



Lagan Cement *News*

February 2008

Lagan Cement to Further Reduce Fossil Fuel use, CO₂ Emissions

Lagan Cement is shortly to apply for planning permission and approval from the Environmental Protection Agency (EPA) to substitute part of its fossil fuel requirement with new alternative fuels – Solid Recovered Fuel (SRF) and tyre chips.

Lagan Cement will not be seeking any increase in its emissions limits to use these new fuels; rather, there will actually be a net reduction in its CO₂ emissions.

Today there is an increasing focus on environmental issues such as global warming and it is a well-known fact that carbon emissions into the atmosphere need to be reduced in order to combat climate change. Industry therefore faces a challenge in terms of its energy requirements. It also faces a challenge due to the threat to global energy supply and the need to change primary energy sources is growing. This is why most European governments are encouraging large industrial organisations to seek alternative fuel resources in order to reduce their carbon footprint. For these reasons Lagan Cement needs to continue to reduce its CO₂ emissions and become an even more environmentally aware organisation.

SRF is a renewable, high quality, clean burning fuel that is produced as a coal replacement from the non-recyclable part of normal household and office waste, much of which is currently sent to landfill. To produce SRF, household waste is processed to remove recyclable or compostable materials, sand, grit and any materials that may produce harmful emissions when burned. Once these materials are removed, what is left is primarily small pieces of non-recyclable paper, cardboard and light plastics.

Ireland produces in the region of one million used tyres every year. Tyre chips are essentially a processed version of these used tyres which are suitable for using as a fuel in a cement kiln. Tyres are made using rubber and oils and consequently have a high calorific value, similar to that associated with fossil fuels.

The move is primarily aimed at further reducing Lagan Cement's carbon footprint in line with the Kyoto Protocol and national environmental policy. Lagan's track record in this regard is unparalleled in Ireland, following successful substitution of part of its fossil fuel requirement with Meat and Bone Meal (MBM). Lagan Cement already operates to the most stringent environmental standards imposed on any cement plant in Europe, as it is one of the most technologically advanced. Notwithstanding this, Lagan Cement is dedicated to continuous environmental improvement and sustainable development both for the good of the local and wider environment and also to maintain its economic viability.

In addition to this, since the application to utilise MBM as a co-fuel in its cement kiln, increasing fossil fuel prices and stringent financial penalties for industries which emit excess CO₂ have come to the fore.

All of these factors have led Lagan Cement to further its research into additional possible sources of greener fuels for its kiln. SRF and tyres are fuel sources widely used in the cement industry across Europe, not only to assist the industry in reducing its fossil fuel use and net CO₂ emissions, but also to solve another problem – what we as a society do with our waste.

“Lagan Cement is dedicated to continuous environmental improvement”

As the material present in SRF cannot be recycled, it is currently sent to landfill which is an environmentally unsound option, as landfills produce large volumes of methane – a greenhouse gas. As a result of the EU Landfill Directive, tyres cannot be landfilled and their disposal is a worldwide problem.

The unique nature of a cement kiln, with flame temperatures burning in excess of 2,000°C means that materials such as these can be completely destroyed without producing waste ash or harmful emissions. Furthermore, as energy is recovered in the burning process, it makes excellent use of an otherwise waste material.

Lagan Cement intends to submit an application to Meath County Council for planning permission and to the EPA for approval shortly.

Solid Recovered Fuel



Solid Recovered Fuel

Solid Recovered Fuel (SRF) has been used as a fuel in cement kilns and power stations in Europe since the 1970s.

SRF is a renewable, high quality, clean burning fuel that is produced from the non-recyclable part of normal household and office waste. This waste is processed to remove recyclable or compostable materials, sand, grit and any materials that may produce harmful emissions when burned. Typical constituents of SRF include;

- Wood
- Cardboard
- Textiles
- Non hazardous plastics
- Non compostable food waste

These wastes are typically sourced from municipal waste outlets where household and office waste is collected and also from some industrial outlets.

SRF has a good energy value; typically in the region of 22 Giga Joules (GJ) per tonne, coal has an energy value of about 27GJ per tonne.

Tyres

There are in the region of one million tyres in need of disposal every year in Ireland. The EU Landfill Directive forbids that they be sent to landfill and therefore an alternative method of disposal is required.

The cement industry offers a unique solution. The high oil content of the tyres means that they have an excellent calorific value therefore producing a lot of heat when burned – ideal for the cement industry. The energy value of tyres is typically in the region of 30GJ per tonne. Tyres also contain a small amount of steel which is useful as an ingredient in the cement manufacturing process.

