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Presentation to

Teagasc – Talking Poultry Webinar Series

September 8th 2021

Balcas energy

CODE RED FOR GLASGOW SUMMIT

Last chance to stop climate catastrophe

BY PAUL HUTCHEON

THE COP26 summit in Glasgow could be the world's "last chance" to avert a climate catastrophe.

A report by UN experts yesterday warned of a "code red for humanity" if we continue to burn fossil fuels and fail to dramatically cut pollution.

FULL STORY PAGES 6&7

As world leaders prepare for COP26, UN experts paint dire picture of planet's future

'Road map' needed to beat climate catastrophe

Nations require schedules for net zero, say scientists

Ben Webster Environment Editor
Oliver Wright Policy Editor

Britain's chief scientific adviser has called on governments to produce climate change "road maps" and a new emissions dashboard.

Sir Patrick Vallance said that the time for vague promises was over and that yesterday's "stark and rightly uncomfortable" report by the UN's Intergovernmental Panel on Climate Change (IPCC) showed the need for immediate action.

The report concluded that the 1.5C limit on global warming set in the Paris Agreement was likely to be breached within a few decades in all scenarios but that the overshoot would be only temporary if there were immediate and sustained cuts in emissions.

Vallance said: "Every government needs to develop an evidence-based road map setting out the technologies that they require and by when to achieve net zero ... Monitoring progress against those road maps is going to be crucially important."

He said that the road maps should be published before Cop26, the UN climate conference in Glasgow in November, which he described as a big opportunity to make progress "as we move from one rather short-term crisis of Covid to something much more long-term".

Writing for the online edition of The Times today, Vallance and Professor Stephen Belcher, chief scientist at the Met Office, say that recent floods in London and Germany and wildfires in Greece and Turkey "provide a sad taste of the future".

They call on all nations to submit detailed, new and ambitious climate targets before Cop26.

A direct measurement system is being tested in Britain and involves measuring concentrations of greenhouse gases in the atmosphere and using computer modelling of weather to work out their origin.

Boris Johnson said he hoped that the IPCC report would be "a wake-up call for the world".

Alok Sharma, the cabinet minister leading preparations for Cop26, condemned the 12 countries in the G20, including China, India, South Africa and Saudi Arabia, which had so far failed to submit new climate targets to the UN. Sharma said that to achieve the main goal of Cop26 of keeping the 1.5C limit within reach, all countries in the Organisation for Economic Co-operation and Development must stop burning coal by 2030 and the rest of the world by 2040.

Downing Street, however, has pushed back plans to publish details of the phasing out of natural gas for heating homes. The Treasury is also sitting on a report assessing the cost of the government's wider net-zero strategy and the effect on tax receipts from predicted falls in fuel duty.

Climate change, pages 6-7
Reduction road maps are essential, leading article, page 27
Sir Patrick Vallance, thetimes.co.uk

Red alert climate report 'has to be oil's death knell'

Transition away from fossil fuels just cannot wait, warns UN chief

HAMISH PENMAN

THERE is "no time for delay and no room for excuses" on climate change, the world was warned yesterday after the release of a stark assessment of the overwhelming scale of the global emergency.

UN Secretary General Antonio Guterres described the sobering assessment of the Intergovernmental Panel on Climate Change as a "code red for humanity" that "must sound a death knell" for fossil fuels.

The report, released just months before world leaders gather in Scotland for a crunch summit, concluded that it is "unequivocal" that human activity is causing global temperatures to rise, leading to extreme weather events all over the planet.

How to achieve a swift transition to greener fuels that is fair to the huge oil and gas workforce is one of the biggest challenges facing the government.

Deirdre Michie of Oil and Gas UK said: "The aim is to use new technologies to make these traditional fuels acceptable in our low-carbon future."

Full story: Page 8-9

Will politicians step up after dire climate warning?

