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## FRESH THINKING 更新的思维

这个世界要继续发展必须持续地与污染争斗。

**The world needs to continue its progress in its ongoing fight against pollution.**

当今世界所面临的环境与营商之间的矛盾、已达到空前未有的程度。一方面为节省不可挽回的石化燃料、另一方面大量的工业废料对健康与安全构成危害、这些都成为很突出的生态问题。全球升温对地球上的植物造成大灾难、列如二氧化碳造成的温室效应、使许多国家感到有必要旧事重提、于是在 1997 年底 12 月与日本京都的会议上商讨如何解决那些问题。

**At no time in history has the world faced environmental and business concerns of today's magnitude. The preservation of irreplaceable fossil fuels, an overwhelming volume of industrial waste and health, and safety concerns are in the forefront of ecological issues. Global warming is back on the agenda of most countries and the peril to the planet of greenhouse gases such as carbon dioxide is has been tackled at a conference of world leaders in Kyoto, Japan in December 1997.**

由于国际上的竞争、节约成本与盈利、在营商方面是颇受关注的事。

**Cost competitiveness and profitability due to international competition are concerns for the business side.**

针对那些营商与生态的问题、纪元科科技应用已经证实的、由废物中提炼燃料的科技来对付它。

**It is precisely those business and ecological issues that ERAtech addresses with its proven waste-derived fuels (WDF) technology.**

## 哪是个怎么样的办法？ What is the solution?

一直以来创新的思维和新的科技、是有需要用来管理[包括处理与销毁]特殊的废物、既要合乎经济原则又要对环境合理。一个国家如有良好的废物管理计划、应该可以避免再次投资兴建昂贵的、富争议性的焚烧厂[焚化炉]。因为当今的科技、已可以把从有机废物里提炼出来的再生燃料、在水泥窑中燃烧。正确履行再生燃料的科技、会有下列好处：

**Innovative ideas and new technologies are continually needed to manage special wastes in an environmentally sound and cost-effective manner. National waste management plans are able to forego the need to further invest in costly, and controversial waste incinerators, because of the capability of burning recycled fuels made from organic wastes in cement kilns. Properly implemented recycled fuels technology will yield the following benefits:**

- 从有高度能源价值的废物里、把能源和原料回收； **energy & material recovery from combustible wastes with a high energy value;**
- 减轻水泥的生产成本； **reduction in cement production costs;**
- 妥善地销毁特殊废物、不危害环境； **environmentally sound destruction of special wastes;**
- 节省石化燃料；和 **conservation of fossil fuels;** and
- 对减低二氧化碳排放有贡献。 **contribution to a reduction in carbon dioxide emissions.**

水泥资源回收方案是普遍认为、是最经济可行的废物处理科技、它代表着当今最实际的环保选择。因为生产水泥的业务是消耗大量能源的行业、但是它[水泥窑]兼有高温、气体停滞时间长和有高度湍流的特点、是个废物燃料的理想消费者。

**Cement kiln resource recovery is widely regarded as one of the most cost-effective and viable waste treatment technologies available and represents the Best Practical Environmental Option for waste today. Because the cement manufacturing business is not only energy intensive but also combines a high temperature with lengthy gas retention times and high turbulence, it is an ideal consumer of waste derived fuels.**

## 提炼废物燃料是怎么样的科技？ What is waste-derived fuels technology?

从废物里提炼出来的燃料、是一种不同废物原料的混合体、按比例调配以迎合个别水泥厂子的燃料需要。在适当的高温里、液体和固体是能调配成混合体的。

**A waste-derived fuel is a blend of varying waste streams that are proportionally mixed to meet the fuel requirements for particular cement works. Liquid and solid compounds with the proper heat content may be blended.**

于接受任何废物之前、需要采取一个有代表性的样本作分析、以肯定它适合用作燃料调配。收取了可以作为资源回收处理的废物、在特定的设施里[废物燃料调配厂]、依照严格的规范、加工调配成燃料。

**Before any waste is accepted, a representative sample is collected and analyzed for suitability to the fuel-blending program. Waste accepted for resource recovery disposal is blended at a dedicated facility and converted to a fuel that meets strict specifications.**

水泥窑在正常运作时、比起典型的危险废物焚化炉、有极高的温度和[废物]滞留时间。其结果是它的销毁和摒弃有害物质的效能超过 99.9%。

**The cement kiln, when properly operated, has dramatically higher temperatures and longer retention times than a typical hazardous waste incinerator. Consequently, the destruction and removal efficiency exceeds 99.99 percent.**

