

Geocycle

The solution for your waste



A member of the Holcim Group



Geocycle

Expert in the recovery («co-processing»)
of waste in the cement industry



Geocycle manages all the industrial waste treatment activities and its recovery in cement manufacture for the Holcim Group. Having developed this activity from 1989 onward, Holcim is a pioneer in industrial ecology. In France and in Belgium, this activity relies on 6 cement works, equipped with specific pretreat-

ment systems such as pyrolysis (Rochefort), a non-hazardous waste shredding unit (Heming) or a sludge dryer (Obourg). Two industrial waste pretreatment platforms (Senefte and St Etienne) recycle waste into solid or liquid substitute fuels suitable for the cement-making process. In order to provide each waste producer with

a solution adapted to its specific needs, and to guarantee a flawless service, Geocycle has a team of 80 employees continually trained in the latest waste processing techniques. Geocycle processes nearly a million tonnes of waste per year.

The cement-making process

An environment-friendly and sustainable solution for industrial waste

Saving more non-renewable natural resources

250,000 tonnes of fossil fuels are saved each year, thanks to the substitute fuels used by the 6 cement works of the Holcim group in France and Belgium.

The recovery of mineral waste as a substitute for raw materials like bauxite or iron oxide is also part of the group's sustainable development approach.

Taking part in the battle against global warming

Replacing the incineration of large numbers of types of industrial waste by recovering them as substitute fuels reduces overall emissions of greenhouse gases, which are responsible for global warming.

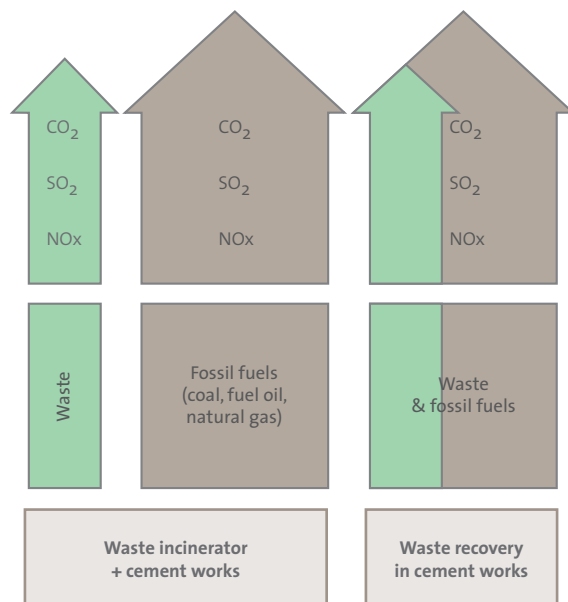
A solution which avoids the final residues: no waste from waste

The mineral fraction of the waste and its ash is incorporated into the material fused to form clinker, the main component of cement. So there is no final residue, and all the waste is recovered as energy and raw materials.

A guarantee of safety and traceability

Constant controls and strict acceptance criteria guarantee complete consistency of the manufacturing process and the quality of the cement, as well as waste treatment performance. The sites are certified to ISO 9001TV 2000 and ISO 14001.

Due to the absence of residues and the proximity of the recycling plants, Geocycle offers the community a long-term, local solution to the problem of waste, guaranteeing enhanced safety and total traceability.

