



Irish Cement - Platin

Investing in our future



irish cement -
platin

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introduction

did you know?

Concrete

is the second most consumed substance on the planet after water. Cement as the main constituent of concrete contributes significantly to the quality and sustainability of our built environment.

With new technology coming on-line and new programmes to address both CO₂ emissions and reduce our dependence on imported fuels, the future for cement manufacture at Platin is secured.

Since 1972, Irish Cement has been continually investing in our plant in Platin. With our Kiln 3 project coming on-line, Platin is Europe's most modern and efficient cement manufacturing facility. The new technologies on-site reduce our energy consumption and improve our environmental performance. In light of the global climate change challenge, we have already introduced a 'lower carbon' Cem II cement and we are currently

beginning an alternative fuels programme which will allow us to further reduce our CO₂ emissions and decrease our dependence on imported fossil fuels. This programme of swapping a portion of our fossil fuels for specified alternative fuels will bring us into line with our European neighbours, where the practice is common, and ensure the continued competitiveness of the Platin site.

cement production

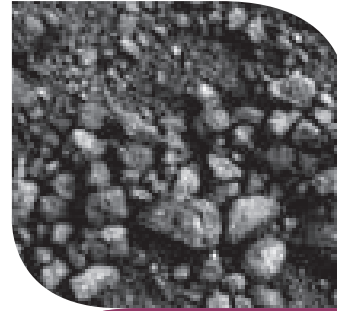
a precisely controlled chemical reaction

raw materials

1



Limestone quarried onsite is the main raw material. Shale and clay-overburden, together with small quantities of bauxite and iron ore, are also used. The raw materials are crushed, ground and homogenised to produce a 'raw meal' which is fed to the kiln.



fuel

2

The primary fuel in Platin is petroleum coke (petcoke) which is imported into Ireland. The petcoke is dried and milled before being fired in the kiln. With the alternative fuels programme, other materials from Ireland will be used as support fuels and will thereby reduce our reliance on imported fossil fuels.

quality control

3



Quality control is critical to the whole cement manufacturing process. Irish Cement operates to the international quality standard ISO 9001. Our laboratory operates a continuous testing regime linked to a state-of-the-art central control room.



chemistry

4

The creation of cement clinker inside the kiln is the result of a precise set of chemical reactions. The compounds required are calcium oxide (CaO), silicon dioxide (SiO₂), aluminium oxide (Al₂O₃) and iron oxide (Fe₂O₃) which are all fused at the high temperatures in the kiln to produce clinker.

temperature

5



The temperature of the molten minerals in the kiln exceeds 1450°C. Air sucked into the kiln to provide oxygen for the combustion process reaches over 2000°C. These temperatures are necessary for the formation of the clinker.



clinker

6

The clinker is created by the fusion of all the raw materials into complex chemical structures which are the basic building blocks of cement. The clinker is cooled as it exits the kiln, and is then stored on-site in dedicated silos.

cement

7



Cement is produced by milling the clinker to a fine powder with the addition of small quantities of gypsum to control the setting time. In producing Cem II cement, unburnt limestone is also added to reduce the carbon footprint of the cement. The cements are conveyed to silos for dispatch or packed into 25kg bags.

investments for the future - kiln 3

did you know?

Cem II Cement

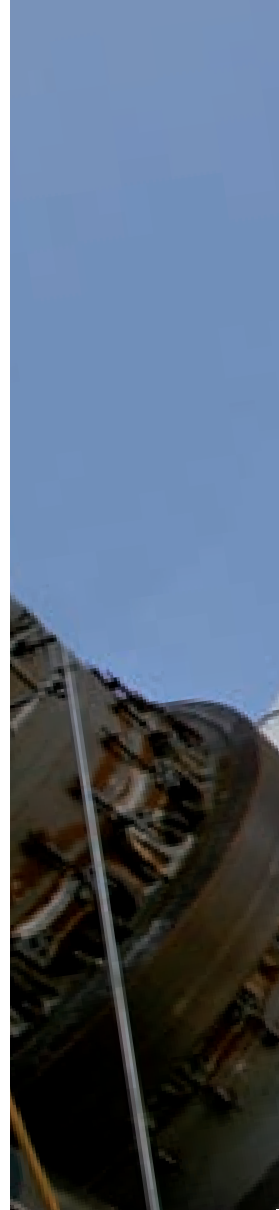
was first produced by Irish Cement in 2006 and uses unburnt limestone ground with the clinker to reduce the carbon footprint of the final cement product.

