

Bioenergy NEWS

- **European Wood Pellet Markets**
- **New Wood Heating Developments in Ireland**
- **Interviews with Wood Pellet Producer Balcas and the Austrian Pellet Association**



European Wood Pellet Conference 2005 at World Sustainable Days, Austria

The Sustainable Energy Days event took place in Wels, Austria in March 2005 and was attended by 20 Irish business people and professionals with an interest in sustainable heating and renewable energy technologies. The event included a study tour to Wood Pellet production and heating installations, three conferences on wood pellets, Sustainable Energy Communities and Innovative Buildings as well as a trade exhibition with over 800 companies offering sustainable products and services.

Our review of the wood pellet conference gives an overview of the development of wood pellet heating in various markets. Some markets are based on domestic wood pellet heating (eg. Sweden, USA, Austria) while other markets have a high use of pellets for industrial energy production (Denmark). Presentations on the marketing of wood pellet heating through local radio campaigns in Germany underlined the importance of information and promotion activities. The tradeshow was a chance for delegates to see the latest design in wood boilers and stoves in some cases in wood pellet heated tradeshow marquees.

Our wood pellet market review includes:

- German Radio Campaign for wood pellets
- Pellets in the USA
- Denmark-2nd largest wood pellet market in EU
- Italy's Development of Agri Pellets
- Germany's wood pellet market
- Poland's Research of Short Rotation Forestry Pellets

German Radio Campaign for Wood Pellets

The North Rhine Westphalia (NRW) region in the North East of Germany includes the industrialised, urban centres of Essen, Dortmund, Dusseldorf and Cologne.

Wood pellet heating has boomed over the past two years following the development of local wood pellet production and the availability of wood heating services in the region. The decentralised Department of the Environment of the region has been instrumental in this development.



Combined solar and wood heating Container from Conness/ KWB Austria on show at SEI's Wood Energy 2005



European Wood Pellet Production Facilities, reproduced by kind permission of Bioenergy International.

One of the most innovative activities by the Department has been a radio campaign to stimulate domestic wood pellet heating. The main goal of the 'Pellet Action' marketing campaign has been to reduce consumers' uncertainty and lack of information about pellet heating. The key messages have been the reliability, availability, high performance, comfort and price competitiveness of wood pellet heating.

Working with over 180 boiler manufacturers, pellet producers, suppliers, installers, educational institutions and trade associations, the campaign aimed to increase the market share of pellet heating and help widespread market breakthrough.

In its first year, the campaign produced information materials including brochures, market guides, posters, advertising as well as setting up an information line and web site. Its promotional activities included tradeshow participation and demonstration events.

The second year built on the previous work by achieving a wider distribution for the information materials.

Launched in February 2004, the eight week radio campaign was the first of its kind in Germany. Five different ads were aired four times daily on the public broadcasting and local radio stations.

More than 2,000 calls were recorded during the campaign and 60,000 web pages were accessed.

The number of pellet heating installations in the region in 2004 increased by 100% (575 in 2003, 1000 in 2004). Due to the success of the campaign, it was repeated again in Spring 2005.

Pellets in the USA

Stan Elliott of Bear Mountain Forest Products presented the topic of the US wood pellet market. Obviously the US is a huge market, consuming 900,000 tons annually. However, it is very different from many European markets. There is no government support for pellets, no significant advertising and the market is very regional and concentrated on rural homeowners.

The pellet market is concentrated in three regions: North West (Oregon, Washington States), North East (New York, Pennsylvania, West Virginia States) and some central states.

Sixty pellet mills produce both hard and softwood pellets from Douglas Fir, Spruce, Pine in the west to Oak, Maples and other hardwoods mainly in the east. Many of the mills produce less than 10,000 tons per year and often do so on a seasonal or part-time basis depending on raw material availability. A small amount of Canadian pellets are imported in border areas.

All the pellets are sold in bags. The USA does not have the technology to bulk deliver. Pellets are typically sold in 40lb poly bags on an individual basis or by the pallet (50 bags). As Mr. Elliott explained many Americans have pickup trucks so this is a convenient way to buy pellets.

One big cost element for pellets in the USA is transport as the mills are not usually located near the big population centres.

Who sells Wood Pellets in the USA?

Store retailers including Walmart, feed and farm retailers sell on average 200 tons per year, larger retailers sell up to 1,500 ton per year. Retailers buy full truckloads of pellets i.e. 22 pallets x 50

bags per pallet at a cost of \$130 per ton plus freight charges. Retailers typically stock up to five brands of wood pellets, from different wood sources. The consumer tries out the variety of types until s/he is happy with a particular brand. The lower ash pellets sell at a higher price and in higher volumes.

Who buys Wood Pellets?

Rural homeowners buy free standing stoves or fireplace inserts to replace some other form of heating. There is no market for new homeowners. Consumers opt for pellets because they are cheaper. The cost of gas, oil and electricity has risen by 30-60% over the past three years. Pellet stove sales increased by 50% over the last 12 months with sales of 70,000 stoves in 2004. Mr. Elliott predicted an annual growth rate of 20-30% over the next three to five years.

Supply & Financial Issues

The US is experiencing raw material shortages for pellet production. There have been many closures of furniture factories and lumber mills over the last year as production has moved overseas. Pellet production tends to be part-time due to lack of access to the raw material.

Pellet producers also experience cash flow problems because of the seasonality of the business. Producers cannot afford to stockpile pellets in the Summer.

The speaker expressed interest in importing European technology for the US pellet market for bulk handling, drying and wood heating stoves and boilers.

Wood Pellet Market-Denmark

Denmark is the second largest wood pellet market in the EU. The market is set to grow to around 700,000 tonnes/year

The import of pellets has surpassed Danish production of pellets. Pellet imports are forecasted to increase while Danish production capacity will remain stable. The Danish wood pellet market is made up of three sectors: Domestic, District Heating and Heating Plants.