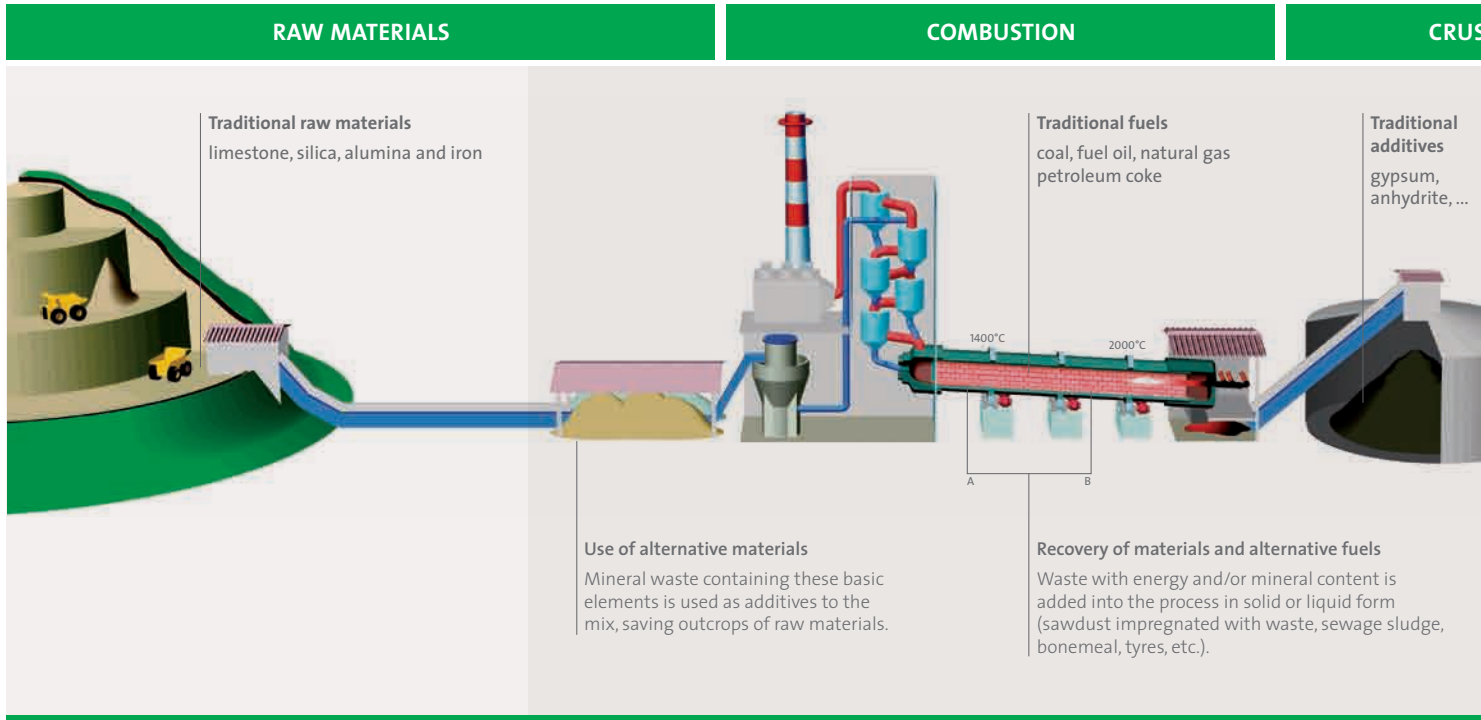


This solution contributes to reducing overall emissions



The treatment and recovery of waste

in the cement process



A CONTROLLED PROCESS
<ul style="list-style-type: none"> - Very high combustion temperature (2000°C) - Long residence time in the kiln
<ul style="list-style-type: none"> - Total integration of the combustion ash into the material in fusion (clinker)
<ul style="list-style-type: none"> - Neutralisation of the acid combustion gases by the limestone present in the clinker and the final processing of the emissions
<ul style="list-style-type: none"> - Procedures, certifications and controls guarantee total consistency in the manufacturing process and the quality of the cement

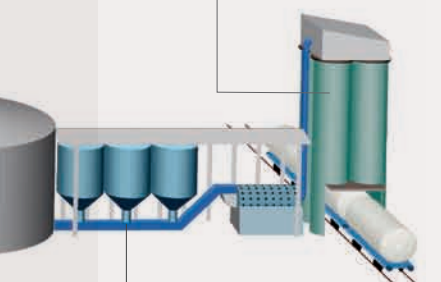
MEASURABLE ENVIRONMENTAL PERFORMANCE
<ul style="list-style-type: none"> - Complete destruction of the organics, avoiding the formation of secondary pollutants
<ul style="list-style-type: none"> - Total absence of residual waste
<ul style="list-style-type: none"> - Strict compliance with emission standards : emissions are not influenced by the combustion of waste
<ul style="list-style-type: none"> - No influence of waste processing on the quality of cement produced

SHING

SHIPMENT

Shipment

Cement is then shipped in bulk or in sacks



Use of alternative materials
mineral by-products, slag,
fly ash, calcium sulphate ...



Below, left to right :
Receipt of alternative fuels at Altkirch
Kilns in Obourg



Recovery of raw material



Quarry materials	Raw materials in the mix	Mineral waste
<ul style="list-style-type: none"> Limestone (CaCO_3) Clays 	<ul style="list-style-type: none"> Limestone (CaO) Silica (SiO_2) Correctors: Iron (Fe_2O_3) + Alumina (Al_2O_3) 	Waste containing: <ul style="list-style-type: none"> limestone silica iron alumina

Main origins of waste

Main sectors of activity:

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> Steel-making Metal Foundry Galvanisation Mechanical | <ul style="list-style-type: none"> Car industry Aircraft construction Chemical industry Paper industry | <ul style="list-style-type: none"> Food processing industry Glass industry |
|--|--|--|

Energy recovery in the kiln

This waste is used at high temperature at the nozzle and at the base of the tower.