Irish businesses face torrent of change as climate crisis bites

From agriculture to energy, ambitious new targets will have far-reaching consequences

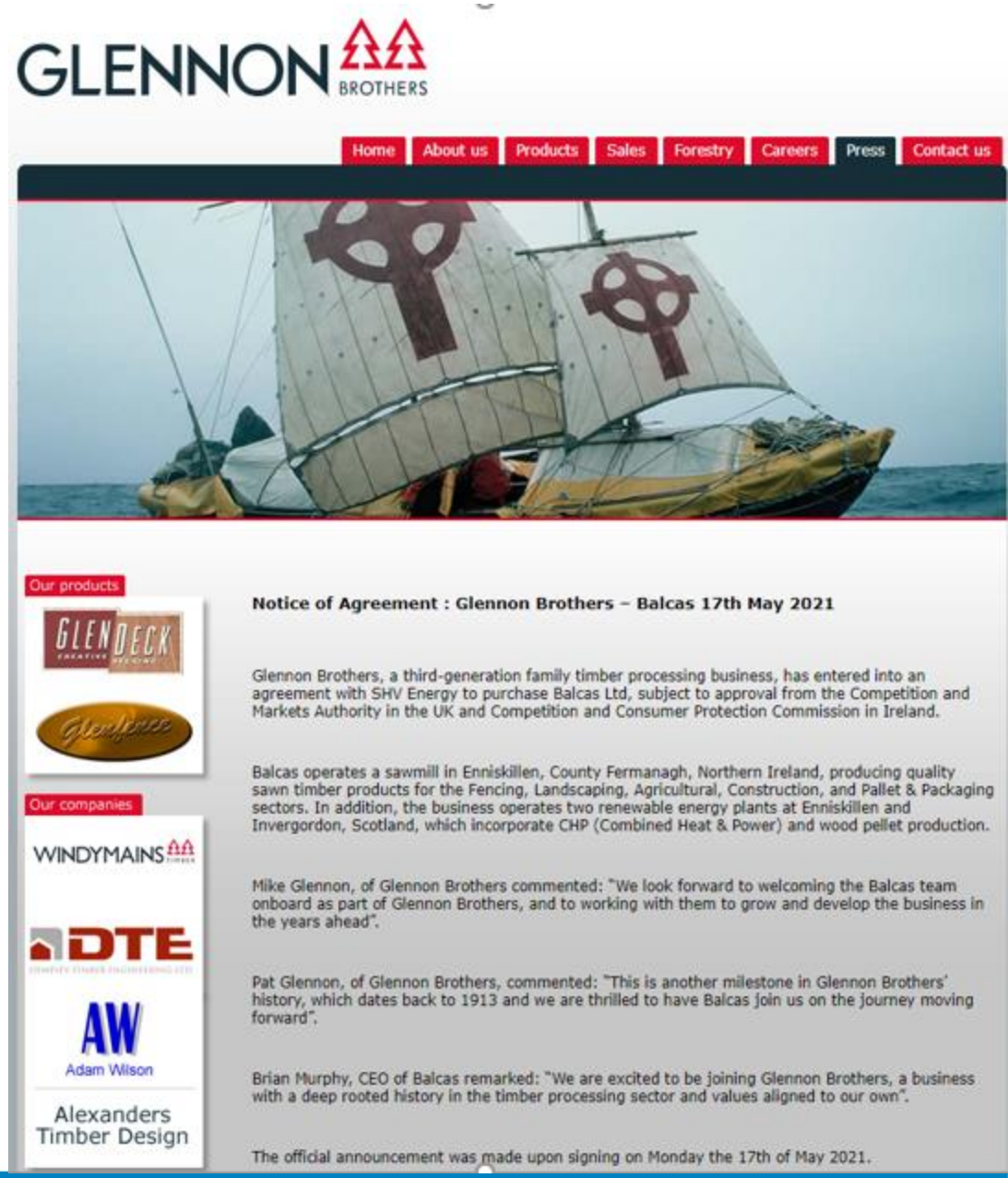
Balcas – who we are

- Timber Sawmill in Enniskillen Co. Fermanagh.
- Established in1962
- £100m p.a turn over
- Processing 1m tonnes of sustainably sourced logs every year
- We have our own forestry team and a mix of short & long term contracts to guarantee supply
- 30%+ of our raw material is sourced from private land owners
- 360+ employee's
- Further 300+ people employed indirectly
- in the forestry industry in NI and ROI

