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Title:	A users view of energy in manufacturing industry

A users view of Energy in Manufacturing Industry

Executive Summary

Total demand for manufactured goods remains weak and downward pressure on prices continues. In order to combat this, manufacturing industry in general has no option but to reduce costs and innovate to maintain viability. Many panelboard producers in Europe have attempted to run high efficiency gas fuelled combined heat and power schemes. The commercial viability of such schemes is dependent on heat recovery, gas prices are extremely volatile and that electricity prices which have dropped some 20% over the last two years. Responsible companies practice waste minimisation techniques and have to find ways to utilise all co-products. Government Regulation and Policy are critical to the success of manufacturing industry and support is required to allow the commercial development of innovative techniques. This paper outlines one company's approach to Energy Management and Waste Minimisation and presents ideas for development in the future.

1.0 Introduction

Kronospan Ltd
Chirk,Wrexham



1.1 The Kronospan Group

The Kronospan Group is an Austrian privately owned and managed Pan European operation that first came to Wales in 1970.

With its origins in sawmilling, it has been operating since 1897 and has a proven track record of financial strength and growth.

Kronospan specialises in the production of Chipboard, MDF and is the World's largest producer of Laminate Floor (Over 5 million m³ per year of wood based panels are produced within the Group)

23 plants in 12 European countries are operated along with recent additions in China and Russia. Over the last few years the emphasis on investment has been towards the East. Current group turnover is in excess of £1.2 billion of which £160 million is generated in Wales.

1.2 The Chirk Site

This investment provided an ideal opportunity for development of the business in the heart of the UK with good infrastructures for distribution and centralised location for raw material supply.

The operation is totally integrated in forestry, sawmilling, paper production, resin manufacture, paper impregnation, power generation, recycling of timber co-products products and supply of decorative surfaces

Over 1 million tonnes of timber per year is utilised in Chirk from various sources in the UK including Forest Enterprise Wales.

615 people are employed in the plant, which operates 24 hours per day, 365 days per year. Turnover is expected to rise to £200 million within the next two years.

Kronospan supplies the kitchen, bedroom, office furniture, occasional furniture, furniture components industry and also supplies the DIY Chains, timber and builders merchants and main panel distributors.

Over £220 million has been invested over the last 5 years to completely upgrade the operation, demonstrating Kronospan's commitment to Wales as the source of the whole UK operation and vindicating the original decision over 30 years ago to locate in North Wales.

2.0 CHP in Kronospan

Two CHP plants are operated. Turbine I was installed as part of the MDF I process in September 1992 and Turbine II linked to MDF II in April 1999. Each unit generates 6.2MW and 6 MW of heat respectively, which is used to dry the wood fibres. The 12 MW of electricity contributes to the total site use of up to 32 MW.

Both CHP plants are *Alstom Power* and have been very reliable sources of energy.

3.0 Volatility of Gas Price

Since October 2000 the gas price in the UK has seen levels of volatility previously unimaginable. The price has fluctuated between 10p and 40p per therm which makes any medium term investment associated with gas as a fuel unlikely to proceed. *Alstom UK Ltd* 3 years ago sold 12 gas fired CHP schemes per annum in the UK; they are forecasting a sale of 2 for 2002. Nowhere in Europe have their sales slumped so heavily as in the UK. Changes in the European Energy Market linked with changes in Government Policy have been major drivers. Figure 1 shows the change in market volume.

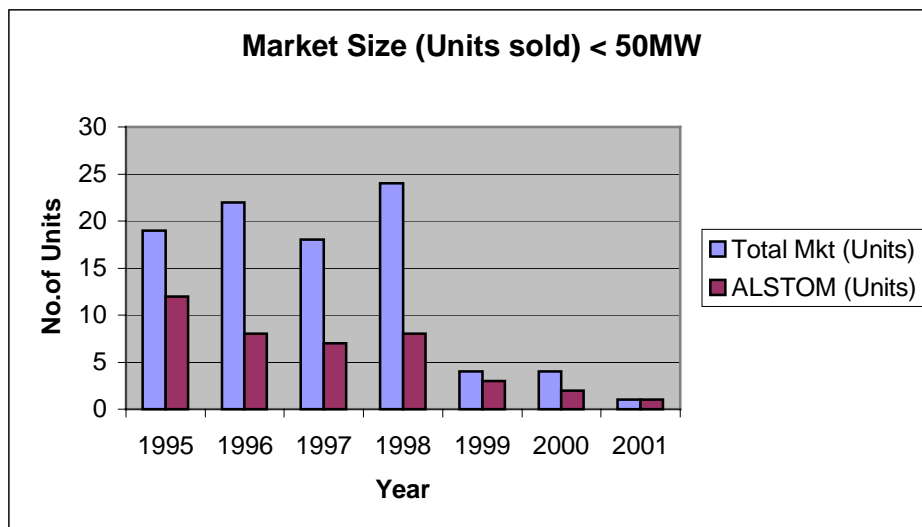


Fig 1 Market size per year for sub 50 MW cogeneration schemes

4.0 Climate Change Levy

The introduction of the CCL had two major impacts on Kronospan Ltd. The first was a demand on senior management time to ensure all possible concessions were acquired, to retain sensible economics. Kronospan CHP units received CHP QA accreditation. Kronospan were leading players for the industry sector in elaborate negotiations with the DETR. Secondly, the estimated management cost of this effort was some £50,000 yet still this resulted in the energy bill increasing by £250,000 per year. None of Kronospan's sister companies in Europe are faced with such a levy, despite assurances that Europe would be a level playing field.

It is difficult to explain to a foreign owner why when Britain has gas, oil and coal reserves, which are the envy of most European countries why the Chirk site has energy bills per kWh which are the highest.