几乎所有的有机物质都在生产的过程里消耗掉。剩下的无机物质变成烧结块[水泥熟料]的成份或者是窑灰。使用废物燃料、工厂里的防空气污染的设备不会受到影响。事实上由于废物燃料所含的硫黄相当低、排放的氧化硫与氧化氮会有明显下降。

**Virtually all organics in the process are consumed in the manufacturing operation. The remaining inorganics become part of the clinker or the kiln dust. Facilities with air pollution control equipment are not impacted by the use of waste-derived fuels. In fact, with the use of WDF, less sulfur is contained in the fuel source and there is typically a reduction in SO<sub>x</sub> and NO<sub>x</sub> emissions.**

### 是不是安全呢？ Is it safe?

运作的安全、环境和水泥的品质从不妥协。对环境的责任与员工的安全是纪元科技的工作准则。因此废物制造者要负责妥善储存、搬运和销毁他们的废物、另一方面于进行水泥资源回收的运作时、必须做足有关的安全和防范的措施。

**The safety of the operation, the environment and the quality of the cement are never compromised. Environmental responsibility and employee safety are dual cornerstones in ERAtech's work. Since waste producers are held responsible for the proper storage, handling and disposal of their waste; it is essential that relevant safety issues and precautions be primary in every cement kiln resource recovery operation.**

### 能处理些什么废物？ What wastes can be handled?

液体是最容易处理的。可以用罐车拉来、加以分析、调配后注入水泥窑。

**Liquids** are the easiest wastes to handle. They can be received in a tank truck, analyzed, blended and injected into a kiln.

固体废物如塑料、纸张、米糠壳等可用气压注入、经双闸气阀、或者在长窑的侧边经一道闸门装置、引入水泥窑的燃料输入口内。

**Waste solids** such as plastics, papers or rice hulls are pneumatically injected, introduced with the kiln feed, through a double-gate airlock or through the side of a long kiln by use of a charging gate arrangement.

整个废旧轮胎可用作水泥窑的燃料。我们的特殊处理过程可以自动扫描、并摒弃不合规格的轮胎、仅需很少人手。

**Tire derived fuels** can use whole tires as a kiln fuel. Our unique process automatically scans and rejects tires that do not meet specifications, and it requires a minimum of labor to operate.

来自炼油设施里的污水处理厂的固体和半固体废料、或是池糟积沉物可经加工后成液体、然后注入水泥窑、有回收能源和矿物质的价值。

**Refinery solids and semi-solid generated by refinery wastewater treatment plants or by lagoon remediation can be refluidized and introduced into a kiln for recovery of the waste's energy content and mineral value.**

**实行提炼废物燃料的方案、需要有些什么基本步骤？ What basic steps are needed to establish a waste derived fuel program?**

实行提炼废物燃料的方案、所需的专门技术与经验是多层次的。以下各方面都至关重要：

**The expertise and experience necessary to successfully establish and operate a waste derived fuel program are multileveled. All of the following areas are extremely important:**

- Initial market evaluation 初步的市场评估
- Initial kiln evaluation 初步的水泥窑评估
- Appropriate WDF specifications 恰当的废物燃料规范
- Permit writing and submission 撰写与呈交许可申请
- Quality control procedures 质量控制程序
- Laboratory operation and procedures 化验工作程序
- Design and operation of fuels blending facilities 废物燃料调配厂的设计和运作
- Test burn procedures, monitoring and evaluation 为试烧、监控与评估制订程序
- Safety training and procedures 安全训练与其程序
- Design of fuel delivery systems 设计燃料输送系统
- Regulatory compliance 遵守法规
- Community relations 与社区的关系

## 结 论

### Conclusion

这是水泥业值得高兴的年代。如今水泥公司有机会使用这些科技、并且可以安全地处理多种废料、作为补充燃料。

**These are exciting times for the cement industry. Today cement companies have the opportunity to implement these technologies, and safely handle a variety of waste materials for use as supplemental fuels.**

这些科技在全球范围内已经证实、对环境合理、而且如正确的管理、对水泥厂子、和环绕厂子的社区都很安全。使用废物燃料的好处、包括降低全球的一氧化碳及二氧化碳气体的排放、节约石化燃料、使水泥生产厂子减轻能源负担、而且可以用安全的方法处理多种废物。

**The technologies have been proven world wide to be environmentally sound and, when properly managed, safe to the cement facility utilizing the WDF and the community surrounding these operations. The benefits of WDF include the reduction of global emissions of CO and CO<sub>2</sub>, conservation of fossil fuels, reduction in energy costs for cement manufacturers, and the environmentally safe method for the treatment of many types of wastes.**