



Wood Energy Ltd

Heating that doesn't cost the Earth



Biomass Heating in the UK

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Wood Energy Ltd

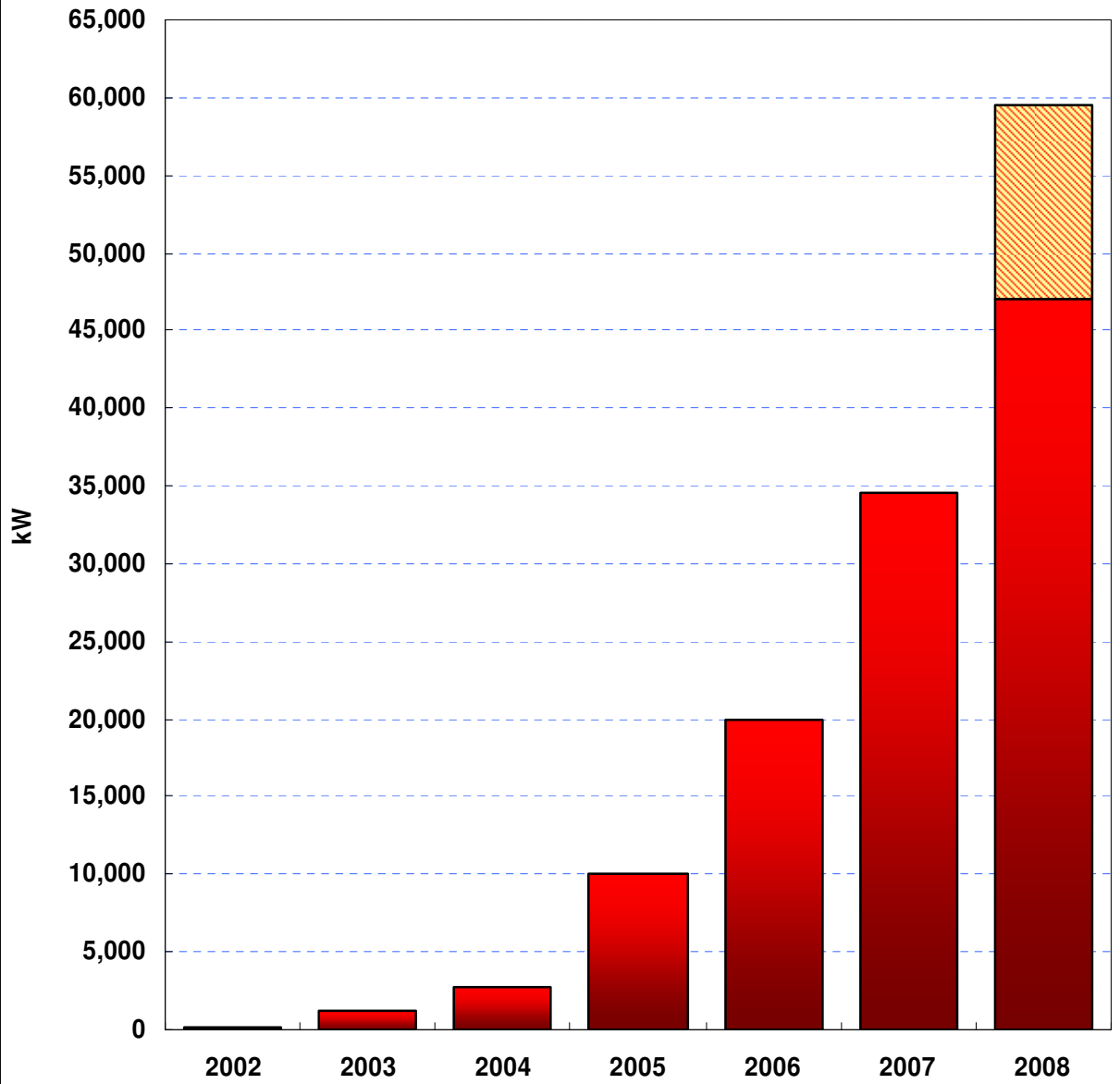


Wood Energy Ltd

- Wood Energy Ltd are a leading UK provider of biomass boilers with over c.47,000kW of capacity and c.160 projects to date across UK and Ireland. Currently 38 staff. Founded 2002.
- Expanding rapidly with head office in South West England and offices in Ireland, Wales and Scotland.
- Distributors for UK & Ireland of Binder GmbH boilers since 2003
- Full in-house design & engineering staff within WEL