Solid waste

- | | |
|--|---|
| <ul style="list-style-type: none"> - Shredded packaging waste - Shredded plastic and textile waste (fluff, etc.) - Hydrocarbon residue - Sawdust impregnated with pasty waste (supplied by platform) | <ul style="list-style-type: none"> - Crushing rejects - Sewage sludge - Polluted soil - Bone meal - Seeds - ... |
|--|---|

Liquid and pasty waste

- Solvents
- Emulsions, detergents
- Waste oil
- Waste water
- Oil tank sludge and viscous hydrocarbon residue
- ...



A safe and recognised solution



Depending on its characteristics, industrial waste passes through our pretreatment platforms, or is delivered direct to cement works.

Receipt and direct injection into the cement works

Waste whose physical appearance and composition corresponds to our permits and allow direct injection into the cement-making process is received directly in the plant after an acceptance and receipt process.

Specific pre-treatment in the cement works

Some types of waste undergoes specific pretreatment in the cement works before being able to be used.

The following tools are used:

- Pyrolysis (Rochefort) *
- Sludge dryer - «BEMTI» (Obourg) *
- Industrial waste shredding unit (Heming) *



Pretreatment at the platform

Some types of waste, mainly pasty waste such as paint sludge or wax must undergo pretreatment to convert it into solid fuel before being used in the cement plant.

For this purpose, Geocycle has two platforms mainly dedicated to impregnation of absorbent carriers: St-Etienne-du-Vauvray* (France) and Seneffe* (Belgium).

* Specific brochures available on request

For the Holcim group, Geocycle manages all industrial waste processing activities and recovers them in cement plants.

Photo 1: Liquid waste storage tanks (Rochefort)

Photo 2: Pyrolysis (Rochefort)

Photo 3 : Platform (Seneffe)

Efficient waste acceptance

and receipt procedures



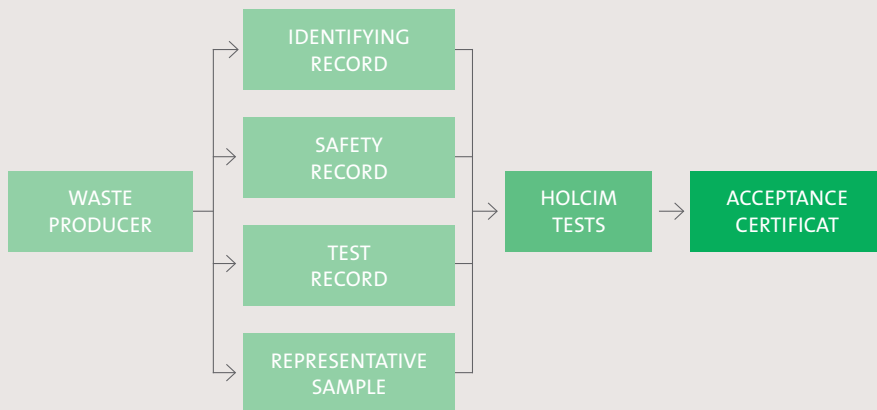
Rigorous procedures have been developed in order to accept and test products that comply strictly with the legal authorizations and our process. Each plant and pretreatment platform has an efficient laboratory which systematically tests samples of all waste received.



ACCEPTANCE PROCEDURES

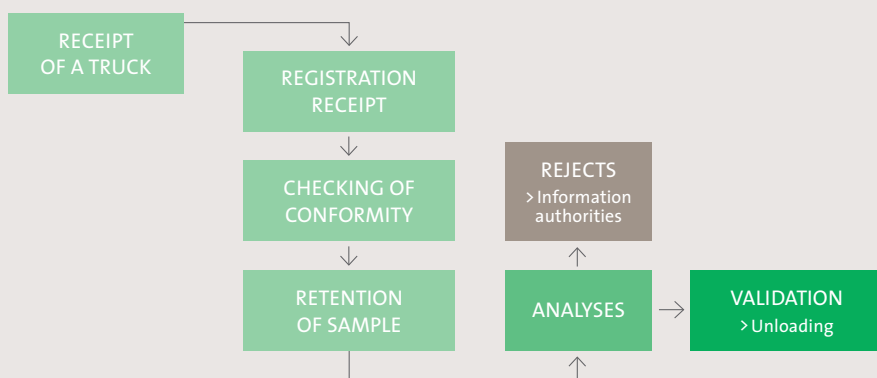
REFUSED WASTE

- Radioactive waste
- Explosives
- Asbestos
- Pathogenic waste
- Waste containing PCBs (>50ppm)
- Waste containing over 2% of Chlorine
- Untreated household refuse
- Waste not conforming to our permits or liable to impair the quality of the cement produced



RECEPTION PROCEDURES

Different measurements (levels of chlorine, heavy metals, halogenates etc.) are carried out in our laboratory on each delivery before unloading.



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