The domestic market is made up of 25-30,000 domestic pellet boilers and stoves

-Investment support and high oil prices made the installation of domestic pellet boilers boom in 1999-2001.

-Stopped investment support and increased pellet prices has slowed down the expansion of the market since 2002.

Two pellet-fuelled CHP plants consume more than 300,000 tonnes per year.

Denmark also has 300 wood pellet heating plants which resulted mainly from the retrofitting of oil systems. A further 30 wood pellet District Heating Plants were developed in the 1990s. However the current trend for biomass heating plants is towards multi-fuel biomass plants, using cheaper biomass fuels.

Germany Researches Wood Pellets from Fresh Forest Wood

Due to ever increasing demand for industrial residues, purpose grown energy crops and other sources of wood residues are being researched as the raw material for wood pellets. A presentation from Seeger Engineering, Germany outlined the possibilities of producing wood pellets to the German DIN standard from fresh forest wood. Key to the process is the drying of the material and the separation of dry from wet material, soft and hardwoods in order to achieve a standard pellet.

Italian Agri Pellets-a sustainable future business for European Farmers

The Italian Renewable Energy Consultancy, ETA Florence, who are active in the development, application and implementation of Renewable Energy systems, presented their findings on the future market for pellets made from agro-biomass (straw, cereals etc) for energy purposes. The medium term market within the EU is estimated at 20 million tonnes. The presentation raised the challenges associated with straw pellets-such as higher wear and tear of pelletising equipment. With regard to combustion, straw pellets can pose problems particularly in small-scale applications but the technology is being developed to counter deposit formation, emissions, corrosion and ash issues for straw. Straw pellets are particularly suitable for large combustion plants that have the flue gas cleaning facility necessary for this fuel. It makes sense then that the higher quality wood pellets would be marketed to the smaller scale domestic and commercial applications.

Overview of the German Wood Pellet Market

The wood pellet heating market began only at the end of 1999 during a time when oil and gas prices had increased. It has grown significantly with 7,500 installations in 2005. By the end of this year, the total number of wood pellet heating systems installed in Germany will be 33,000. The development of the pellet heating market in German actually coincided with a downturn in the German construction industry. Pellet heating represents just 1% of the total heating market and has significant market growth potential.

The uptake of wood pellet heating varies greatly throughout the regions with the south accounting for 64% of all pellet boilers installed. The southern region has a tradition of wood heating and the cost of gas is 23% higher than in the north of the country.

The market is well developed with 80 manufacturers offering pellet heating equipment in the range of 5kW up to 1MW. The domestic market was the first to take off, therefore a high quality pellet was needed for this market segment. Future market growth is predicted in the large buildings sector, in the 400kW range, where energy cost increases are widespread.

Germany has 27 pellet production facilities. They are typically located near sawmills as access to the raw material is critical. The production capacity in Germany is 226,000 tonnes per year (2004) rising to 300,000 tonnes in 2005. Most pellet mills are operating at full capacity, on a three shift basis. There is both export and import of pellets in the German market.

While financial incentives have been successful in stimulating demand for pellet heating, government and industry support initiatives, based on information, advice and promotion will be important for further growth.

Poland Researches Pellets from Short Rotation Forestry

Poland is examining the use of short rotation forestry for the production of fuel pellets. Currently pellets are produced from the co-products of the wood-processing sector, however in the future the raw material may be supplemented by the production of pellets from energy crops. Trials in Poland have been based on willow and Virginia mallow. The crops were chipped and transported to the pellet plant where they were dried in a drum dryer. After pelleting, tests were carried out to determine bulk density, combustion heat, moisture and ash content.

In Poland, energy crop chips are purchased at €8.75/MWh (transport costs are covered by the purchaser) at a moisture level of 3.1% (willow) and 6% (Virginia mallow).



The latest wood stove design on show at Wels, Austria, March 2005

Both crops pelletise easily. Moisture content of the willow and Virginia mallow pellets was 7.5-7.9%. However the ash content of the Virginia mallow pellets (3.43%) was over twice as high as that of the willow pellets (1.38%).

Production costs of the energy crop pellets were €78/tonne. The raw material was the biggest cost, contributing up to 50% of the total cost. Drying represented 20% of the cost. Transport costs for the Virginia mallow were double that of the willow chips because of its lower bulk density. Pelletising increases the energy density of willow chips four fold and Virginia mallow pellets six fold.

The study found that it makes sense for the pellet producer to grow the energy crop himself close to the production facility in order to reduce raw material and transport costs. The research also recommended natural drying of the chips to reduce the cost of artificial drying. Harvesting in dry conditions can also have an effect on overall costs.

Further Information:

To view some of the innovative wood heating technology at the tradeshow and a slideshow of the event's Wood Pellet Study Tour, check out the April 05 issue of our electronic newsletter E-Update on the News Section of www.sei.ie/reio.htm



Wood Pellets Go on Tour-wood pellet marketing in Germany

Recent Wood Heating Developments

Natural Power Supply Ltd have recently installed a wood heating system for the Gilliland family farm estate, Brook Hall in Derry. The contract was for the installation and commissioning of a 100kW wood chip boiler to be fuelled from willow chip from the Brook Hall Estate. Installed in January 2005, the KWB 100kW wood chip boiler from Austria has a certified boiler efficiency at nominal load of 91.1% with a heat output of 110.9%. It has automatic ash removal and fully automatic daily cleaning of the heat exchanger as standard.

Brook Hall Estate owner, John Gilliland, OBE, is no newcomer to wood heating. John Gilliland is a managing partner of the family farm business and is also chairman of Rural Generation Ltd, who develop integrated environmental projects using willow coppice as a biological filter and as a source of renewable energy.

Mr. Gilliland is also former president of the Ulster Farmers' Union and has been involved in bioenergy for many years, having developed the UK's first on-farm willow fired combined heat and power (CHP) plant at the estate in 1998. The CHP plant supplies 100kW of electricity to the grid and heat for grain drying as well as heating farm buildings.