Wood Energy biomass boiler (cumulative) sales

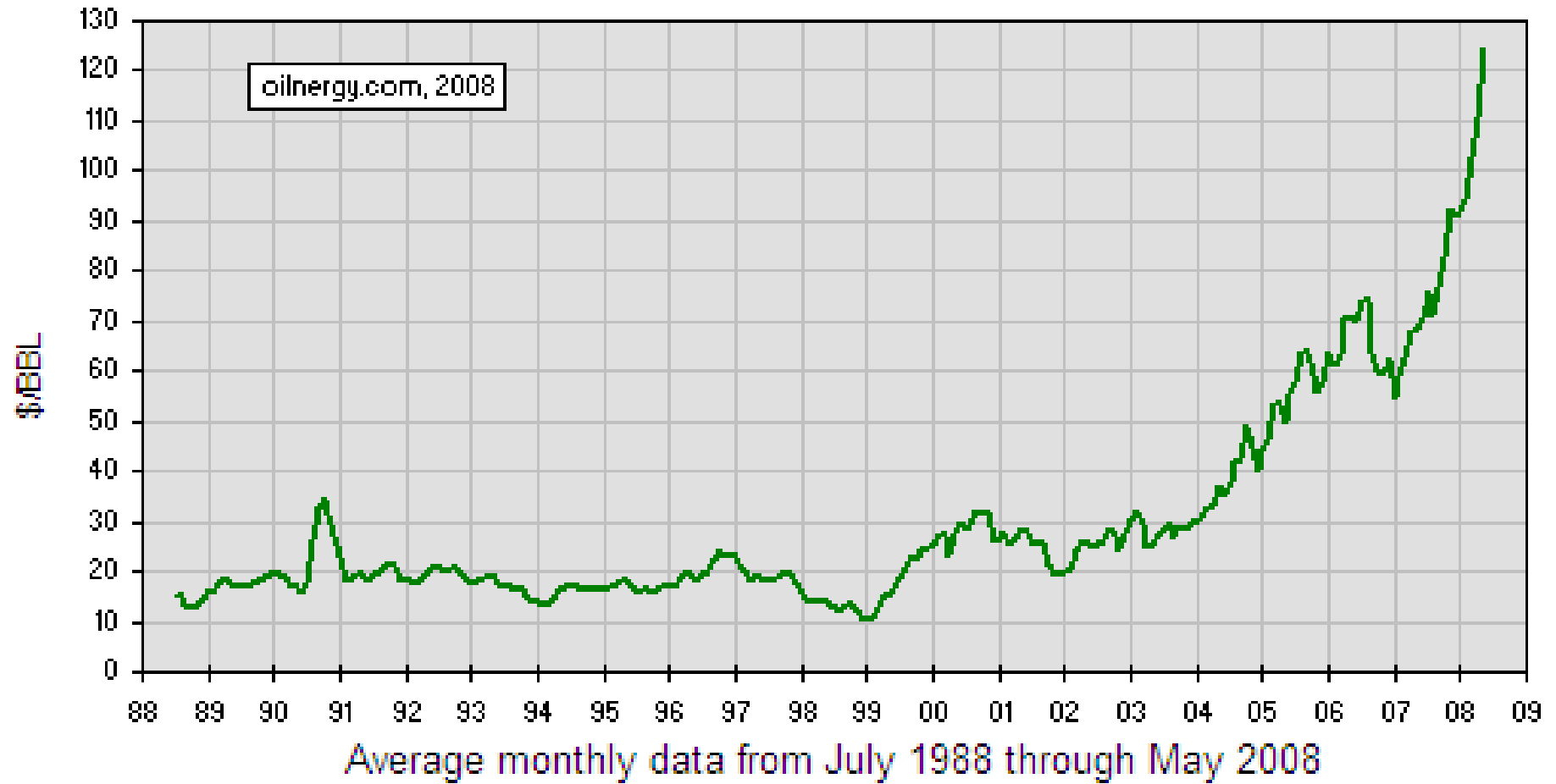


WEL Biomass Installations in Wales

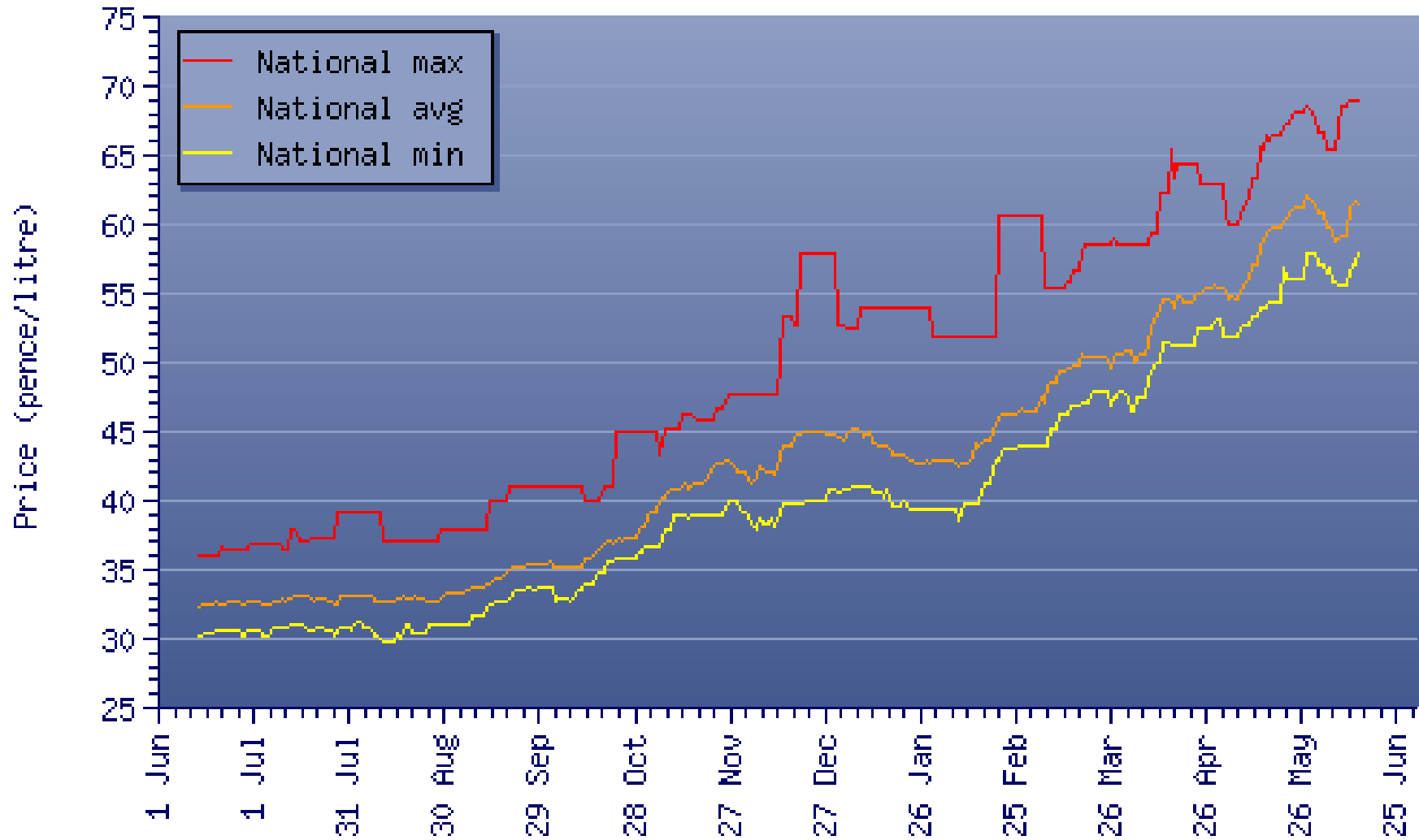
- To date 23 biomass boilers installed or under construction
- Ranging from 50kW to 1 MW
- Estimated consumption c. 4,000 tonnes of wood fuel per annum
- Estimated carbon saving c. 2500 tonnes CO₂/year