We have been part of SHV Group

SHV

- *SHV have recently agreed to sell Balcas to Glennon Brothers.*
- *Glennon Brothers is a family owned Irish business with sawmills in Longford and Fermoy in Ireland and Edinburgh and Troon in Scotland, and Timber Frame Manufacturing and Engineering in Arklow and Troon.*
- *The sale process is ongoing and subject to approval by the Competition Authorities in Ireland and the UK.*



Balcas energy

Our industry experience

- We’re here to talk about wood pellet biomass as a replacement heat source for fossil fuels in poultry production …
- We have been manufacturing wood pellet biomass fuel since 2004
- We understand that time is precious for farmers
    - We supply 1,000 poultry houses in Northern Ireland and GB
    - Using 45,000 tonnes of fuel per annum
    - Generating 200 million KWh of heat
    - Producing 160 million birds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SCANIA

What is biomass ?

- Biomass is biological material derived from living, or recently living organisms.
- The carbon used to construct biomass is absorbed from the atmosphere as carbon dioxide (CO_2) by plant life, using energy from the sun.
- If burned the carbon is returned to the atmosphere as CO_2.
- These processes have happened for as long as there have been plants on Earth and is part of what is known as the carbon cycle.
- There are five basic categories of material:
  - **Virgin wood**, from forestry, arboricultural activities or from wood processing
  - **Energy crops**: high yield crops grown specifically for energy applications
  - **Agricultural residues**: residues from agriculture harvesting or processing
  - **Food waste**, from food and drink manufacture, preparation and processing, and post-consumer waste
  - **Industrial waste and co-products** from manufacturing and industrial processes.

- https://www.youtube.com/watch?v=-jln6yi7LF0

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Biomass v Fossil Fuels

- Fossil fuels such as coal, oil and gas are also derived from biological material, however material that absorbed CO_2 from the atmosphere many millions of years ago.
- The vital difference between biomass and fossil fuels is one of time scale.
- Biomass takes carbon out of the atmosphere while it is growing, and returns it as it is burned.
- If it is managed on a sustainable basis, biomass is harvested as part of a constantly replenished crop through a continuous programme of replanting with the new growth taking up CO_2 from the atmosphere at the same time as it is released by combustion of the previous harvest
- Carbon Cycle - Carbon Neutrality

How Biomass Works

Our Wood Pellet Fuel

- Manufactured as a co-product of our sawmill in Enniskillen
  - The other co-products are construction, agricultural and pallet timber
    - Locking in CO2 from the sustainably harvested forestry

- Manufactured using 100% “Green” electricity and “Green” heat from our on site CHP plant, which is fuelled by forest residues and sawmill waste

- As a manufactured product our wood pellets offer a consistent quality fuel that cannot be matched by other forms of forest biomass

- Our Balcas Energy wood pellets are very much a product of the “circular bio-economy” – nothing is wasted

As this short animation explains it very well

Balcas Energy Biomass Fuel

- Balcas energy wood pellets exceed the requirements of ENplusA1 quality standard and are 100% carbon neutral