Wood heating container from Ala Talkkari, Finland demonstrated at Wood Energy 2005 before delivery to Liffey Mills, Roscrea.



Wood chip storage at Brook Hall

Teagasc installs wood chip boiler at Carlow HQ

A new automatic wood heating system has been installed and commissioned by Natural Power Supply (NPS) Ltd at Teagasc, the agriculture and food development authority, at its Crops Research Centre at Oak Park, Carlow.

The 100kW KWB boiler is currently powered by wood chips made from short-rotation willow crops but the unit will also be used for trials with fuels such as cereal straws, a by-product of arable farms, rape straw and Miscanthus, commonly known as elephant grass.

The new boiler heats 10,000 square feet of office, laboratory and workshop space.

"We are anxious to work with companies such as NPS who are striving hard to establish sustainable and environmentally sound alternative energy systems and we were also happy about the price and value for money," said Bernard Rice of Teagasc.

Teagasc at Oak Park have been pioneers in researching and testing sources of sustainable and renewable energy for several decades. Oak Park is recognised as one of the leading research establishments in this particular field.

The large-scale commercial wood-chip fuelled boiler was installed by John Wills and Damien Dolan of Complete Corporate Support

Services, Dublin with Christian Luttenberger, of Conness, distributors of Austrian-manufactured KWB wood heating boilers. The boiler is a KWB USV 100, with an output capacity of 100kW and has an efficiency of over 90% at rated output and 90% on part load.



James Kennedy, NPS and Bernard Rice, Teagasc, pictured with the wood chip boiler installed at Teagasc.



DR CHRISTIAN RAKOS, Austrian Wood Pellet Association

Currently working with the SWS Group, Dr. Christian Rakos manages a number of European Commission Renewable Energy Projects. Christian was previously

employed by the Austrian Energy Agency (E.V.A), where he managed the renewable energy area with particular responsibility for energy use from biomass. Activities included the development of renewable energy, the Austrian strategy for carbon reduction and the promotion of wood heating. Later this year, Dr. Rakos will take up a full-time position as Director of the Austrian Wood Pellet Association (Pro Pellets).

Over the past year, Dr. Rakos has engaged with many of those involved in starting wood heating enterprises and projects in this country and so gives us his views on the developing wood heating market in Ireland.

1) What were the main drivers for developing the wood heating market in Austria?

There were three main drivers – technology, investment grants and the introduction of pellets. Technology development was driven by strict emission limits and requirements for efficiency. Substantial R&D money helped boiler producers in developing what is today world leading boiler technology. Investment grants covering about 30% of investment costs created the right incentive for users to accept the higher investment costs of wood boilers. Finally, it was pellets which really made the market grow, they are a wonderful fuel, pleasant smelling, high energy content and just as comfortable as oil or gas.

2) What benefits did wood heating bring to the local economy in Austria?

More than 800 rural communities in Austria have developed local biomass district heating grids. Farmers supply wood chips from their own forest to run central heating plants. These supply room heat and hot water via insulated hot water pipes either to the whole village or to the main buildings such as a school, town hall, leisure centre etc. This supports the local economy as wood chip production creates local income and jobs. The investment in the heating plant and the district heating grid usually also benefits local contractors.

3) We have seen a number of Austrian manufacturers of wood heating equipment enter the Irish market and set up partnerships with Irish firms-for example KWB, Froeling, Rika etc. What is the key criteria customers should look for in quality equipment?

Competition in Austria is so strong and quality standards are so high that you can expect to get a very good boiler from any of these manufacturers. Key issues are high efficiency (above 90%), low CO₂ emissions (<200mg/MJ at full load), low electricity consumption and silent operation. Boilers must also have

automatic cleaning of heat exchangers, electric ignition and easy to handle control units. Finally I would look for quality of service, ask how many trained staff are available for boiler maintenance and for the costs and availability of a service contract. Never run a biomass boiler without a service contract. You can't run a car without service either - a boiler is operating for more hours in one year than a car in its lifetime.

4) Are there further opportunities for Irish firms to partner with Austrian wood heating technology/service companies?

Yes definitely, for the moment most boiler manufacturers have just one representative in the Irish market. What it needs is a network of companies selling and installing pellet stoves and boilers. So team up with the national representatives is my advice. You will see a skyrocketing demand for these units as oil prices are going to go through the roof and the first oil shortages will be felt. In Austria the share of oil boilers in new houses is below 10%, the share of pellet boilers is exceeding 50% in several provinces. The same will happen here in Ireland within a few years.

5) During your stay in Ireland, you have met with many Irish companies considering installing wood heating. What is their attitude to wood heating? What concerns do they have?

I felt a considerable interest. Everybody feels now that oil is not a safe choice. The greatest concerns were related to the availability of pellets. The establishment of a reliable and visible pellet supply throughout the country will be essential to kick-start this market.

6) What in your opinion are the ideal target markets in Ireland for wood heating?

Ideal target markets are large buildings, they need a lot of energy and would benefit most from the lower costs of wood fuel. However, there will also be a large consumer market for pellet stoves. A pellet room heater is very simple to install, has low initial costs, creates the cosy atmosphere of an open fire and can replace more than 50% of your oil or gas consumption. Finally, I see a considerable scope for small district heating systems in newly constructed residential developments. Heat supply based on domestic renewable fuel and solar energy will be a very important selling argument in the near future. Very nice "plug and play" solutions combining solar energy and pellet use are just now entering the market in Ireland. They are ideally suited to supply residential developments, hotels etc.

7) Energy service contracting seems to be a way of providing wood heating services that works well in Austria. Can you tell us how it works and how it might suit the Irish situation?