When tyres are used as a fuel in the cement industry, they can be burned whole in their original state or as processed small chips which burn rapidly. Lagan will only be utilising tyre chips which will arrive on site already processed. The excessive temperature in the cement kiln also ensures that they burn quickly and cleanly, and do not produce any of the smoke associated with burning tyres on a bonfire.



Tyre chips

Benefits of Alternative Fuel Use

Reduction in net CO₂ emissions



Reduction in fossil fuel use



Reduction in materials being sent to landfill



Energy is recovered from otherwise waste materials



Energy Recovery

The current national waste strategy with which most of us are familiar encourages us to reduce, reuse or recycle our waste, rather than throw it away. Where none of these options is possible, there is a solution which is far more desirable than landfill - energy recovery.

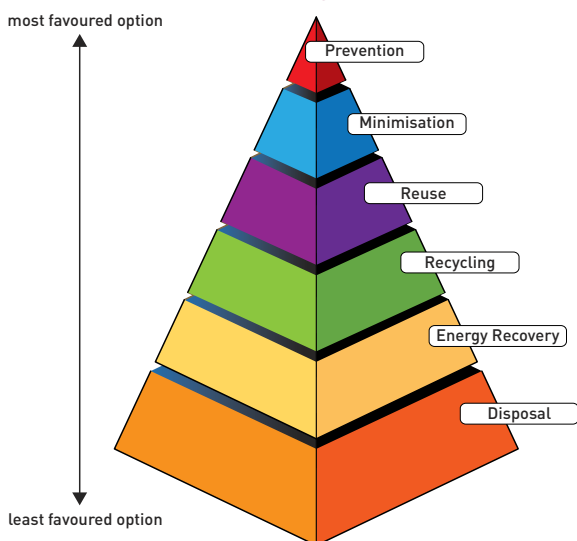
Put simply, energy recovery is the practice of burning a material to produce heat, either in industrial processes or power generation. Rather than using fossil fuels to create energy, industries such as cement factories or power stations can utilise materials such as SRF or tyre chips instead.

This solves two problems;

- It reduces the amount of material going to landfill
- It reduces the amount of fossil fuels being used

The most common alternative fuels being used in the European cement industry are SRF and tyres.

Waste Pyramid



The waste pyramid shows the desirable methods of dealing with waste

Emissions

The applications to utilise these alternative fuels at Lagan Cement will make no noticeable difference in terms of the content or visual appearance of the emissions at Lagan Cement, other than the reduction in net CO₂ and minor reductions in SO₂ and NO₂.

The very high temperatures used in the cement kiln destroy any harmful materials, therefore preventing harmful emissions.

Dioxins are by-products of both natural processes, such as volcanic eruptions and open fires and industrial processes. However, the ultra-high temperatures reached in a cement kiln destroy dioxins and other organic substances and ensure that these emissions are very low.

Overall emission limits at Lagan Cement are amongst the lowest imposed on any cement plant in Europe and monitoring at the facility has consistently shown dioxin levels to be extremely low.

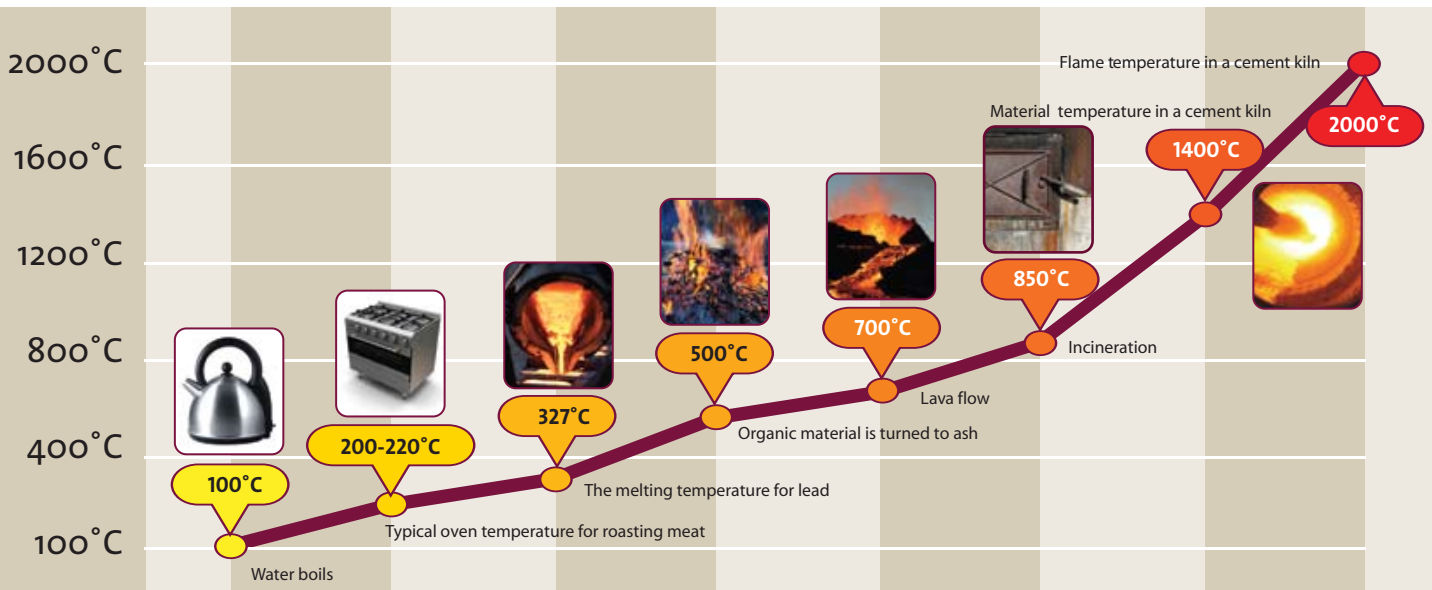
A key element of SRF production is to ensure that the raw material does not contain materials that could give rise to harmful emissions. This is achieved by only selecting raw materials from reliable sources. This waste is then carefully screened to remove any low levels of materials that may cause problems.

