

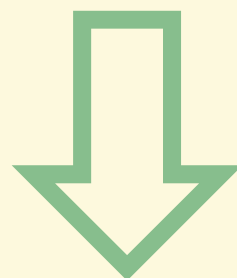
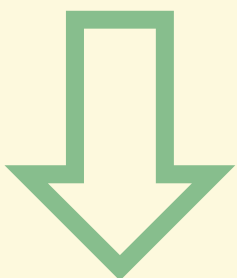
Alternative Fuels and Economic Downturns



David Gossman,
Gossman
Consulting, Inc.,
USA, provides
historical
evidence as
to why an
economic
downturn is
the perfect
time to pursue
alternative fuel
projects.

Introduction

The current worldwide economic downturn presents a rare but proven opportunity for cement plants to extend their reach and improve the economics of the use of alternative fuels. Apparently, this is not a well-known phenomenon. This was illustrated to this author in a recent communication with an AFR manager in an international cement company. He lamented that it was going to be difficult to get new AFR projects started with the current economic conditions. Because the author's experience with alternative fuels extends back almost 30 years, he had a radically different perspective and pointed out the unique opportunity that current economic conditions provide. This article will discuss this history of alternative fuel use in the cement industry relative to economic conditions, why an economic downturn is the perfect time to aggressively pursue alternative fuel projects and how to move forward now to get alternative fuel projects operating and profitable with minimum risk.





The Systech/Lafarge hazardous waste fuel facility in Paulding, Ohio today.

History of AFs and economic recession

Two prior worldwide recessions occurred during 1980 - 1982 and 1990 - 1991. Both of these periods correspond with unique times in the history of the development of alternative fuels in cement kilns.

The early 1980s saw the real beginnings of alternative fuels. One of the keys was the establishment of the first cement kiln to burn hazardous waste marketed directly from generators to a cement plant. This happened at the General Portland cement plant in Paulding, Ohio. At that time, General Portland built, permitted and operated, with Systech Environmental Corporation, an operation that solicited hazardous waste directly from waste generators. The waste was manifested to the cement plant where it was blended and stored on site in a permitted hazardous waste-storage facility. All quality control of the hazardous waste was performed on site with a modern comprehensive dedicated laboratory. The operation broke unique ground for both the cement and waste management industries and, not coincidentally, allowed the cement plant to remain in operation throughout that economic recession. This facility is still operating today, now owned by Lafarge but still operated by Systech, which was acquired by Lafarge in 1986. In Norway, Norcem similarly was breaking new ground with the only plant to be permitted to burn PCB-containing wastes.

Moving into the next recession, the late 1980s and early 1990s saw the expansion of the number of hazardous waste fuel burning cement plants in the US and Europe, while the burning of non-hazardous waste fuel, such as tyres, also became well established and accepted in the industry.

Examples include the first hazardous waste burning cement plants in the United Kingdom by Castle Cement, in France by Lafarge and in Belgium by Obourg Cement. Alternative fuels have continued to expand both geographically and to other materials since then, as local regulations and opportunities have developed.

Why during an economic downturn?

There are a number of reasons that alternative fuel projects have seen dynamic surges in development during economic recessions and those reasons hold as well today as they did nearly 30 years ago.

- Economic recessions put tremendous pressure on plants to reduce operating costs. Obviously, with fuel as a large portion of the operating costs of a cement plant, reduction in fuel costs via the use of alternative fuels can aid this effort significantly. There have been instances where individual cement plants have achieved negative fuel costs with the use of alternative fuels.
- There is a decrease in pressure during economic recessions to maximise clinker/cement production. It is often the case that individual plant managers are reluctant to try new alternative fuels while they are also under pressure to maximise production for fear of disrupting on-going operations. During a recession, this pressure backs off considerably and it presents a unique period in a cement plant's operation for alternative fuel managers to "sell" new projects and trial burns to cement plant managers. This same philosophy applies to workers in a cement plant who might otherwise be reluctant to try alternative fuels.