This model is based on the concept, that a contractor invests in the wood heating system, takes care of the entire operation, fuel supply and maintenance of the unit and charges for the heat. This will be interesting for many users as they need not invest in the system. The consumer just gets competitive heat which is environ-

mentally sound and offers significantly higher supply security and cost stability. What more can you ask for?

8) What recommendations would you make to the developing wood heating services industry in Ireland in relation to market development and quality standards?

If you plan to run an energy service business you need to get the technology right. It's not just a question of a good boiler. The whole heating system must be installed in a way that maximises efficiency. Because energy losses directly affect revenues of a contractor, it is essential to get the know-how on board by partnering with experienced contracting companies, engineering consultants or by using plug and play solutions that already incorporate the necessary know-how.

9) What are the key benefits for a business considering wood pellets for heating their offices or generating heat for operational processes?

The key benefit is competitiveness and stability of costs. At present we have substantial overcapacity of pellet production and further massive growth of production sites is expected. This will keep prices low and you will be able to get long term contracts for pellets. For oil, LPG or gas all indicators point towards further massive price increases, unless we enter a global recession bringing down demand. In addition to savings and price stability savings in CO₂ trading could apply for big CO₂ producers that are in the trading regime.

The Importance of Quality for Wood Fuel and Wood Heating Equipment

To compete in the heating market, wood fuels and heating equipment need to offer a consistent, reliable, standardised quality.

Wood fuel customers often choose this form of heating because of its environmental credentials. If sub-standard quality fuels or equipment enter a market, they cause problems for customers in terms of their heating system operation. Wood heating technology or fuels that do not conform with the highest European standards can cause emission problems and can damage the reputation of the wood heating industry.

A bad image problem because of poor fuel or equipment can affect the market for years.

Wood Fuels:

Wood fuels that conform to the European-wide CEN standard means that the product is of the highest quality and that the consumer can have every confidence in choosing wood heating.

CEN, the European Committee for Standardisation, established a Technical Committee to define standards for solid biofuels. The Technical Committee (TC335) comprises of five working groups(WG):

- WG 1 - Terminology, definitions and description
- WG 2 - Fuel specifications and classes, Fuel quality assurance
- WG 3 - Sampling and sample reduction
- WG 4 - Physical and Chemical test methods
- WG 5 - Chemical testing methods



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The scope of the mandate for TC335 for the production of Solid Biofuels includes:

- Products from agriculture and forestry,
- Vegetable waste from agriculture and forestry,
- Vegetable waste from the food processing industry,
- Wood waste, with the exception of wood waste which may contain halogenated organic compounds or heavy metals as a result of treatment with wood preservatives or coating, and which includes in particular such wood waste originated from construction and demolition waste,
- Cork waste.

In April 2005, CEN published five standards, which have now been adopted in Ireland. For a copy of the standards, contact the National Standards Authority of Ireland www.nsai.ie

CEN-TS-14588 Solid Biofuels-Terminology, Definitions and Descriptions defines various terms such as biomass, densified biofuel and biofuel pellet.

Moisture Content

CEN-TS-14774-1, 14774-2, 14774-3 deal with methods for wood fuel moisture content determination.

Ash Content

CEN-TS-14775 deals with methods for the determination of ash content.

Solid biofuels are specified according to CEN-TS-14961 Solid Biofuels, Fuel Specification and Classes Fuel Specifications and Classes.

Recommended Specification for Wood Pellets for Domestic Heating:

Origin:	Chemically untreated wood without bark
Moisture content:	≤10 %
Dimensions:	≤ 6 mm ± 0.5 mm and L ≤ 5 x Diameter or ≤ 8 mm ± 0.5 mm, and L ≤ 4 x Diameter
Ash content:	≤ 0.7%
Sulphur content:	≤ 0.05 %
Mechanical durability:	97.5% after testing
Amount of fines:	≤ 2.0 %
Additives:	< 2 w-% of dry basis
Energy density:	4.7 kWh/kg.

Only products from primarily agricultural and forest biomass that are not chemically modified are approved to be added as pressing aids. Type and amount of additive has to be stated.

Austrian Quality Standards for Pellet Logistics

The Austrian standards for pellets deal with the whole supply chain from the production of the pellets right through to fuel storage at the customer site. They involve inspection of accredited institutions. In addition, special labels (or quality seals) were

developed by the Austrian Pellet Association (including pellet and boiler manufacturers, retailers etc). The labels are a sign of high pellet and boiler quality, maintenance and delivery quality. It also contains a labelling system for pellets. For every production batch, encoding particles are added that make it possible to trace back to the producer. Thus, quality deficiencies can very easily be traced back and the overall quality management can be improved.

Wood Heating Technology

There are many different makes of automatic wood-fuel boilers and stoves available, produced to different standards and with different levels of equipment, some of which manufacturers offer as standard and others as options.

CE marked

CE marking is a declaration by the manufacturer that the product meets all the appropriate provisions of the relevant legislation implementing certain European Directives. The directives covering automatic wood-fuelled boilers include:

- The Low Voltage Directive – 73/23/EEC
- The Machinery Directive - 98/37/EC

Boiler efficiency

Wood-fuel boiler efficiencies are typically between 80 and 90%. The manufacturer should have efficiency independently verified in accordance with EN303-5 or another recognised national standard.

Boiler emissions

Boiler emissions must comply with regulations set out in the Air Pollution Act 1987. If national limits for emissions are not available then, for boilers up to 300kW, boiler emissions should conform to Euro Norm EN303-5 1999.



Wood Boilers as Design Items-the latest show pieces from Austrian manufacturers at Wels, Austria



PETER KERNOHAN, Business Development Manager, Balcas

Peter Kernohan has worked in the energy sector in its various forms for 26 years.

In 1978 he started a 20 year career in Northern Ireland Electricity initially in engineering through to Energy Marketing. Peter worked for B9 Energy (now Exus Energy) as projects development manager for their renewable energy systems before moving on to the role of "Head of the Energy Savings Trust, Northern Ireland". Most recently Peter's role at Balcas is "Market Development Manager, Bio fuel". His main objective in Balcas is to develop the market for wood pellets in the form of heat only and CHP applications.