irbea | irish bioenergy association

WFQA Wood Fuel Quality Assurance

EN plus A1 ISO 17225-2 UK 002

FSC www.fsc.org FSC® C021367 The mark of responsible forestry

Wood Pellet Specifications				
Criteria		ENPlusA1 Standard		Balcas Energy Woodpellets
Calorific Value		**16.5 ≤ Q ≤ 19 MJ/kg**		**17.2**
		4.6kWh/kg		**4.8kWh/kg**
Ash (A0.7)		**≤ 0.70%**		**0.30%**
Ash deformation Temp. (DT1200)		≥ 1200 °C		1350 °C
Moisture (M10)		**≤ 10%**		**7.50%**
Additives		≤ 2% of dry bases (natural)		≤ 2%
Dimensions (D06)		Diameter 6mm ± 1.0mm		6mm ± 1.0mm
		Length 3.15 ≤ L ≤ 40		3.15 ≤ L ≤ 40
Sulphur (S0.03)		≤ 0.04%		0.03%
Chlorine (CL0.02)		≤ 0.02%		0.01%
Fines (F1.0)		≤ .5%		0.24%
Mechacinal Durability (DU97.5)		≥ 98%		98.90%
Bulk Density		**600 ≤ BD ≤ 750 kg/m3**		**672 kg/m3**

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Advantages of Balcas Energy wood pellets v other biomass fuels eg wood chip @ 30% mc

Criteria	Wood Pellets	Wood Chip	Difference %	Advantage
Calorific Value KWh/t	4,800	3,490	38%	Better efficiency
Moisture Content	7.50%	30%	-75%	Consistent product
% Ash	0.30%	0.50%	-40%	Less waste
Bulk density KG/M3	672	207	225%	Smaller footprint

- Fuel handling is more efficient - auger v swinging arm
- Wood pellet boilers are the most responsive and closest to fossil fuel-based boilers in their maintenance and operation.
- The heat generated is drier than direct fired gas heating and creates a healthier environment for the birds.

Balcas energy

A natural leader in sustainability

- 4 trees planted for every one harvested
- Our pellets are produced using 100% renewable energy
- Over the last 10 years we have sold more than 2 million tonnes of wood pellets, displacing more than 1 billion litres of imported oil, equating to more than 3 million tonnes of carbon savings
- Produced to consistent, rigorous standards
- A viable renewable that's available now
- We have made renewable energy a reality

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What's that got to do with all of us ?