The constitution of tyre chips is such that they produce emissions very similar to coal or oil.

The principle driving factor for this application is the reduction of net CO₂ emissions at the facility, which will be a benefit nationally.



Comparative Temperatures



The ultra-high temperatures generated in a cement kiln are in excess of 1,400°C, and in excess of 2000°C in the flame.

Alternative Fuel Use in Europe

Ireland is lagging behind Europe in terms of alternative fuel use in industry. Both SRF and tyre chips are being used in the cement industry across Europe as the map to the right indicates. It is essential that Ireland aligns itself with the rest of Europe in this respect to remain economically competitive and environmentally responsible.



Alternative Fuel Use in Europe

Planning Process

Lagan Cement will require planning permission and EPA approval in order to utilise the new alternative fuels.

As well as embarking on this through the statutory planning and licensing process, neighbours can also be assured that Lagan will be undertaking a communications programme with its neighbours, including this newsletter, a DVD and neighbourhood consultation to keep you informed.

Local Update

Lagan Cement has awarded local Rochfortbridge student Darren Quinn a €2,000 annual scholarship for his college studies in Environmental Science and Technology in Sligo IT.

Darren was selected from a list of candidates in recognition of his academic and personal achievements. He will continue to receive €2,000 per year sponsorship from Lagan Cement for his duration in third level education.



Darren Quinn receives his award for Lagan Cement

The environmental scholarship was started to assist a local student in pursuit of a third level qualification within the environmental field and to recognise the important role of environmental management within industries such as Lagan Cement.

Environmental Award

Lagan Cement has also recently been recognised by Chambers Ireland for its efforts to reduce its carbon footprint above and beyond the national requirements. The company won the Environment SME award in Chambers Ireland's Presidents' award for Corporate Social Responsibility. In the first year of this project, Lagan Cement's CO₂ emissions and carbon footprint have been reduced by 4% per tonne of clinker produced.



David Tobin receives Lagan Cement's Corporate Social Responsibility Award

Model Review Committee

During the initial planning application Lagan Cement conducted detailed computer modeling of the predicted impact of its operations on the local groundwater resource. As part of its planning permission Lagan Cement was required to conduct an ongoing study of ground water levels in the local community and compare this with the predictions made in the model. In conjunction with officials and elected representatives of Meath County Council and representatives of the local community, Lagan Cement has conducted a review of the past five years of monitoring results. The review has concluded that quarry operations to date have not had any significant impact on ground water levels in the locality. Further reviews of ongoing monitoring data will take place in due course.

Broadband Link

Lagan Cement has formed a strategic partnership with Bounce Broadband to use Lagan's central and elevated location to open its broadband network to rural customers. Bounce now aims to expand its network and offer broadband to those residents that have line of sight of Lagan's facility.



New Broadband access for the area

Workplace Insight

Via an initiative of Business in the Community Ireland, Lagan employees are embarking on an initiative which endeavours to provide a first hand insight to the world of work to senior cycle students from St Fintina's College, Longwood. Employees will provide talks on 'A Day in the Life of', a company overview, CV and interview skills workshops and mock interviews to assist them in their quest for career paths.

What is SRF?

Solid Recovered Fuel (SRF) is a non-hazardous, renewable, high quality, clean burning fuel that is produced as a coal replacement from the non-recyclable part of normal household and office waste. SRF is comprised largely of paper, cardboard and some light plastics.