Mr. Kernohan gives us his views of the Wood Pellet Market in Ireland and its potential in the short to medium term.

1) Why did a successful company such as Balcas who have been in the wood processing business for over 40 years, decide to diversify into the production and marketing of Wood Pellets?

It was not that big of diversification as it is still a wood product, although one that has not been tried before in Ireland. You must remember that the project was twofold; a 2.7MWe (10MWth) wood fuelled CHP along with a 50,000 tonne pellet production facility. With growing energy costs and falling value for our sawmill co-product in the form of sawdust and wood chips, this was always something worth examining. The total cost of the project was just over £9 million, we applied for and got approval of a £2 million grant from the Department of Trade & Industry and received a £1 million interest free loan from Viridian. The majority of the finance though was raised by Balcas. It was difficult for Balcas to raise the finance for this project so I would say that it is extremely important that any thoughts of replication are well thought out and that the economics are favourable.

2) What is the raw material for wood pellet production at your facility?

All pellet material comes from the wood being processed at our sawmill. The log is de-barked before entering the sawmill and as such the pellet material is free of this bark and eligible for the top EU standard certification. The wood species is mainly Sitka Spruce.

3) Who is your main target market?

The Balcas objective is to have all 50,000 tonnes of production used in Ireland. This will help our own economy and carbon footprint. I envisage in about five years time that most of this will go to the domestic and small commercial sectors.

4) How are Irish businesses reacting to Wood Pellets?

We do not have a culture of burning wood and as such there is major work to be done in raising awareness. The situation is currently helped by the constantly rising cost of oil and gas resulting in a search for alternatives both in the home and business sectors.

5) Will switching to Wood Pellets involve a huge investment in new boiler equipment for companies?

In most cases the search for alternative fuels coincides with boiler replacement and in this case a pellet boiler or stove is required. Pellets burn most efficiently in a boiler specially designed for them. Whilst pellet burning equipment is more expensive than oil and gas equipment, the fuel is much cheaper, so there is a short payback.

In some cases when a commercial boiler is not nearing the end of its useful life, the burner can be changed to a pellet burner possibly reducing the cost of conversion.

6) How will pellets be delivered to the Irish customer?

There are three ways of delivering Wood Pellets:

Bulk tipped: For large users with an underground silo for instance.

Bulk Blown: Very similar to getting an oil delivery, the blower vehicle will connect to a pipe on a storage unit and blow the pellets in. The pellets can be blown to distances of around 30m. The current price for three tonnes of pellets blown in this manner is €150/tonne, this price includes delivery anywhere in Ireland but not VAT.

Bagged: We envisage using 15kg bags, unlike blown and tipped deliveries these will not be available directly from Balcas unless buying in bulk (24 tonnes). Instead these will be available through a network of retailers that are currently being established. Bagged pellets will be more expensive due to the bagging process and the fact that a retailer is used but no capital is required for storage as they can be kept in a garage for instance.

7) How do you see the Wood Pellet Market in Ireland developing?

There has been a large number of entrants in the pellet equipment supply market, especially in the South of Ireland. The lack of capital grants for accredited equipment has meant unfortunately that some poorer quality units are now being installed by unregistered installers. It is important to also point out that there are some very high quality equipment and installers available in Ireland. This is an added advantage of a controlled grants scheme, it's not just about the financing of the equipment but also about ensuring quality and safety. Some of the early entrants in this sector are already beginning to leave it again due to a failure to appreciate what is required from a quality

installer and equipment. I believe that in time there will be only a few installers providing good quality equipment that is well installed.

8) What standards do you need to comply with to sell pellets into the Irish and European markets?

Anyone can import and sell pellets of any quality, I have seen imported pellets in plain white plastic bags with no mention at all as to what the bag contains let alone any reference to pellet quality. This needs to be addressed urgently as the use of poor quality pellets could lead to failed installations and a slowing of the development of this sector.

9) Who are your key business partners in developing a new pellet

heating marketing in Ireland?

Two main areas here are key to the sector development. The timely delivery of blown pellets to the end user through the use of a quality contractor is currently being developed. The second is retailers of the pellets who will share the Balcas vision of steady and sustainable development of this sector.

10) What are the key benefits for a business considering Wood Pellets for heating their offices or generating heat for operational processes?

Firstly, a significant reduction in energy costs without loss in convenience. Secondly, the environmental benefits of using wood pellets.

Wood Energy and Agriculture - a Review of International Support Mechanisms

Development of Biomass Heating in Austria

In the early 1980s, the first projects involving small-scale heating based on biomass were developed in Austrian villages. Small heating stations in the several hundred kW to 5MWs were fuelled by wood chips from forestry operation or sawmill wastes. In most cases the promoters of these plants were agricultural co-operatives trying to enter the energy market. As a result of the first successful projects, the Federal Ministry of Agriculture and the provincial governments introduced significant subsidies.

Later, small-scale biomass heating plants received additional subsidies from EU regional funds. Typically, subsidies amounted to up to 50% of investment costs.

In addition to the subsidies, several provincial governments offered consulting services that helped to identify new projects, gave advice to farmers, encouraged further development of the technology, and lobbied for further support measures. The provinces that offered consulting services were by far the most successful at disseminating biomass heating. On a national level, the installed biomass heating capacity rose from almost zero in the early 1980s to over 800 MW in 2002.

An agricultural subsidy, co-financed by the provincial governments and the EU awarded grants of up to 30% to farmers' bioenergy projects. In 2002, 481 projects were supported. This amounted to subsidies of €3 million and an overall investment of €10.3 million.

Germany

Agricultural Investment Promotion Programme - Department of Agriculture and Environment

The programme supports competitive, sustainable, environmentally friendly agriculture, which contributes to the overall improvement of agricultural income and working, living and production conditions.