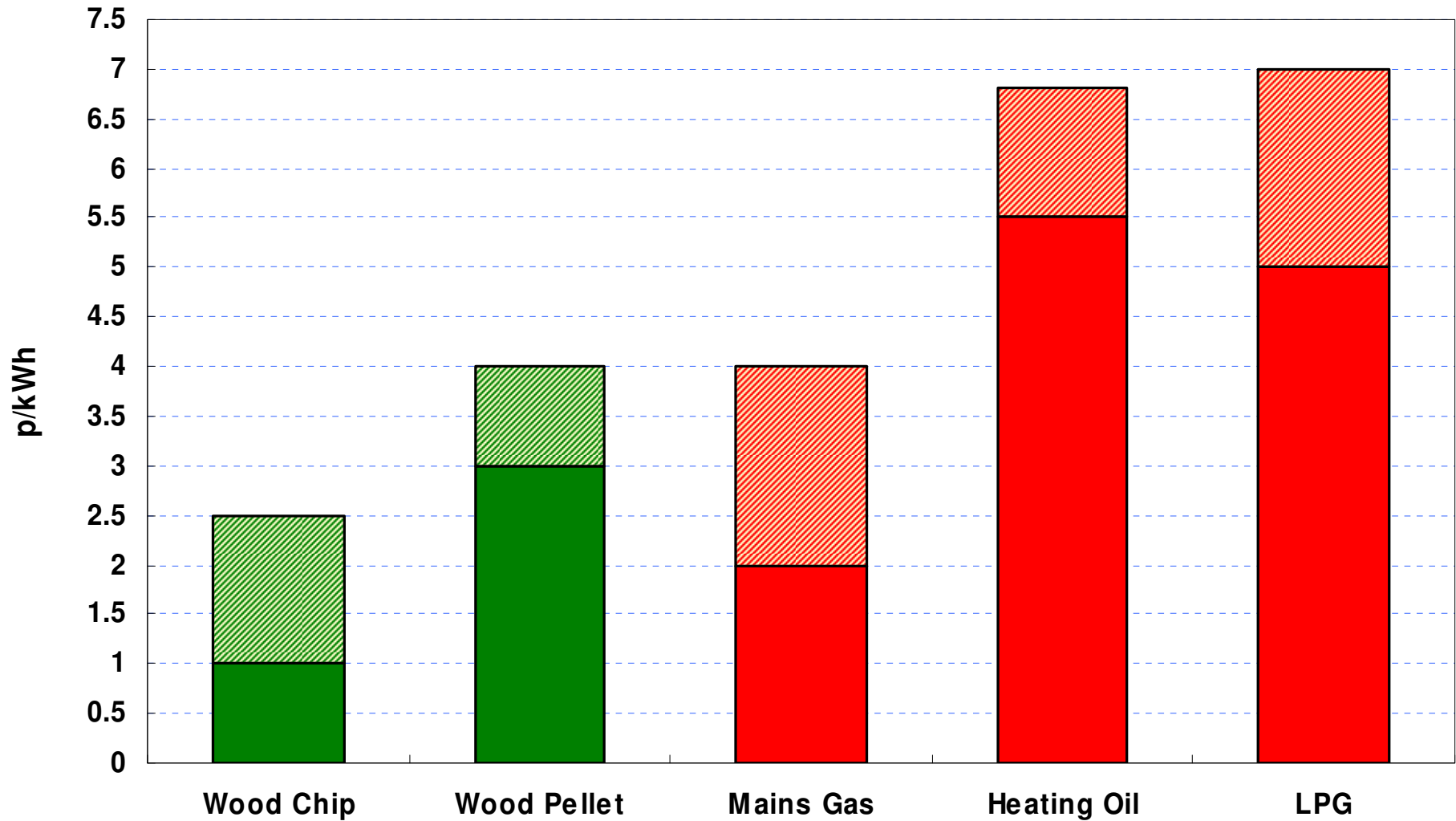
ICE Brent Crude Oil Closing Price (begin July 1988)



