sampling loop



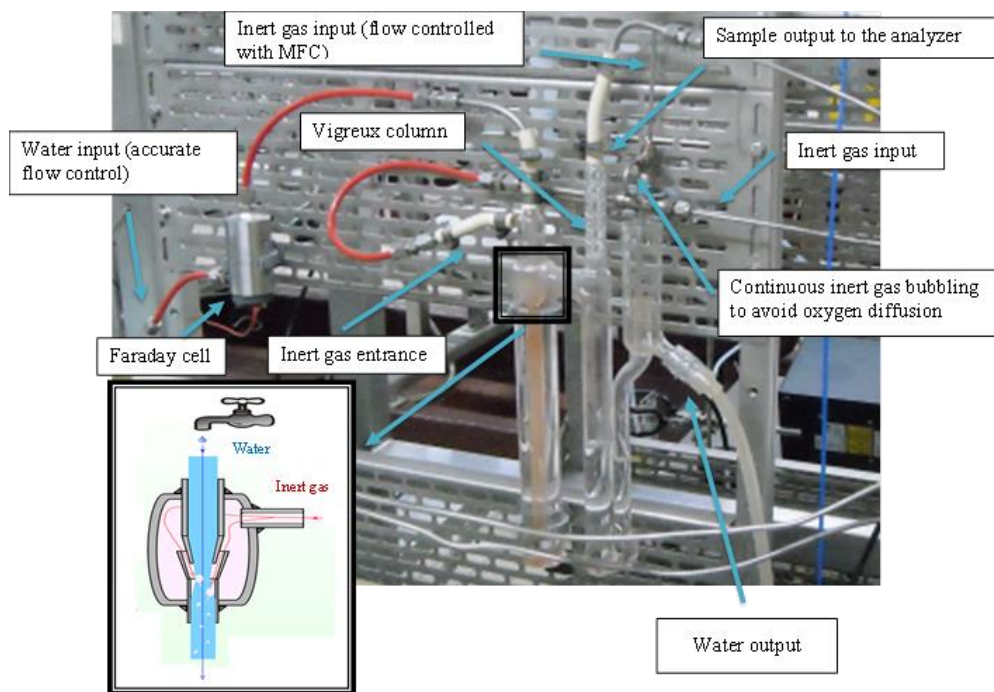
chromArgon

Ref: C41022

Pure gases

Our Solutions

- Dissolved gases in water:
 - Continuous extraction and analysis of O₂ / N₂ / H₂
 - Measurement at low concentration (μg/kg)
 - Automatic online calibration for results validation



Pure gases

Some References

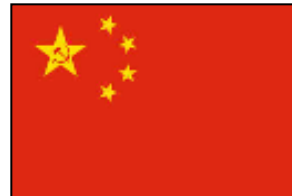
– EDF (France)



– AREVA (France)



– Tianjin (China)



Agenda

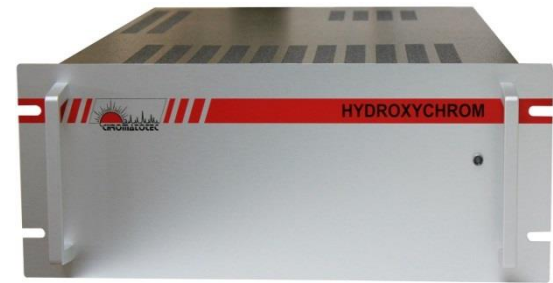
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Products & Technology

- Different range of analyzers depending on applications:
 - Chroma (using loop technology) for ppb, ppm and % concentration levels
 - airmo (using trap technology) for ppt, ppb and ppm concentration levels
 - Medor (using humid cell detector) for sulfur compounds analysis except CS₂ and COS (specific Medor analyzer for COS)

Products – Options

- Complete solutions with:
 - Gas generators (H_2 , N_2 and Air)
 - Dilution system such as MFC or critical orifice
 - Multiplexer system
 - Integrated computer with *Vistachrom* (or *Vistadetector*) software and associated drivers for data transfer and alarms
 - Cabinet and explosive proof cabinet