The following measures are eligible - the promotion of energy saving or conversion to renewable energy sources including when the heat or power is dispatched to a third party/grid network, investment in heat pumps, solar heating, biogas and biomass combustion plants.

US Department of Agriculture supports the production of energy crops such as switchgrass.





SEI Site Visit to the Coillte Wood Pellet Boiler, Newtownmountkennedy, Co. Wicklow

Grant funding of 30% is available on investments up to €50,000.

Additional subsidies payable on earnings were awarded through the feed in tariff mechanism. For further information on this system, www.react.novem.org

USA

The US Department of Agriculture (USDA) has its own renewable energy research program funded at \$93 million per year. Examples of activity include production research for biomass from crops and trees; processing treatment of biomass and conversion; animal waste to electricity and the use of small diameter wood from national forests for energy.

USDA collaborates with the Department of Environment on a number of research projects. A couple of examples include turning biomass into gas (gasification) to turn turbines, novel chemicals from crops such as castor; turning corn stover to ethanol; and using methane from dairy farms to generate electricity.

The 2002 Farm Bill was the first ever to have an energy title. The Farm Bill funds farms, ranches and small businesses to help them create renewable energy systems and to improve their energy efficiency.

USDA also shares the cost of agricultural crops purchased by ethanol and biodiesel plants that expand production above the previous year's level.

It is the view of the USDA that domestically produced biofuels and biomass for energy help meet the country's energy needs, aid the environment, help promote national security, promote energy sustainability, and bring new income to farmers and new jobs and

value added processing to rural communities.

In March 2005, the Agriculture Secretary Mike Johanns announced the availability of \$22.8 million to support investments in renewable energy systems and energy efficiency improvements by agricultural producers and rural small businesses.

"Renewable energy is an exciting growth frontier for American agriculture. Implementing an innovative energy policy, which the President has proposed, provides an opportunity to strengthen both our national security and the rural economy" said Johanns.

The 2002 Farm Bill established the Renewable Energy Systems and Energy Efficiency Improvements loan and grant program to encourage agricultural producers and small rural businesses to create renewable and energy efficient systems. The funds are available to support a wide range of technologies encompassing biomass (including anaerobic digesters), geothermal, hydrogen, solar, and wind energy, as well as energy efficiency improvements. To date, government has invested nearly \$45 million in 32 states through this program.

The \$22.8 million will be available in two stages. One-half, \$11.4 million, is available immediately for competitive grants. Renewable energy grant applications must be for a minimum of \$2,500 and a maximum of \$500,000. The grant request may not exceed 25% of the eligible project cost.

The remaining budget will be used for renewable energy and energy efficiency guaranteed loans.

For further information visit USDA's web site at <http://www.rurdev.usda.gov>

Green Electricity – Safeguarding the Future

With the restructuring of the electricity industry, everyone has the ability to choose where his or her electricity comes from. Electricity is a product we pay for 24 hours a day, yet we never see it and it is the lifeblood of modern society. Although you can't tell when you turn on your lights, there are huge differences among energy sources that produce electricity.

The traditional power supply tends to be fossil fuels including coal, gas, and oil, whereas renewable energy — power from the sun, wind, plants, and moving water is a sustainable way to meet our current and future energy needs.

Today, people have a choice when it comes to electricity – buying green electricity means you can choose to protect the environment and leave a lasting legacy for future generations.

Which fuels are used to generate electricity in Ireland?

Imported coal, gas, and oil are the main sources of fuel used in power stations across Ireland. Given the continued threat of climate change, the volatility of oil prices and with Ireland's energy demands increasing, consumers are beginning to look for more secure and sustainable sources of energy –today renewable energy is coming very much to the fore.

What is Renewable 'Green' Energy?

Under Article 2 of Directive 2001/77/EC, renewable energy is defined as:

(a) "Renewable energy sources shall mean renewable non-fossil energy sources (wind, solar, geothermal, wave, tidal, hydro-power, biomass, landfill gas, sewage treatment plant gas and biogases"

(c) "Electricity produced from renewable energy sources shall mean electricity produced by plants using only renewable energy sources as well as the proportion of electricity produced from renewable energy sources in hybrid plants also using conventional energy sources."

Green energy produced from renewable natural resources offer a significant supply of clean power. Electricity produced using renewable energy produces minimal environmental impacts, offers energy security and energy at affordable, secure prices.

So can I change my electricity supplier?

Yes. All consumers can change their electricity supplier. Switching to a green electricity tariff is one of the best and simplest ways of making a difference for the environment.

Currently, there are three suppliers of green electricity in the Irish market place.

Airtricity:

supply green electricity to both commercial and domestic customers.

• For further information call: 1850 40 40 80 or

• Log onto: www.airtricity.com

ESB Independent Energy (ESBIE):

provide green energy to the business and commercial sectors.

• For further information call 01 8628 300 or

• Log onto: www.esbie.ie/products_services/green_energy.html

Viridian/Energia:

supplies green electricity to the business and commercial sectors.

• For further information call 1850 363 744 or

• Log onto: www.energja.ie



B2B Marketplace

German-Irish Chamber of Industry and Commerce

The German-Irish Chamber of Industry and Commerce is part of a global network of German Chambers in 80 countries. The chamber's mission is trade facilitation between Germany and Ireland and it assists companies in their search for new business opportunities and business partners in both countries.

Three German wood fuel boiler manufacturers, along with three German heat pump manufacturers, took part in "Kick-Off Ireland", a wood fuel and heat pump technology conference, in combination with business meetings with potential Irish trading partners. "Kick-Off Ireland" which took place in Dublin in April, was a tremendous success. The event gave the renewable energy heating market the exposure it deserves and managed to provoke debate around the subject, against the backdrop of German development in the area to date. Furthermore, over 55 meetings were held between the six companies and potential partners on the Irish market.