We can't change the past, but we can influence the future

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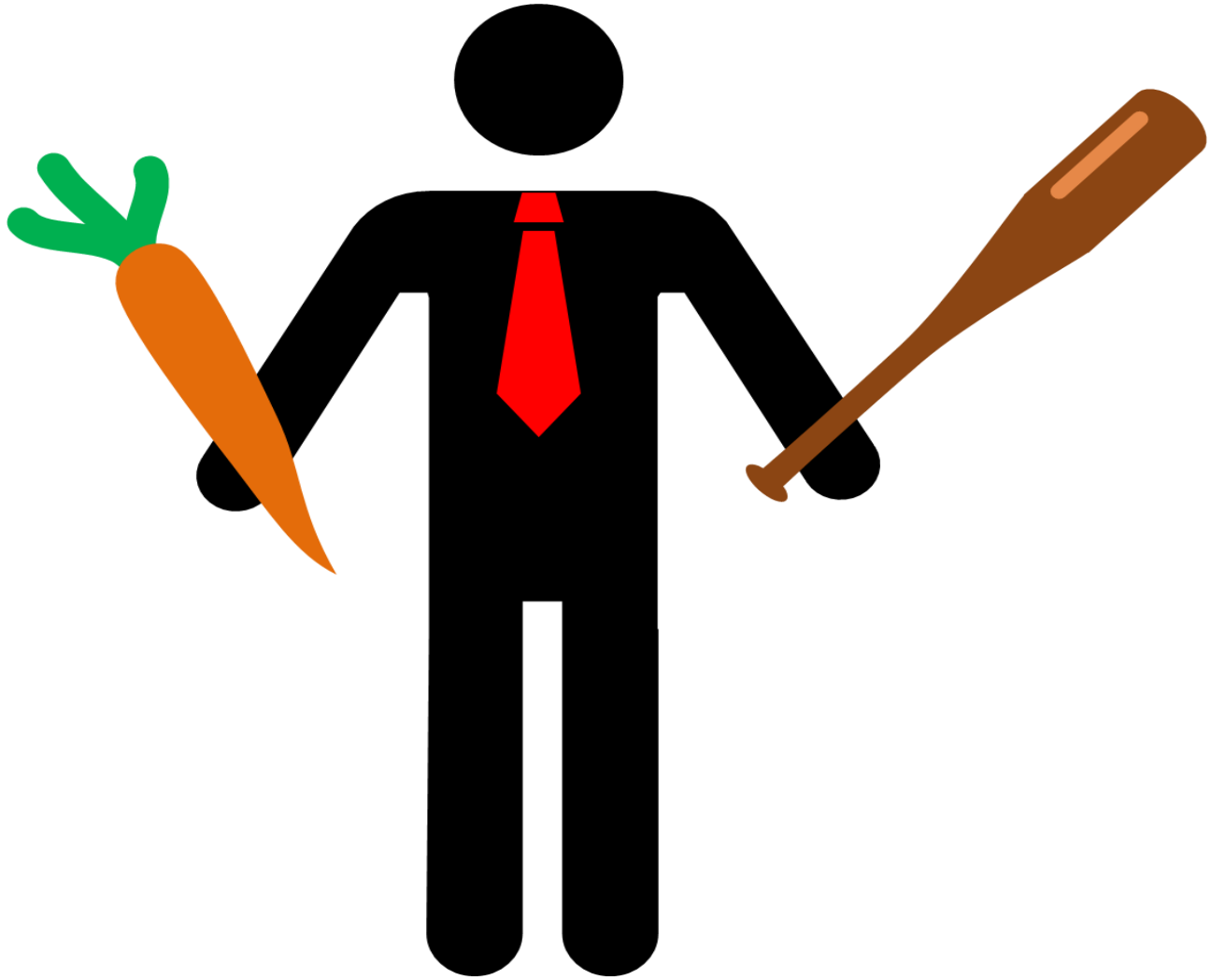
Carrot and Stick policy



- The Irish Government has committed to reduce carbon emissions by 50% by 2030 and to be carbon neutral by 2050
- Biomass will play a key part in achieving these targets

The Stick - Carbon Tax Increases ROI 2021 - 2030

- Carbon Tax is the tax you pay on the CO_2 Emissions generated by burning fossil fuels
- Through the Climate Action and Low Carbon Development (Amendment) Bill 2021, The Irish Government has committed to increase carbon tax from €33.50 per tonne (2021) to (at least) €100 per tonne by 2030
- This will be achieved through incremental increases every year by (approx.) €7.50 per tonne for 10 years

	Litres	Units	KG CO2 per Ltr/Unit	Ltrs/Units per ton CO2	Carbon Tax per ton 2021	Carbon Tax per Ltr/Unit 2021	Carbon Tax per ton 2030	Carbon Tax per Ltr/Unit 2030
Oil	1		2.524	396.20	€33.50	€0.0845	€100.00	€0.2524
LPG	1		1.521	657.46	€33.50	€0.0509	€100.00	€0.1521
Natural Gas		1	0.184	5434.78	€33.50	€0.0062	€100.00	€0.0184

(These numbers are based on carbon taxes not going above €100 per tonne by 2030)

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Carbon Tax Impact ROI 2021 - 2030

- The total additional cost (by fuel type) for 1,000 MWh of heat will be

	10 Years	**15 Years**
• **Oil**	€ 125,000	€ 238,000
• **LPG**	€ 112,000	€ 213,000
• **Nat Gas**	€ 89,000	€ 169,000

The Carrot - Support Scheme for Renewable Heat - SSRH

- The Support Scheme for Renewable Heat is a government funded initiative designed to increase the energy generated from renewable sources in the heat sector. The scheme is open to commercial, industrial, agricultural, district heating, public sector and other non-domestic heat users.
- Once agreed, payments are guaranteed for 15 years

