

ASTRIA

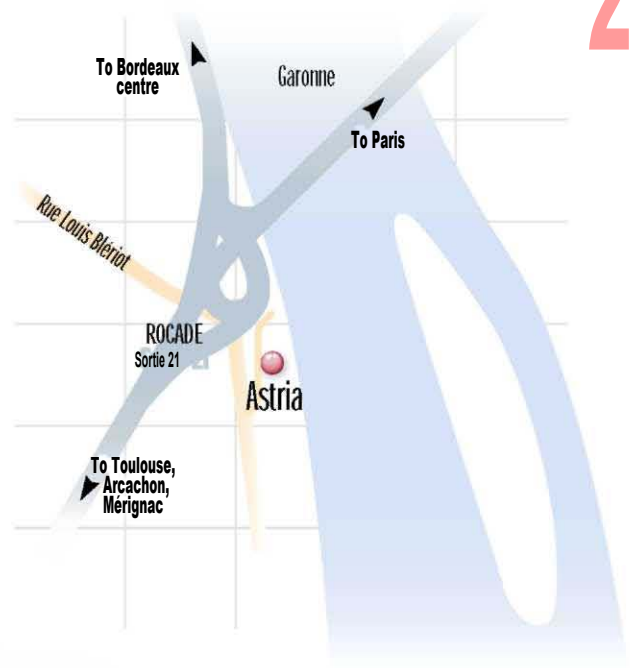
environmental
technology complex

Group of Architects B. SCHWETZER - J. GIACINTO



1 mission: to upgrade

2 means: sorting and



The energy upgrading unit

The thermal treatment unit for incineration with energy upgrading treats non-recyclable waste, having a capacity of 273.000 tons/year. The waste received is household and industrial waste, as well as purification plant sludge.

The sorting centre



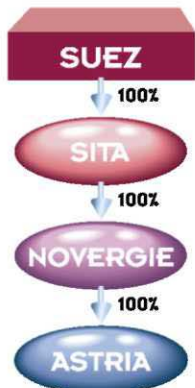
The sorting centre receives and treats the products that can be recycled which result from selective collections carried out door-to-door or by voluntary contributions. It offers a maximum treatment capacity of 30,000 tons/year.

If waste upgrading and respect for the environment are two key terms, ASTRIA's architecture shows that an industrial site can also be an example of integration, at the doors of a great urban area.

our waste incineration

— ASTRIA, located in the town of Bègles, ensures the treatment and upgrading of 300,000 tons of waste, from the urban community of Bordeaux and other communities of the department of the Gironde, each year. To carry out its public service mission, ASTRIA has a Sorting Centre, which was put into service in 1997 and an Energy Unit, that has been operational since 1998.

Shareholding



ASTRIA financed and built the technical complex which it will exploit up to February 2020, on which date the entire installations will be ceded to the community, which will become its owner.

ASTRIA
90 permanent employees, who treat and upgrade our waste

A departmental dimension

50% of the waste treated comes from the urban community of Bordeaux. The remainder is from the other communities of the department and industrial contributors.



1 mission :

4 main parts

1 Recycling

By providing raw material to certain processing industries, ASTRIA gives nearly 30,000 tons of waste which can be recycled a second time each year.



2 Energy upgrading

The combustion of household refuse makes it possible to recover heat in the form of steam. The latter feeds a turboalternator which produces 140 million kWh of electricity per year, which represents the electricity requirements for a town like Bègles for 3 years.

To upgrade our waste

of upgrading

“To upgrade” is to add value to something. Upgrading is thus the re-use, recycling or any other action aimed at obtaining reusable materials or energy from waste. For ASTRIA, waste upgrading represents, more than a mission, a reason for being.



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3 Ferrous and non-ferrous metals

Each year, by sorting and treating incineration residues, ASTRIA reintroduces nearly **5,600 tons** of ferrous and non-ferrous metals into the industrial circuit.

4 Slags

Incineration slags (or HWIS: Household waste incineration slags) are the main solid residues of the incineration. ASTRIA upgrades 80% of them, that is to say, nearly **50,000 tons/year**. After treatment, the incineration slags are used in **road underlayers or fills** and thus offer an answer to the problems linked to alluvial material extraction, thus contributing to the preservation of natural resources.



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2 means:

SORTING

People,
It is the



74%

of the incoming products come from sorting dustbins, by door-to-door collection.



26%

of the incoming products come from voluntary contribution terminals.

Automatic sorting technology ...

An eddy current machine to extract aluminium waste, an electromagnetic separator to separate scrap iron by magnetization, a rotary trommel unit to differentiate the product sizes, a ballistic separator and an optical sorter for hollow bodies are some of the many technologies which make the ASTRIA sorting centre one of most modern of its kind in France.

... aiding manual sorting

45 people recycle almost 30,000 tons of waste each year.