5.0 Environmental Legislation (CCL and PRN's)

Under the climate change levy Kronospan Ltd registered their CHP's as CHP QA. The Sector negotiated agreement was the first signed by Michael Meacher Secretary of State.

Kronospan is also an accredited re-processor of timber and has been since 1998. As such it has increased its consumption of recycled timber from 5000 tonnes in 1997 to 250,000 tonnes in 2002. Virgin timber supply has become more expensive, overcapacity of panel production in Europe and specifically the UK has created higher demand for a limited supply. Kronospan has had no option but to create the right channels for collection of recycled materials and has had to accordingly modify manufacturing techniques to allow continuity of production. Customer quality applications are increasingly demanding and the whole market has had to be conditioned to use recycled products. As part of recycling timber there is a very intricate cleaning process which segregates any wood products which are not suitable for production. These co-products presently are unusable in the process and many technologies have been thoroughly reviewed in order to gain a method of use and commercial benefit, to no avail. Kronospan's recycling techniques already provides major environmental benefit in reducing landfill but with effective utilisation of all waste this can be enhanced.

6.0 Biomass for Co-Firing

Due to the introduction of The Renewable Obligation Order 2002, forestry companies are being approached by electricity generators who are keen to comply. Their approach is to search for biomass as a fuel to co-fire with current Pulverised Fuel (PF) firing systems. The use of virgin fibre as a fuel rather than as a raw material is a direct threat to the costs of the particleboard industry as well as being ecologically unsound. Regulations when introduced must promote co-operation between industry sectors to allow strong economic development with improved sustainability. The "Dash for Gas" clearly created short term gains at the expense of other tertiary industries however only a decade later policy is changing again.

Biomass related to the Panelboard sector is categorised into virgin fibres and into recycled wood.

Again due to the introduction of Renewable Obligation Certificates (ROC's) many power generation companies are approaching recyclers to gain recycled wood as a fuel. The points outlined above apply and there must be a co-ordinated approach.

7.0 WRAP and Carbon Trust Dichotomy

There would appear to be two conflicting government initiatives in the area of recycling timber. The Wrap initiatives encourage organisations to recycle timber (enhance trapping carbon) and thus prolong its useful life. Carbon Trust initiative however encourages timber to be used as a fuel in biomass waste to energy

plants. There is a practical solution. Recycled wood fibre as a raw material presents an opportunity to manufacture a recycled product, yet co-products from the use of recycled wood are ideal biomass feedstocks for waste to energy. As a user and generator of biomass and co-products Kronospan support both initiatives, however we recognise that there needs to be a steering group of advisors from industry who can assist the WRAP initiative and Carbon Trust with their endeavours, with technical know how. This would allow both financial and ecological objectives to be met.

8.0 Innovation

As part of an ongoing waste minimisation programme Kronospan has recognised opportunities to develop a Biomass waste to energy plant to replace it's current smaller plant. A feasibility study is currently underway to develop a plant and to generate up to 25 MW of electricity and be self sufficient in power generation, meeting the whole site demand and providing a method by which the transport burden on the road network is massively reduced.

Visits have been made to Germany, Spain and Italy where Biomass waste to energy plants are well established and forward thinking companies have partnered both Central Government and local authorities to provide sustainable energy generation fulfilling European Directives. A new breed of equipment has been designed and commissioned putting many of our European Counterparts in the lead. Fig2 shows such an operation at Crotona in Southern Italy.



Fig 2 Biomasse, Italia, Cotone Italy (Waste to Energy Plant burning wood fibres)

It is envisaged that should Kronospan find the project to be commercially viable, planning applications would be made. It is also foreseen that as with many manufacturers in Wales that Planning approval and Environmental Authorisation will be very problematic. The irony will be that endeavours to move to renewable energy and compliance with the Kyoto Protocol could all be jeopardised by our Planning mechanism. Issues outlined need very serious consideration if

manufacturing in Wales is to survive and if inward investment is to continue. We cannot be complacent.

9.0 Times Are Tough

In 2001 Kronospan Ltd had its worst financial performance in its 32 year history and was barely profitable. Having said that it was the only profitable particleboard manufacturer in the UK. The main contributing factors to this are:-

9.1 Strength of the Pound.

Allowing European companies to sell profitably in the UK and hence 30% of the UK market is supplied by imports, this is a startling statistic given that UK production has been limited by periodic stops due to no demand.

9.2 Energy Prices with Increased Levies and Gas Volatility.

Energy prices have seriously impacted on profitability, and created uncertainty for the investor.

9.3 Increasing Cost

Globally traded commodities used in the industry have also increased dramatically in price, yet again adding to the burden of the manufacturer.

9.4 Power of Customers.

Retail buyers are becoming more and more powerful as they realise their purchasing strength. This has a downward pressure on prices, which adversely affects bottom line. This pattern can be seen throughout Europe where insurers and credit insurers are worried about the state of the industry as a whole. Four major German particleboard manufacturers have gone into liquidation in the last 18 months.

10.0 Conclusion

Kronospan is one of the largest employers in North Wales and is aggressive with high quality investments to underpin the operation in Chirk. The CHP operations would have been willingly turned off due to heavy gas prices making losses for the units. Unfortunately the company has had no option but to continue to run the CHPs because of inadequate mains power supply to the site. The development of a Biomass waste to energy centre is possible but is a massive investment for a private company. It is however a way that the company can help itself with the problems it faces. Kronospan on behalf of manufacturing in North Wales would ask the Economic Development Committee to consider the plight of many local companies and to formulate a way forward by which Kronospan can remain proud in being innovative, leaders in the European Manufacturing Sector and to help the Assembly to keep pace with it's own goals and energy policy.

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