The German wood fuel boiler manufacturers are:

IB-MFA, Maschinen und Anlagenbau

IB-MFA is a manufacturer of biomass boiler technology, the most innovative of which is its trademark external container solution for boilers and its fuel (wood pellets & chips).

IB-MFA provides project management, R&D, sales and service of the following systems and their components:

- Automatic biomass boilers for pellets, wood chips, unprocessed timber etc. (15kW - 3500kW) in stationary and / or mobile container form
- Shredding and conveying equipment (15kW- 72kW),
- Bunkers and discharger
- Heat exchangers

IB-MFA are interested in hearing from large retailers, plumbing & heating installers and mechanical engineering companies. Their intention is either to sell their products directly to Irish customers from Germany, and outsource the installation and service of their products, or to develop the systems in co-operation with an Irish business partner.

Contact Details:

IB-MFA Maschinen & Anlagebau
Egon Jach
Naundorfer Str. 13
D-09306 Seelitz
Tel: +49 (0) 37 37- 77 14 94
Fax: +49 (0) 37 37 - 78 67 04
www.holzbrenner.de
IB-MFA@t-online.de



Nolting Holzfeuerungstechnik

Nolting has specialised in wood fuel boilers since the 1970's, and quickly became the market leader in Germany for boilers with a

heating performance of up to 800kW. Now, the company specialises in offering fully customised high performance wood fuel heating systems, ranging from 45 to 2500kW.

An experienced European exporter, Nolting is now eager to enter the Irish market. Its export trade makes up 40% of Nolting's €3.5 m turnover. The Irish market holds a lot of potential for the German wood boiler manufacturer, and they wish to offer a complete package to Irish customers through an Irish partner, from sale through to service. Their ideal Irish partner would have experience in the sale and/ or installation of renewable energy systems, and Nolting is of course willing to offer all the necessary training.

Contact Details:

Nolting Holzfeuerungstechnik
Joachim Eggers
Wiebuschstraße 15
D-32760 Detmold
Tel: +49 5231-95550
Fax: +49 5231-955555
info@nolting-online.de
www.nolting-online.de

Wodtke GmbH

Wodtke is the leading manufacturer of living room wood pellet stoves in Germany. Wodtke was the first German company to receive an official license for a wood pellet stove (<15kW) in 1996. Its sales territory comprises all of Germany and its neighbouring countries, in particular Austria, Scandinavia and Switzerland.

Wodtke is looking forward to co-operating with innovative and creative Irish companies whose aim it is to promote biomass technology within a variety of sectors. These partners should offer a complete service to their Irish customers, including installation and maintenance, to guarantee complete customer satisfaction. Wodtke's intention is to export to an Irish importer or wholesaler with nationwide distributorship, in order that it gets the exposure that it deserves on the Irish market.

Wodtke GmbH

Thomas Ries
Rittweg 55 - 57
D-72070 Tübingen
Tel: +49 (0) 70 71 - 7003 - 26
Fax: +49 (0) 70 71 - 7003 - 50
Thomas.Ries@wodtke.com
www.wodtke.com

For further information on any of the firms profiled, contact German-Irish Chamber of Commerce

*Ms. Aideen Keenan
46 Fitzwilliam Square
Dublin 2
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Fax: +353 (0) 1 - 676 2595
aideen.keenan@german-irish.ie*

B2B Marketplace

CzechTrade Ireland

The Czech Trade Promotion Agency/CzechTrade was established by the Ministry of Industry and Trade of the Czech Republic in May 1997. CzechTrade's main objective is to promote international trade and cooperation between Czech and foreign companies. CzechTrade Ireland represents the Czech Biomass Team which includes the following companies:

BIOENERGY GROUP AS

The company deals with the development of renewable energy projects, in particular biomass. The company is experienced in feasibility studies, the determination of suitable technology and equipment for their processing and finally their use for thermal and electrical energy. www.bioenergy.cz

HAMONT

Manufacturer of high-quality automatic boilers for pellets (up to 100kW) and wood chips (up to 500kW). www.hamont.cz

PONAST

Manufacturer of automatic boilers for pellets with an output range of 4.5 to 48kW; multiple boilers connected within a heating system can offer an output range of up to 200kW. www.ponast.cz

SG strojirna s. r. o.

Manufacturer of equipment for the use of wood waste products. Product lines include wood pelletising and briquetting

Wood chipper with conveyor from SGE Strojirna



equipment, wood waste chippers (15kW-110kW), wood waste & bark crushers, mobile chippers, chip separators and conveyors. www.sg-stroj.cz

Please contact Czech Biomass Team to obtain details of technologies supplied, contact information of all companies involved and recent references.

Contacts:

Mr. Tomas Pisa
CzechTrade Ireland
27 Upper Fitzwilliam Street, Dublin 2
Tel.: 01 6328 625
Email: info@czechtrade.ie
Internet: <http://www.czechtrade.ie>
Czech Biomass Team - Bioenergy group a.s.
E-mail: acropolis@acropolis.cz

Bioenergy Resource DVD

The Bioenergy Resource DVD is the result of a number of years' publications and events produced by SEI's Renewable Energy Information Office (REIO) and it covers three distinct areas of interest:

1. Bioenergy Basics

Provides comprehensive information on the main bioenergy technologies of wood energy, anaerobic digestion and liquid biofuels. Included are presentations, papers and studies on the above technologies and biomass resources in Ireland.

2. Wood Energy Conference Compilation

Wood Energy is an annual business-to-business conference, exhibition, study tour and training event aimed at professionals and enterprises in the rapidly expanding wood energy market. The content presents wood energy for commercial and industrial applications as a means of minimising energy costs and as a significant new business opportunity. Wood Energy is hosted by SEI REIO and COFORD, the National Council for Forest Research and Development. This section is a compilation of presentations and reviews of the conferences from 2002-2005 as well as SEI REIO facilitated Study Tours to Finland and Sweden.