The ballistic separator makes use of a well-known physical property of materials: the capacity to bounce. Shaking products on a tilted grid makes hollow packing materials gather at the bottom and flat packing materials gather at the top.



The optical sorter, by recognizing the luminous spectrum reflected by the objects, makes it possible to separate the various types of plastics, in mere fractions of a second, by blowing.

and incineration

Machines, a mission

"Sorting-dimension"

— To receive and store the entering products, to sort them, to monitor them and gather them by category in order to finally condition them and dispatch them to the suitable sectors as new raw materials ... This is the "Sorting-dimension".

Human intervention in sorting is essential, but technology has recently optimized the tasks thanks to automatic sorting.



Did you know ?

What they were	what they become
Newspapers and magazines	Newspaper
Unsorted paper and cardboard	Cardboard
Food bricks	Raw material for plasterboards
PET (mineral water bottles for example)	Textile fibres
PEHD (Cleaning product bottles)	Bottles for detergent or engine oil, conduit pipes for electric cable

As for iron, it becomes iron again, and aluminium becomes aluminium...

All our energy dedicated to upgrading

Heat treatment by incineration and energy upgrading, makes it possible to bring the necessary electricity to 70,000 inhabitants, while reducing the volume of our waste by 90%. This mode of treatment is today a true industrial process, which makes it possible to enter 97.5% of the incoming waste into an upgrading circuit.

La combustion des déchets

With 3 lines, each capable of treating 11 tons per hour, the ASTRIA furnaces ensure the combustion of 273,000 tons of waste per year. Brought to a temperature of almost 1,200 degrees, 75% of the waste is transformed into gas. The remainder constitutes the solid incineration residue, called the slag, which is re-used for road construction. Combustion is maintained simply by continuously introducing air, thus not requiring any auxiliary fuel. 2 Furnaces out of 3 are equipped with a direct injection system under purification plant mud pressure.



Energy upgrading

Subjected to a high pressure (46 bars), a water circuit recovers the combustion calories while circulating in the boilers. Water is thus transformed into steam, then the steam is overheated to reach a temperature of 360°C. This steam thus taken to a high pressure and high temperature restores its energy to a turboalternator which delivers electricity on the domestic network. The decompressed steam is cooled in the aerocondensers, where it again becomes liquid, in order to be reintroduced into the boilers and to thus start a new cycle again.