SSRH Calculator				
Tier	lower limit kWh/yr	upper limit kWh/yr	Biomass c/kWh	total €/tier
1	-	300,000	5.66	16,980
2	300,000	1,000,000	3.02	21,140
3	1,000,000	2,400,000	0.50	7,000
4	2,400,000	10,000,000	0.50	38,000
5	10,000,000	50,000,000	0.37	148,000
Annual Total				**231,120**
10 year Total				**2,311,200**
15 year Total				**3,466,800**

- For 1,000 MWh of useful heat qualifying businesses will be eligible to claim up to €38,120 per annum through SSRH

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Poultry Farm Example (based on example in Teagasc Fact Sheet Energy 12 (2020 Energy efficiency in Poultry Units)

- 4 x 1,300 sq mtr shed
- 25,000 birds per crop per shed
- 7.5 crops per annum
- Production = 187,500 birds per shed per annum
- Total Production = 750,000 birds per annum
- @ 1.227 kWh per bird
- Total Heat demand = 920,250 kWh per annum

- Total LPG = 140,303 litres per annum
- Total Cost @ 43c per litre = €60,330
- kWh cost per bird = 8c

- Indicative pricing for the equivalent heat using wood pellets would be
  7c per KWh per bird
  €7,830 per annum saving

Potential carbon tax increases

Carbon Tax Increases 2021 - 2036					
Fuel			LPG		
Volume Litres			140,303		
Tonnes Carbon			214		
Year	€ Increase per tonne YoY	Rate	Additional Cost PA	Cumulative	Total Tax
2021		€ 33.50			€7,154
2022	€ 7.50	€ 41.00	€1,602	€1,602	€ 8,755
2023	€ 7.50	€ 48.50	€1,602	€3,203	€ 10,357
2024	€ 7.50	€ 56.00	€1,602	€4,805	€ 11,958
2025	€ 7.50	€ 63.50	€1,602	€6,406	€ 13,560
2026	€ 7.50	€ 71.00	€1,602	€8,008	€ 15,161
2027	€ 7.50	€ 78.50	€1,602	€9,609	€ 16,763
2028	€ 7.50	€ 86.00	€1,602	€11,211	€ 18,365
2029	€ 7.50	€ 93.50	€1,602	€12,812	€ 19,966
2030	€ 6.50	€ 100.00	€1,602	€14,414	€ 21,354
2031	€ 0.00	€ 100.00	€0	€14,414	€ 21,354
10 Year Totals				€86,484	€ 157,593
2032	2031	€ 100.00	€0	€14,414	€ 21,354
2033	2032	€ 100.00	€0	€14,414	€ 21,354
2034	2033	€ 100.00	€0	€14,414	€ 21,354
2035	2034	€ 100.00	€0	€14,414	€ 21,354
2036	2035	€ 100.00	€0	€14,414	€ 21,354
15 Year Totals				€ 158,554	€ 264,364

Carbon Tax on 140,303 litres LPG

- 214 Tonnes of Carbon
- Current cost €33.50/t = €7,154 per annum
- €7.50 increase = + €1,602 per annum
- 2030 Cost €100/t = €21,354
- **10 year cumulative increase = €86,484**
- **10 year total cost = €157,593**

- **15 year cumulative increase = €158,554**
- **15 year total cost = €264,364**

- *These numbers assume cost doesn't go above €100 per tonne*

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Support Scheme for Renewable Heat

SSRH Calculator					
Tier	lower limit kWh/yr	upper limit kWh/yr	Biomass c/kWh	total €/tier	kWh 920,250
1	-	300,000	5.66	16,980	**€16,980**
2	300,000	1,000,000	3.02	21,140	**€18,732**
3	1,000,000	2,400,000	0.50	7,000	
4	2,400,000	10,000,000	0.50	38,000	
5	10,000,000	50,000,000	0.37	148,000	
Annual Total				**231,120**	**€35,712**
10 year Total				**2,311,200**	**€357,116**
15 year Total				**3,466,800**	**€535,673**