*Hydrogen generator
Hydroxychrom
Réf: XXX916*



*airmoCAL-D
Réf: XXX922D*

Agenda

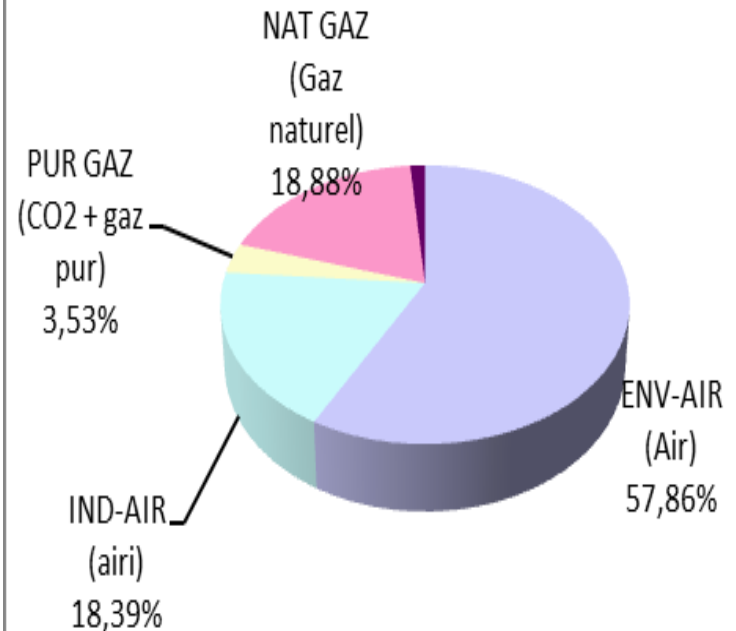
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About our sales

Sales contribution

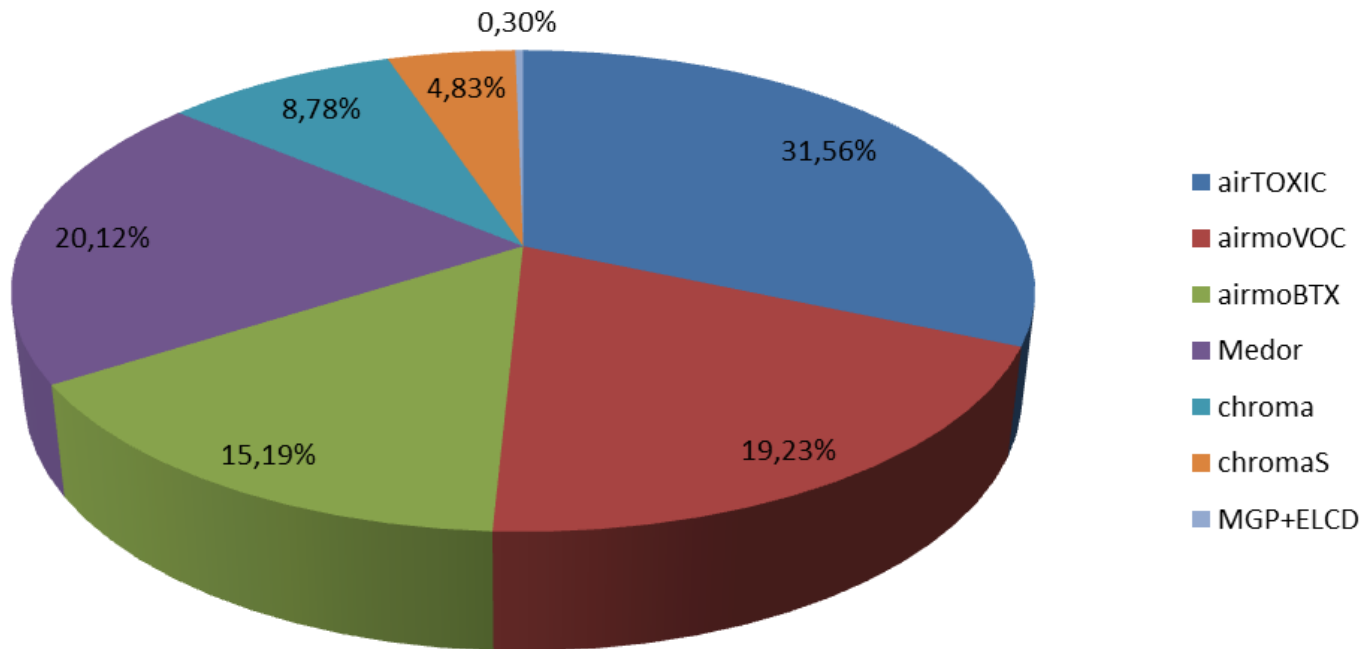
- Air and airi are not well defined (e.g. waste water plant fenceline)
- Sales are in Air percentage but could be included in airi percentage.

Application field for instruments sold in 2013



Products sales

Sold products distribution in % between 2000 and 2012



Conclusion

- Very large range of products available and designed according to Market's needs
 - VOC, Sulfurs, nitrogenous
 - 24h /7 days measurements
- Large range of concentration level from ppt to ppb and ppm
- Turnkey solutions :
 - Instruments
 - Multiplexers
 - Air generators

Conclusions

- Unique technology for sulfur quantification at low concentration levels
- Modular and innovative solutions according to your customer's needs
- Equipments 100 % Hand made and control with French Quality
- Solutions recognized as performant with amount of certifications



Thank you for your attention !