3. Renewable Heating in Buildings

This information on renewable heating serves as an introduction to wood, solar and heat pump technology for the built environment. It is intended to assist professionals and decision-makers in acquiring the confidence and tools to apply renewable heating technologies in their projects. This section includes presentations, case studies and papers on the renewable heating technologies from the SEI REIO Solar and Passive Design Conference of recent years.

The Bioenergy Resource DVD is available from SEI REIO or to purchase online at www.sei.ie/reio.htm. Cost €5



BIOENERGY RESOURCES

Heat Cost Comparison Tools for Wood Heating

SEI REIO has developed a number of simple heat cost calculators to help you compare the heating cost of various heating systems (oil, gas etc.) to those using renewable energy sources (ground source heat pumps, wood boilers etc.).

The following is an example of a commercial building, a luxury hotel with a floor space of 10,000 m² and compares the cost of oil and wood pellet heating.

Total Heating Cost Comparison for Commercial Sector		
Parameter	Oil	Wood Pellets
FUEL COST		
Annual Fuel Cost	€10,000	€1,000
Annual Fuel Cost per m ²	€100	€10
MAINTENANCE COSTS		
Annual Maintenance Cost	€500	€100
Annual Maintenance Cost per m ²	€5	€1
TOTAL HEATING COST		
Annual Total Heating Cost	€10,500	€1,100
Annual Total Heating Cost per m ²	€105	€11

Fuel cost savings of almost €100,000 per year are possible by choosing wood pellets.

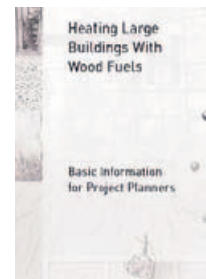
Calculators for both domestic and commercial applications are available on the Bioenergy DVD, contact SEI REIO at renewables@reio.ie to order your copy.

Bioheat II – New Technical Brochure on Wood Heating in Large Buildings

A new brochure entitled Heating Large Buildings with Wood Fuels - Basic Information for Project Planners has recently been published under the Bioheat II programme. This is the third publication for Bioheat since the project began in January 2003. The Bioheat II Project is funded by the EU Commission within the Altener Programme and is dedicated to developing high quality wood heating projects. The brochure contains basic technical information to assist with the preparation and planning of wood-fired heating systems in large buildings. Typical projects where wood heating represents an attractive alternative include: residential blocks, hotels, commercial premises or public buildings such as schools, hospitals, old people's homes, town halls and other large buildings with a heat rating of between 50kW and 500kW.

Bioheat CD

A Bioheat CD is also available and features recent footage from Duncan Stewart's "Eco Eye" series which looks exclusively at wood pellet production and the benefits of wood heating. Also included on the CD are the three Bioheat brochures, RETScreen software and a heat cost calculator.



For a copy of the new brochure and CD, contact Ann McCarthy on (023) 29171. For Irish Wood Heating Case Studies log on to: <http://www.bioheat.info>

Recommended Reading

BIOMASS RESOURCE PACK

A comprehensive information pack on biomass technology including:

- Bioenergy Resource DVD – a complete information resource covering:
- Bioenergy technologies - anaerobic digestion, landfill gas recovery, liquid biofuels and wood energy.



- Wood Energy Conference Compilation (2002-2005)
- Renewable Heat – information and tools for the application of renewable heat technology (heat pump, solar and wood heating)
- Wood Fuels Basic Information Pack – a publication from the BENET Bioenergy Network, Finland – covering all aspects of wood fuel production and combustion. (Retail value €45)
- Biomass Co-firing and Combustion-an IEA publication on combustion technology and fuel supply chains for bioenergy applications from domestic to industrial scale (Retail value €45)
- Bioenergy International magazine-the latest copy with news of the latest international bioenergy developments.

The resource pack is available online at www.sei.ie/reio/.htm

Cost €75.

Wood Heating Supplier Contact List

Wood Stoves Manufacturer	Distributor	Telephone	Website
Calimax, Austria www.calimax.com	Green Heat	069-65200	www.greenheat.ie
	Shamrock Solar Energies Ltd	065-6868468	www.shamrocksolar.com
Rika, Austria www.rika.at	Natural Power Supply	051-832777	www.nps.ie

Wood Boilers Manufacturer	Distributor	Telephone	Website
Froeling, Austria www.froeling.com	Powertech	048-80760088	www.powertechireland.co.uk
KWB, Austria www.kwb.at	Natural Power Supply	051-832777	www.nps.ie
Polytechnik, Austria www.polytechnik.com	National Biofuels	055-80147	www.nationalbiofuels.ie
Tatano, Italy www.tatano.it	Energy Master Ireland	068-24300	www.energymaster.ie
Heizomat, Germany www.heizomat.de	Clearpower	01 6690979	www.clearpower.ie
Windhager, Austria www.windhager.com	Heatright	028-23488	www.heatright.com

For examples and more information on wood pellet boilers in large buildings see www.bioheat.info
For inclusion on this list, please contact renewables@reio.ie

Recommended Events 2005

September 12-15 Bioenergy in the Wood Industry 2005 Conference, Tradeshow and Study Tours Jyväskylä, Finland www.finbioenergy.fi/bioenergy2005	October 6-9 Bois Energie (Wood Energy) Conference and Trade Show Lons Le Saunier, France www.boisenergie.com	October 26-27 Nordic Bioenergy Conference www.bioenergy2005.no
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Sustainable Energy Ireland's Renewable Energy Information Office was established as a national service to promote the use of renewable resources and provide independent information and advice on the financial, social and technical issues relating to renewable energy development.

Sustainable Energy Ireland is Ireland's national energy authority. The authority promotes and assists environmentally and economically sustainable production, supply and use of energy, in support of Government policy, across all sectors of the economy

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Regular renewable energy information updates are available by email from SEI REIO. To join the list, send an email to renewables@reio.ie with "email subscriber" in the subject line.