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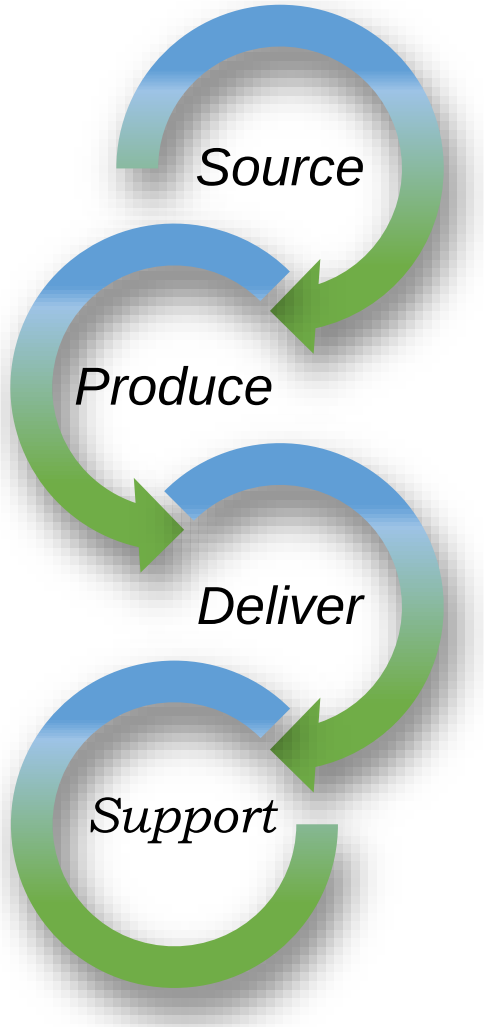
Balcas Energy

Source
- Harvested from local sustainable managed forests

Produce
- ENPlus A1 Wood Pellets & WFQA Authorised
- Quality testing during and after production
- Annual independent audits
- Fuel used in a range of boiler manufacturers

Deliver
- > 50 dedicated delivery vehicles available throughout Ireland, NI & GB
- Experienced drivers regularly attending annual internal and external training
- Equipped to deliver to a range of stores, agri-bins, self-build etc

Support
- Dedicated team to process wood pellet orders and/or enquires
- In-house engineers to provide technical support
- Remote monitoring and maintenance
- Technical Support and Key Account Manager



Balcas Energy Wood Pellets

High Efficiency

Parameters	ENPlus A1	Balcas Energy
Ash (%)	<0.7	0.3
Ash Deform Temp (°C)	>1200	1350
Net Calorific Value (kWh/t)	4600	4800
Moisture (%)	<10	7.5
Bulk Density (kg/m³)	600-750	672

Less Maintenance

- Reduced plant downtime
- Less frequent cleaning
- Reduced risk of clinker formation
- Increased plant and equipment life cycle

Economical

- Minimal disruption to existing power services upgrade
- Efficient at high water temperatures
- Improved end product

Environment

- Low emissions combined with high grade appliances and quality fuel
- Improved bird welfare

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Plant Layout

Energy Cabin & Agri Pellet Store

Wood Pellet Boiler

Storage Vessel

Modern Controls with Remote monitoring

Remote boiler monitoring

Heat Consumption (kWh)