- Downturns in commodity prices during recessions make waste material less valuable to other potential users and increase the potential for disposal revenue. This can be a critical part of an alternative fuel project – and something every cement plant likes to see.
- Recessions generally provide a better environment for obtaining the necessary authorisations from government authorities for alternative fuel projects. Usually, permitting engineers are more available during recessions to review and permit facilities. They are often under additional pressure to get projects approved during these periods because of the potential new jobs and economic growth that they can provide. At a minimum, the projects can be sold as a way of assisting the company to not lose jobs that can be valuable in a community.
- Small capital projects may see more attention during economic downturns. During a growth cycle, cement companies are typically investing in large capital projects for new and expanded cement production. These are the projects that get the attention of senior management and senior engineers. Capital spending does not usually disappear entirely during downturns. Smaller cost saving projects, typical of alternative fuel projects, can get more attention from senior management and technical personnel to push them forward.

An economic downturn provides the perfect opportunity to experiment, gain operational experience and capture market share with alternative fuels. Experimenting with expanded fuel specifications, higher burn rates and different methods of introducing alternative fuels is likely to be more accepted and considered worthwhile as a means toward cost savings when the pressure is off maximising production. Operational experience and trial burns of different alternative fuels can be scheduled without threatening production targets. In addition, market share of waste material can be captured when other industries that may have been previously using particular wastes are undergoing their own production cuts and outages. There could not be a better time with greater incentives and fewer obstacles to pursue alternative fuels in cement kilns.

So, now that aggressive pursuit of new or expanded use of alternative fuels is on the agenda, the question is how to proceed. First, some things to do and then some things not to do.

What to do

Analyse the plant

Every cement plant has a unique physical and chemical configuration. As such, each plant has a unique ability to burn, or in some cases not burn, certain alternative fuels. Even if a plant is already burning alternative fuels, this type of analysis can provide a unique insight into the restrictions and potential opportunities that a specific plant may have. This type of analysis involves a close look at current clinker/cement chemistry at the plant, raw material chemistry, current fuel chemistry, both recycled and “wasted” cement kiln dust, and emissions from the plant. (“Wasted” cement kiln dust may be used in other parts of the process but is extracted from the recycle loop of the kiln system.) The analysis needs to identify any potential limits



The author reviews an organic analysis of hazardous waste fuel at the Paulding, Ohio lab in 1981.

on all of the above, relative to product quality issues and regulatory restrictions. If it has not already been done, an analysis of greenhouse gas emissions is also desirable as part of this process. Further, the analysis should look closely at the physical configuration of the kiln system and the plant to see where there might be opportunities to process, stage and feed alternative fuels.

The net result of the plant analysis can then provide direction for sourcing alternative fuels. For example, a plant with high levels of silica in its raw materials would not want to go looking for alternative fuels that might add to a potential problem. On the other hand, if this same plant was purchasing iron from off-site then an alternative fuel with high levels of iron could be a very good fit; tyres would be a good example. The report from such a plant analysis can help give considerable direction to the personnel assigned the task of sourcing alternative fuels.

Examine local waste markets

Transportation is such a huge cost of alternative fuels that waste market analysis is almost always best carried out within a few hundred miles of a plant. During an economic downturn, other industries are also looking to save costs and therefore may be more interested in considering processing or segregating waste for reuse that had been previously shipped to a landfill. It is important that, when resourcing waste from generators, alternative fuel operations recognise that they are offering a service and there needs to be something of value provided to the waste generator. Too often cement plants act like they are “doing someone a favour” by taking their waste. Alternatively, they treat a waste generator like a supplier that they purchase other materials from. This sort of approach rarely goes over well with waste generators. The cement plant needs to recognise that a significant component of the alternative fuel business is providing waste generators with a service, and that service needs to be consistent and dependable. If that can be done, the waste generator



The Systech lab in Paulding, Ohio today.

is much more likely to stay with the cement plant after the economy recovers and others interested in the waste come knocking on their door.