How is SRF made?

SRF is made in a specialised processing environment, normally where recyclable products are segregated from normal household and office waste. Using an automated screening and segregation process, waste is separated into the following fractions; recyclables, inert, compostable and SRF. The SRF is then shredded, blended and further screened, before it is suitable as a fuel.

Why does Lagan want to utilise SRF?

Lagan Cement currently burns in the region of 80,000 tonnes of non-renewable coal per annum, to heat its cement kiln. The combustion of coal, which is a fossil fuel, gives rise to CO₂ emissions, which is a global warming gas. The part substitution of coal, a non-renewable fossil fuel, with SRF will allow Lagan Cement to reduce its net emissions of CO₂ and therefore enable Lagan Cement reduce its carbon footprint, in keeping with environmental best practice.

Does SRF smell?

The part of your household waste that smells is known as the compostible part. This is removed for composting at the first stage of SRF production. There is very little odour from the SRF itself. As with the MBM it will be kept in dedicated contained storage and fed to the kiln using a state-of-the-art metering system.

Is SRF constant in terms of content?

Yes, consistency in terms of content is important for easy operation of the cement kiln. One of the main aims of SRF production is to make a uniform, consistent and quality controlled fuel material.

Could the SRF contain toxic wastes?

No. Toxic materials are very carefully regulated in Ireland, and only a small number of highly regulated companies produce toxic wastes. Lagan Cement proposes to use SRF produced from households and from carefully screened commercial activities such as offices. These sources will prevent the inclusion of toxic materials. To provide a further safeguard, all raw materials will be carefully screened using automated and manual processes to remove unwanted materials.

What assurance is there that co-fuelling SRF or tyres will not produce or emit additional pollutants?

Emissions from the Lagan Cement facility will not increase as a result of the co-fuelling of SRF and tyres. A rigorous monitoring programme will be approved by the EPA and implemented for the initial testing period of the materials. Further continuous and random monitoring by certified external bodies, on behalf of the EPA, will continue to ensure that there are no unacceptable emissions from the kiln stack.

Who decides what an acceptable emission is?

The EPA apply the strictest interpretation of EU environmental legislation to implement emission limit values. These EU limits are based on international public health studies. Co-fuelling these materials will not require any additional increase in emissions limit values above those already in place at Lagan Cement.

Will the SRF be sourced locally?

In order to achieve sufficient volumes of high quality SRF it will be necessary to take raw materials from outside the immediate locality. However all waste will be from a 50 mile radius. There will be no importation of SRF from outside Ireland.

Will using SRF impact on recycling levels?

No. SRF is the waste left over after all that can be recycled economically is recycled. The paper or plastic present is not suitable for recycling. In fact, energy recovery and recycling tend to go hand-in-hand, countries that burn SRF also tend to have the highest recycling rates

What tonnage of SRF are you planning to use?

It is planned to use about 10,000 tonnes for the first year, rising to about 30,000 tonnes per year thereafter.

Will the tyres create smoke?

No. Tyres create black smoke only when they are not burning properly, e.g. in bonfires and uncontrolled combustion such as backyard burning scenarios. The ultra high temperatures and rigorously controlled environment of the cement kiln will ensure they burn cleanly, with no smoke whatsoever.

How many tyres will you be burning per year?

It is planned to use about 5,000 tonnes of tyre chips for the first year, rising to about 10,000 tonnes per year thereafter.

Do you plan to keep using MBM?

Yes. MBM will continue to be added to the kiln as a fuel along with some coal.

Will there be new processing plants on site as a result of the new fuels?

No. The SRF and tyre chips will arrive at the site fully processed and will be added to the kiln in the same controlled manner as the other fuels.

Will this application for new fuels also allow you to burn waste?

No. This application is specifically for SRF and tyres.

What further plans do you have?

It is our plan to become Europe's most environmentally sustainable cement plant. Further alternative fuels are not planned at this stage, however, it is planned to focus on any initiative that would help us meet this aim.

What are tyres made of?

Tyres are made up mainly of rubber, at about 80% of the tyre weight. The rubber is usually derived 50% from natural sources (ie rubber trees) and 50% from synthetic or man made sources. The other constituents are some textile and metal for reinforcement and sulphur to add strength and various additives. When a tyre is burned, the materials it is made from are destroyed by the high temperatures in the cement kiln.

Is it true that there are plastics in SRF?

Yes there are some very light plastics present in the SRF – these would typically be the common plastics used in the home. For example PET (drinks bottles), LDPE/HDPE (plastic carrier bags) and PP (various packaging materials).

The processing of SRF removes the heavier plastics such as PVC and excludes chlorides. No harmful emissions result from burning light plastics.