This exciting investment, due to be completed in late 2008, will be one of the most modern cement plants anywhere in the world.

This €200 million investment expands Platin's capacity to 2.8 million tonnes of cement per year making Platin one of the most modern cement plants in Europe. This new production line is more energy efficient and will use approximately 30% less energy than the older Kiln 1 line which it replaces, thereby reducing CO₂ emissions.

As part of the investment, a new **40,000** tonne domed limestone store, a new raw mill, a new **80,000** tonne clinker silo and a new vertical roller cement mill have been installed.

The new vertical roller mill will allow Platin to maximise the addition of unburnt limestone in the production of Cem II cements, directly reducing the plant's CO₂ emissions.





our kiln 3
project

investments for the future - alternative fuels



Under the Kyoto Protocol, European governments have agreed a target of reducing European CO₂ emissions by 2012 to 8% below 1990 levels. Ireland has its own demanding 2012 target which looks set to be made even more challenging for 2020.

In line with European trends, Irish Cement Platin is applying for approval from Meath County Council and the Environment Protection Agency to introduce a select number of specified alternative fuels to reduce our dependence on imported petcoke and reduce the plant's carbon footprint.

Among our European neighbours, around 20% of the heat input required to produce cement is derived from alternative fuels. Some countries, like Switzerland, Germany and Holland have over 50% substitution of their fossil fuels.

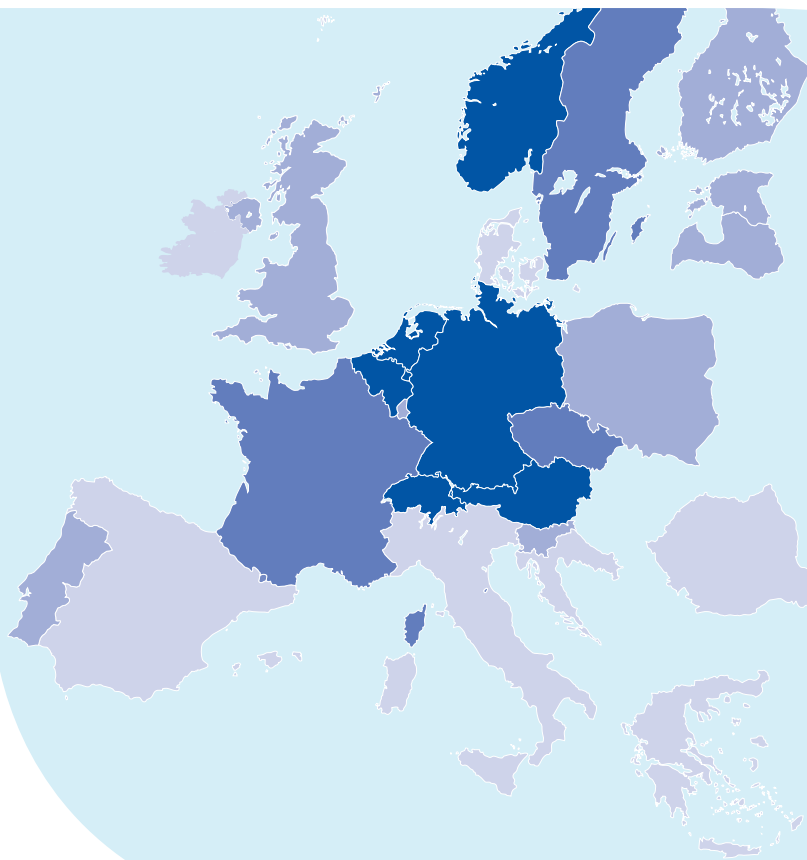
Cement kilns

- **extremely efficient** at capturing energy from alternative fuels
- high temperatures and long residence times ensure **complete combustion**
- produce **no residual wastes**
- the alkaline composition provides an excellent **cleaning** environment for the exhaust gases

Alternative fuels

- **reduce** our **dependence** on imported fossil fuel
- directly **reduce CO₂ emissions**
- indirectly reduce national CO₂ emissions by **avoiding the need for landfill** or thermal treatment elsewhere
- **conserve** valuable **resources**

alternative fuels in europe



This map shows the extent of alternative fuels usage in the European cement industry. The darker the colour, the higher the proportion of alternative fuel use.