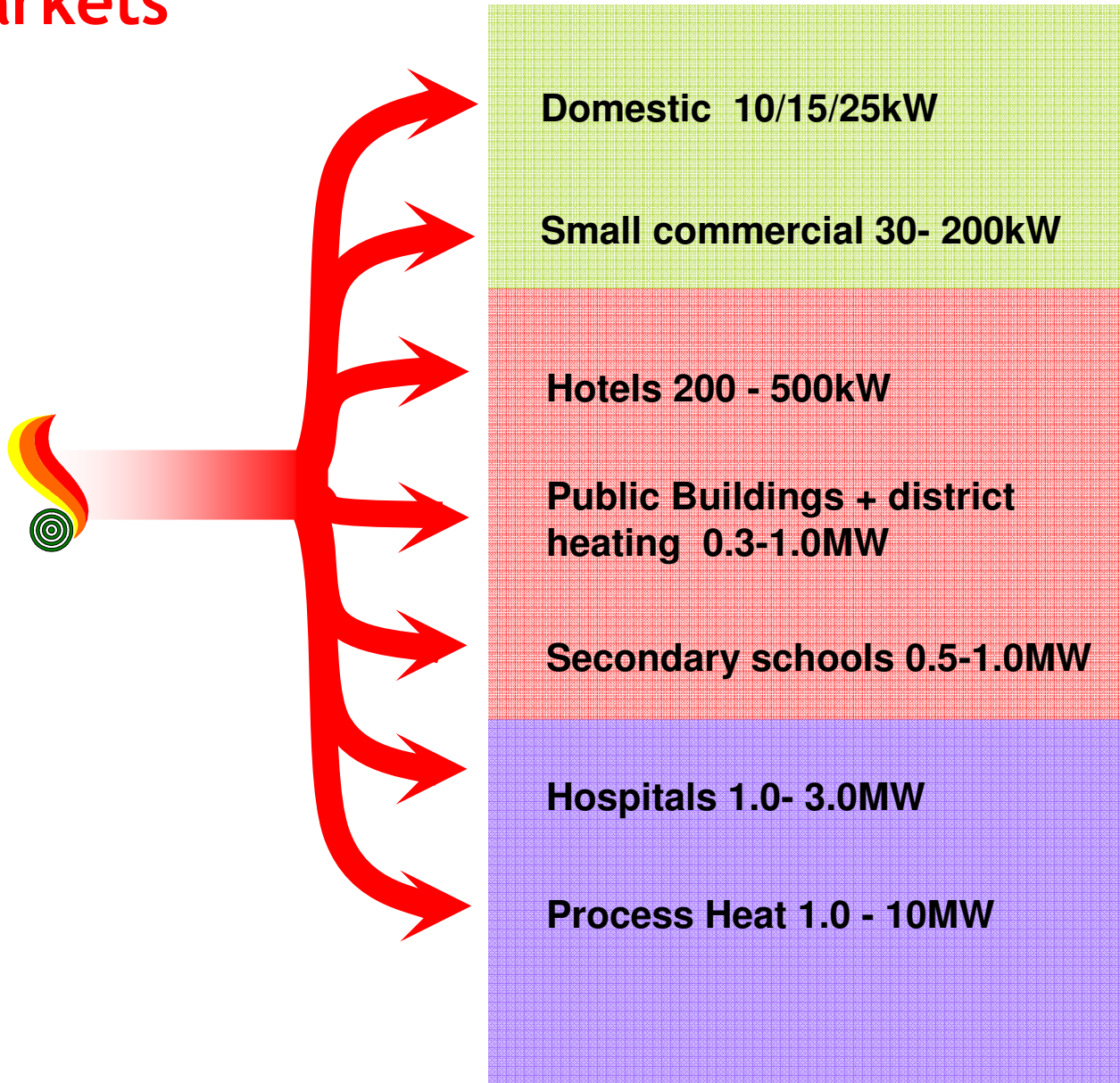
Average Heating Oil price (1 year)