Look for a better return

During a recession, markets and pricing for alternative fuels shift. Current alternative fuels should be studied with an eye toward improving the overall benefit to the plant. Traditional fuel costs have dropped and that means alternative fuels, as fuels, are less valuable to the cement plant and other potential users. This may be a time to get the waste generator/supplier to cover some of the costs involved in transporting or processing the waste fuels. In some cases, disposal charges may be able to be increased or charged where none have been charged before. Be certain to look into the potential for picking up some revenue for greenhouse gas (GHG) emission reductions, especially for agricultural-based alternative fuels. Even if a plant retains the GHG reductions, the value of these reductions needs to be accounted for as part of the profitability of the alternative fuels programme.

What not to do

There is a tendency in the cement industry to treat cement plant operations as cost centres and to slash costs as economic downturns occur. If the alternative fuels programme is not treated as a profit centre with the potential to increase savings and revenue with wise investments, there is often a push to cut costs in the alternative fuels programme as well. The danger comes from not recognising that these cuts can actually have a multiplier effect that is in the wrong direction when it comes to overall corporate profitability. Here are a few areas that, if cut or not managed properly, can really hurt in the long term – and often even in the short term.

Do not skimp on community relations

If you have a good community relations programme, do not cut the programme as part of cost cutting, especially if you are looking at new alternative fuels. The long-term negative impact can be devastating for any new programmes that the plant wants to implement now or in the future. If you are going to start up a new alternative fuels programme during an economic downturn, use the economic conditions as an integral aspect of the communications of benefits of the programme to the local community.

Do not skimp on AF quality control

While this is often seen as a way to save money and cut costs in alternative fuel quality control programmes, top-down untargeted cuts can create enormous short and long-term risks – both to people and the financial bottom line. Proper quality control of alternative fuels is a critical component of the success of these programmes. Setting clear data quality objectives (DQOs) and sensible fuel specifications can go a long way to creating a cost-effective quality control programme that does not eat up the fuel savings. Whatever is done, do not test “after the fact”. In other words, do not conduct alternative fuel testing after the fuel has already been fed to the kiln. It is too late and all this type of testing does is create liability. If one is so certain of the result that there is confidence that the testing can be done “after the fact”, then why bother? That is a cost that can be cut. Many plants have implemented extensive testing of stack emissions that go well beyond that required in authorisations and permits. That is another form of “after the fact” testing that can be reduced or eliminated. For a plant that has an extensive history of good stack test results, it may even be possible to get permission to reduce the frequency of required testing from government authorities. Again, in an economic downturn this is an easier “sell.”

Do not waste capital

During the early 1990s, while working with a cement plant in the US that wanted to start using alternative fuels, the author recalls one example. The plant decided to aggressively pursue hazardous waste fuels, even though the process at the plant was not compatible with typical hazardous waste fuels. The company spent enormous sums on community relations, permitting and design only to have the community relations component blow up in their face. This same plant would have been perfect for whole tyre use but, having wasted both monetary capital and the capital of community good will, they ended up with neither project. It is absolutely critical that an alternative fuels programme “fits” the plant relative to market, technical and regulatory issues so that more than just financial capital is not wasted.

Conclusion

Economic downturns have historically presented unique opportunities to the cement industry to develop new and innovative alternative fuels programmes. The current downturn should be no different. Changes in other industries and regulatory factors also have a large impact on this long-term development. This creates a situation where each economic downturn has a unique set of opportunities for each cement plant. Do not forget that much of what has been previously discussed regarding alternative fuels also applies to alternative raw materials. Take advantage of this unique opportunity to improve the short and long-term profitability now.

About the author

David Gossman is President of Gossman Consulting, Inc. He was the facility manager at the Paulding, Ohio Systech hazardous waste fuel facility when it began operations in 1980 and has worked with the cement industry on alternative fuel and raw materials ever since. 