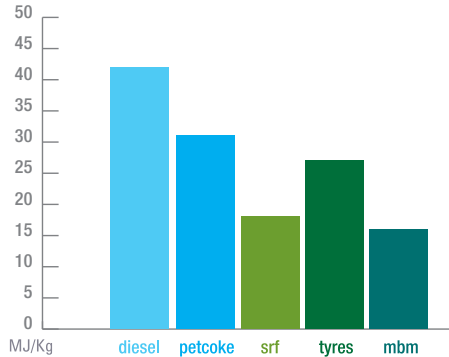
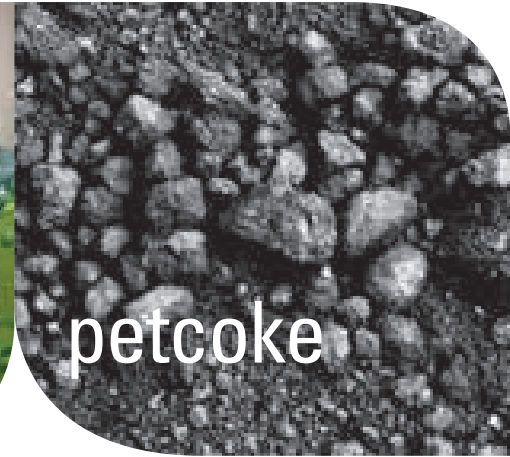
did you know?

Alternative fuels in Europe

20% of the heat required in EU cement kilns comes from alternative fuels. In some countries the figure exceeds 50%.

fuels at platin

traditional



Diesel is one of the products refined from crude oil and is commonly used as a fuel. Only small quantities of diesel are used in Platin for pre-heating the kilns.

Calorific value 42MJ/kg

Petcoke is a by-product of the oil refining industry. The residues are 'coked' under high pressure and temperature to produce a hard black material similar to coal. It is imported by ship, delivered in trucks and milled on site before being used.

Calorific value 31MJ/kg

calorific value

is a measure of the energy value in a material.

alternative



srf
(solid
recovered
fuel)

SRF (solid recovered fuel) is the clean dry blend of fragments of plastics, paper, cardboard and textiles, which are segregated following mechanical and biological treatment of waste materials. This fuel is produced to defined chemical and physical standards specifically for the cement industry.

Calorific value 18MJ/kg



chipped
tyres

Tyres consist mainly of rubber compounds, textiles and small quantities of wire. The tyres will be chipped off-site before being delivered to Platin.

Calorific value 27MJ/kg



meat &
bonemeal

Meat & Bonemeal is produced by rendering, grinding and sterilising by-products of the meat industry. This fuel is produced to defined chemical and physical standards specifically for the cement industry.

Calorific value 15MJ/kg

All the alternative fuels will be required to meet strict specifications and will be processed and ready for use when delivered to site. Irish Cement will carry out testing on materials delivered to Platin to ensure compliance with specification.



did you know?

Safety

As part of our corporate safety initiative 'CRH Simon Safety Challenge' over €770,000 has been contributed to date to the Simon community by Irish Cement and its sister companies.

The health and wellbeing of our employees and neighbours is a primary concern for Irish Cement and has been since we commenced operations in Drogheda 70 years ago. All operations in Platin must be carried out in full compliance with our Irish Cement safety procedures. Many of our key management team are involved in European best-practice safety groups.