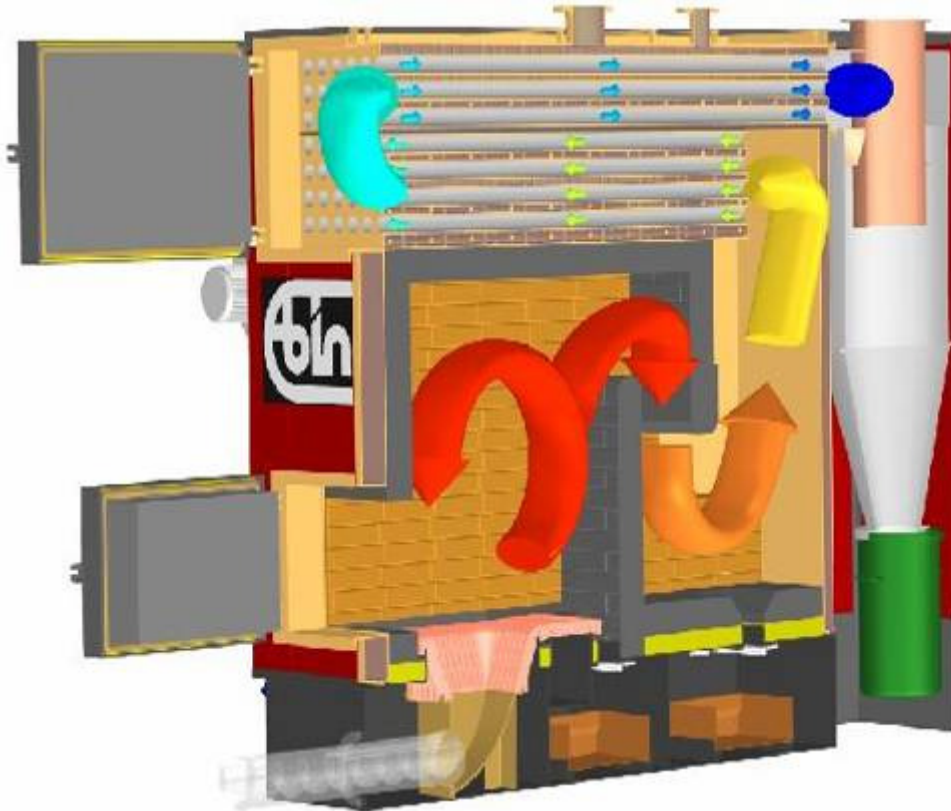
Typical Fuel Costs in the UK (p/kWh), June 2008



Markets



Boiler technology



- Fully automatic feed
- Electric/oil/gas ignition
- Capacity control
- Remote system control
- Remote monitoring
- Automatic cleaning
- Automatic ash extraction
- Typical efficiency 90% +
- Very low ash remains



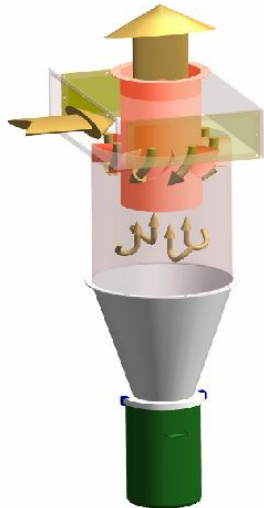
Boiler Technology - emphasis of low



Automatic ash removal from the boiler



High-velocity air cleaning system



Cyclone to remove fly-ash from the emissions



Wood Fuel key Characteristics

Quality of Wood Fuel

- **Moisture content of the wood fuel**
- **Particle size of the wood fuel**

Delivery of Wood Fuel

- **Wood fuel transport equipment**
- **Wood fuel store design**



Wood Fuel Types



Wood Pellets

- High density, low moisture content
- “Standard” product
- Tanker delivery – flows similar to a liquid
- Boiler and fuel store generally simpler & cheaper
- Many production facilities now in the UK



Wood Chip

- Can vary in particle size, moisture content
- Low bulk density
- Difficult to handle
- Widely available – sawmill residues, forestry residues, clean recycled wood, energy crops...
- Lower cost per unit of energy



The Senedd Building, Cardiff - 2005



360kW Binder wood boiler commissioned October 2005.

Carbon Saving c. 120 tonnes CO₂/year



Penmorfa District Heating, Ceredigion 2005



- **County Council Offices**
- **Sheltered Housing**
- **Nursing Home**
- **Small district heating loop fuelled by 550kW wood-boiler and 250kW oil for peaks**



Llandrindod High School, Powys 2005



450kW Step-grate machine
Maximum moisture 50%
20,000litre buffer tank
Remote monitoring & control



Llandrindod High School – Hook Bin System



Swansea Leisure Centre 2008



500kW Binder step-grate wood chip boiler Designed for G100/W50 wood chip

Hook bin wood chip delivery system

Carbon Saving c. 120 tonnes CO₂/year



Summary & Conclusions

- Biomass heating has a central role to play in the UK's energy mix
- Biomass can make a significant contribution to reducing carbon emissions, security of supply and help the local economy
- High quality biomass boiler technology is available in the UK with trained local technical support
- Wood fuel supply infrastructure is being established and is gaining experience
- Biomass market still relatively small
- The expansion of the industry needs to be DEMAND led – the boiler capacity needs to reach a critical size to establish large scale biomass heating sector