Aerocondensers



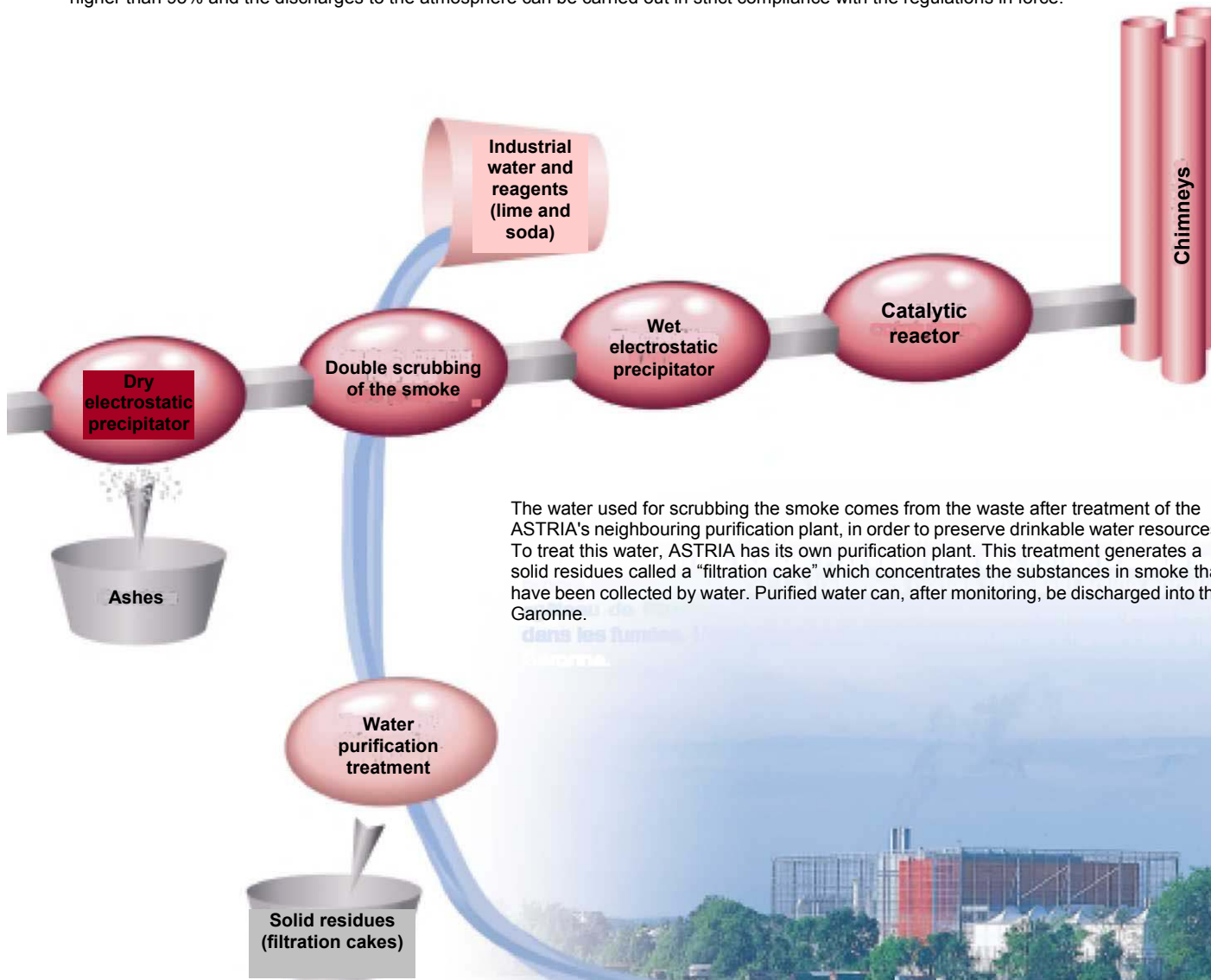
Turboalternator

Supply of electricity on the domestic network

and INCINERATION

Smoke treatment

Smoke treatment begins with dedusting. Within a dry electrostatic precipitator, ashes are trapped by electric charges and then extracted. Smoke then undergoes a double scrubbing process carried out with a mixture of water and reagents (lime and soda), which makes it possible to reduce the acidity of the smoke and the sulphur dioxide and to extract heavy metals. After a new dedusting in a wet electrostatic precipitator, smoke ends up in the catalytic reactor, in which the dioxins and furans are destroyed, as well as nitrogen oxides after injecting of an ammonia solution. The effectiveness of the treatment is higher than 95% and the discharges to the atmosphere can be carried out in strict compliance with the regulations in force.



The water used for scrubbing the smoke comes from the waste after treatment of the ASTRIA's neighbouring purification plant, in order to preserve drinkable water resources. To treat this water, ASTRIA has its own purification plant. This treatment generates a solid residues called a "filtration cake" which concentrates the substances in smoke that have been collected by water. Purified water can, after monitoring, be discharged into the Garonne.

DID YOU KNOW?

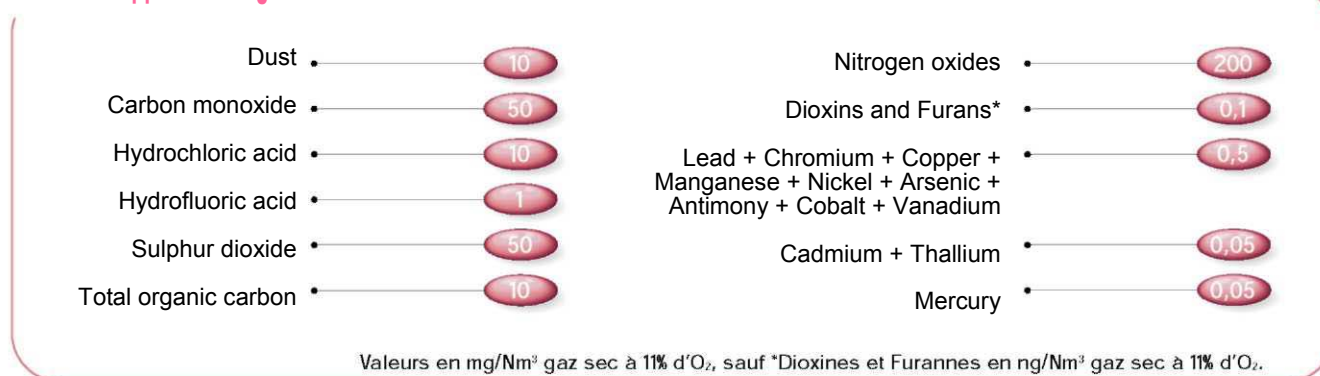
The ashes and filtration cakes, which are final residues that must be treated at a storage centre especially envisaged for this purpose, account for only 2.5% of the entering waste tonnage.