When alternative fuels were first introduced to European cement plants, local communities naturally had questions, particularly in relation to emissions and traffic. These concerns were addressed by engaging in open dialogue and by providing information about the fuels, the technology and controls in place. Furthermore, the successful use of alternative fuels over time has contributed to confidence among communities in their use. We are now fortunate to have many studies over the past 30 years showing that there are no increases in emissions from cement plants using alternative fuels. Additionally, we have undertaken detailed traffic analysis and predictions showing no significant impacts on any local roads near Platin.

The three fuels for which we are seeking approval will be processed to Irish Cement's strict specifications before arriving on-site. The combustion process required to manufacture cement is a highly controlled process. Both the temperature and residence time in our kiln system go beyond what is required under current EU regulations for co-firing these fuels.

With the best available technologies installed at Platin, together with the considerable positive experience of alternative fuels from our sister plants in Europe, we are confident that harnessing the energy value of these fuels and reducing our dependence on imported fossil fuels positively contributes to the environment. We also believe that these benefits ensure the future sustainable development of Platin in the interests of our employees and the local community.

the environment

Platin operates under an Integrated Pollution Prevention and Control (IPPC) licence from the EPA and all emissions are strictly controlled. The plant also operates to the international environmental management standard ISO 14,001. Before introducing alternative fuels, an application will be submitted to the EPA for a revision of the current licence.

Irish Cement Platin is committed to sustainable cement production. In line with CRH's commitment to achieving 15% CO₂ emission reductions by 2015, Irish Cement is working on three principle projects designed to deliver significant CO₂ emission reductions:

- The €200 million Kiln 3 line will make Platin one of the most energy efficient plants in Europe
- Cem II cement is produced with the addition of unburnt limestone. Our new vertical roller mill will allow us to maximise the production of this low carbon 'green' cement.

- Alternative fuels will reduce our dependence on imported fossil fuels and allow us to use energy resources which are currently landfilled or exported as fuel to other countries.

Irish Cement is committed to continuous improvement and is building on our successes to date. Improved abatement technology has reduced particulate emissions and, since their introduction in 2006, our Cem II cements have already reduced our CO₂ emissions.

summary of key points

Platin

- Irish Cement's plant was commissioned in Platin in 1972.
- Platin is Ireland's largest cement plant.
- The plant has operated under an environmental licence from the EPA since 1996.

Kiln 3

- This €200 million expansion makes Platin one of the most energy efficient plants in Europe.
- New technology, using 30% less energy, will replace older technology on site.
- Temperatures and residence times of the kiln system surpass EU requirements.

Cem II

- Cem II cement is a lower carbon cement and was first introduced at Platin in 2006.
- The addition of unburnt limestone reduces the energy required to produce the cement and the carbon footprint of the cement.
- The new vertical cement mill will maximise the addition of unburnt limestone and so reduce further the CO₂ emissions from the plant.

Alternative fuels

- Reduce the need to import fossil fuels.
- Directly reduce CO₂ emissions.
- Significant CO₂ emissions reductions by avoiding landfill and thermal treatment.

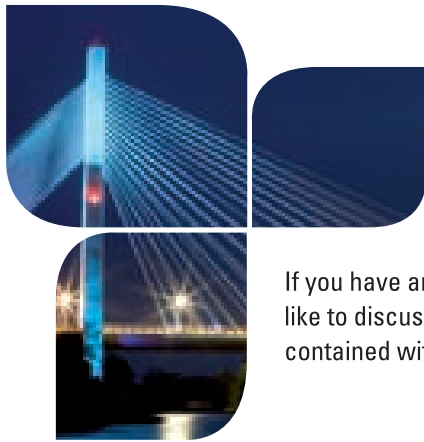
Local perspective

- There will be no significant increase in traffic with this alternative fuels programme.
- No change in emissions from Platin when alternative fuels are used.
- No residual waste is produced from the cement kiln.

Europe

- Alternative fuels have been in use for over 30 years in Europe.
- 20% of the heat input to EU cement kilns already comes from alternative fuels.
- Many EU countries have substituted over 50% of their fossil fuels with alternative fuels.





If you have any questions or would like to discuss any of the information contained within, please contact us.



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