Environmental

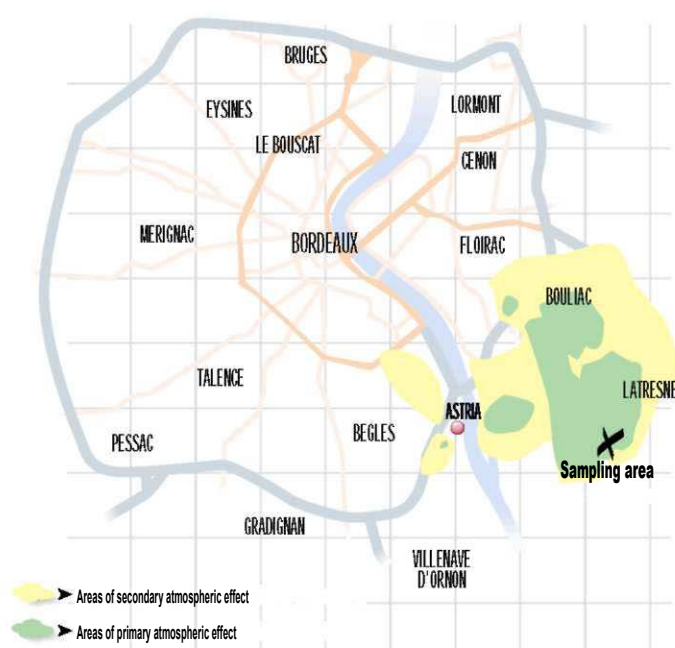
To measure and To preserve

— ASTRIA is classified as an environmental protection installation, subject to prefectorial authorization. The thresholds applicable to gas and liquid effluent emissions are in conformity with the European Directive of December 4, 2000, transposed into French Law by the Decree of September 20, 2002.

Thresholds applicable to gas effluents -



Monitoring of discharges to the environment



Measurement at the point of emission

- A great number of analyzers and sensors monitor 24h/24h the liquid and gas emissions of the factory.
- This automated monitoring, specific to the ASTRIA factory, is reinforced by an external control. ASTRIA calls upon specialized staff and independent analysis laboratories which sample the liquid and gas emissions. They thus validate the quality of measurements which are continuously being made within the factory itself. These external controls take place twice a year during one week.

Measurements in the environment

The prefectorial decree obliges ASTRIA to measure the impact of its installations and its activities on the environment. An evaluation of the initial state of the ground was carried out even before the construction of the factory. Since then, every year, measurements are made on samples of ground located in the direction of the dominant winds.

All measurements made at the point of emission and in the environment are transmitted to the inspector of the DRIRE (Regional Department of Industry, Research, and the Environment) in charge of installations Classified as Environmental Protection Installations (ICPE).

Technology Complex

monitor the environment

1209

This is the number of analyses which ASTRIA carries out each year (at chimney exits, in water and the ground, near the factory or several kilometers away in the direction of the dominant winds).

ISO 14001 Certified since April 2001, ASTRIA is committed to an environmental management system, which is aimed at making the environment a priority.

Thresholds applicable to liquid effluents

Suspended matter *	30	Nickel	0,5
Oxygen chemical demand	125	Zinc	1,5
Total organic carbon	40	Hydrocarbons	5
Hexavalent chromium	0,1	Phenols	0,5
Chromium	0,5	Free cyanides	0,1
Cadmium	0,05	Arsenic	0,1
Lead	0,2	Fluorides	15
Mercury	0,03	Chlorides	30000
Thallium	0,05	Organohalogen compounds	5
Copper	0,5	Dioxins and Furans **	0,3

*This value must be complied with 95% of the measurements. Values are given in mg/litre, except **Dioxins and Furans which are given in ng/litre.

The CLIS (Local commission for Information and Monitoring)

This commission meets at ASTRIA every year under the authority of the Prefect and gathers members of the Prefecture, of the urban community of Bordeaux, of the towns close to the site and environmental protection associations. ASTRIA presents its activity report and answers all the questions raised by those attending. This same activity report is submitted to the Departmental Hygiene Committee (CDH).



The dioxin monitoring committee

This committee, impelled by the urban community of Bordeaux, is a world premiere. It consists of scientists, political figures, representatives of the towns concerned, owners of incineration factories and people in charge of certain administrations such as the DRIRE. The purpose of this committee is to monitor the possible impact of dioxin effects.

Since the ASTRIA factory was put into service in 1998, the committee has not detected any trace of pollution by dioxins in the direction of the dominant winds.

Ask about the day's measurements...

Novergie's Internet site www.novergie.fr offers access to the environmental measurements of the factories belonging to the group. In the section devoted to the ASTRIA site, the measurements of the day relate to the 3 incineration lines and their emissions of hydrochloric acid, carbon monoxide and dust. Tables and graphs of the monthly results are accessible with a simple click...



To learn more visit :

The site of the Ministry for Ecology and Sustainable development,
www.ecologie.gouv.fr

The site of the SVDU (Urban Waste Upgrading Trade Union which gathers all the actors of the sector), www.incineration.org offers general information on the incineration trade.

The NOVERGIE site, www.novergie.fr offers a downloadable information file dealing with incineration and the applicable standards.



ASTRIA



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