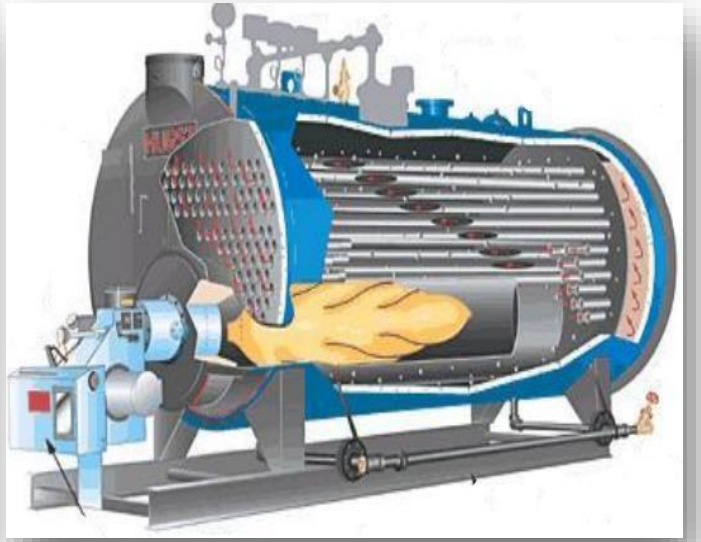
Fuel monitoring

Wood Pellet Boiler Solutions

Industrial Heat Solution:

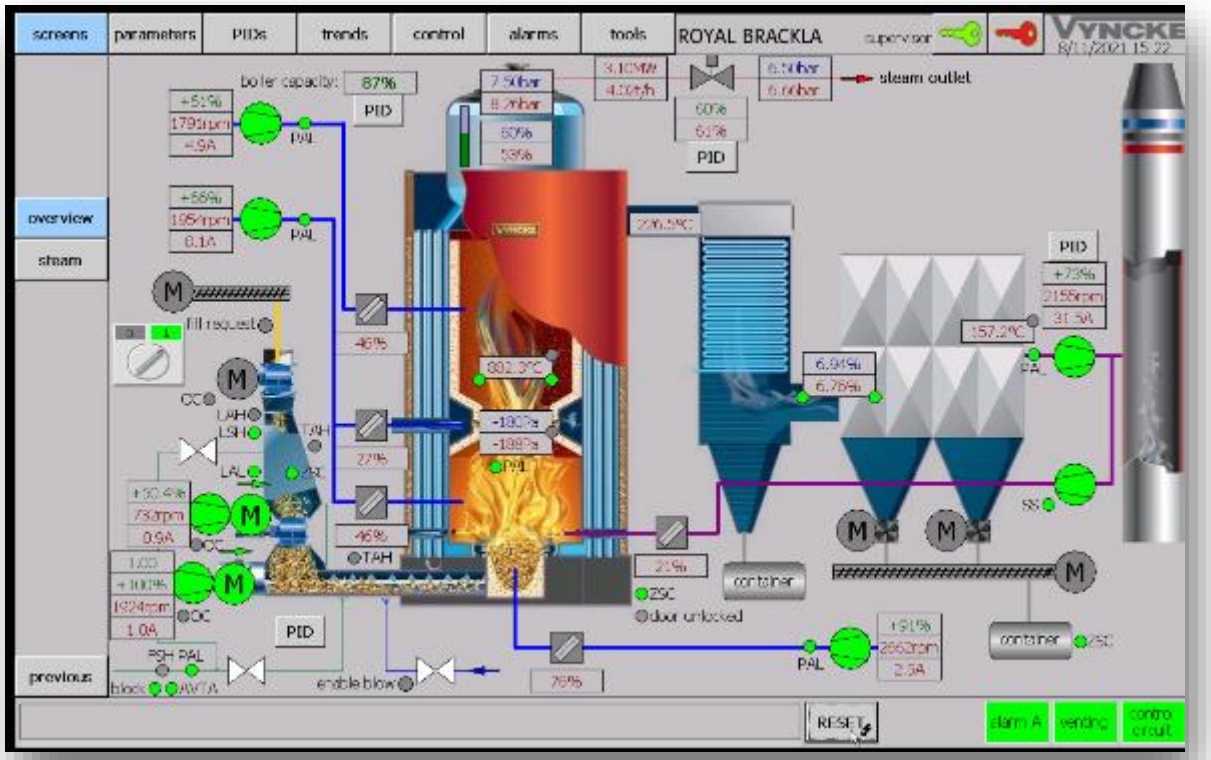
- 4MW steam installation at Tomatin Distillery, Inverness. Esco installation.

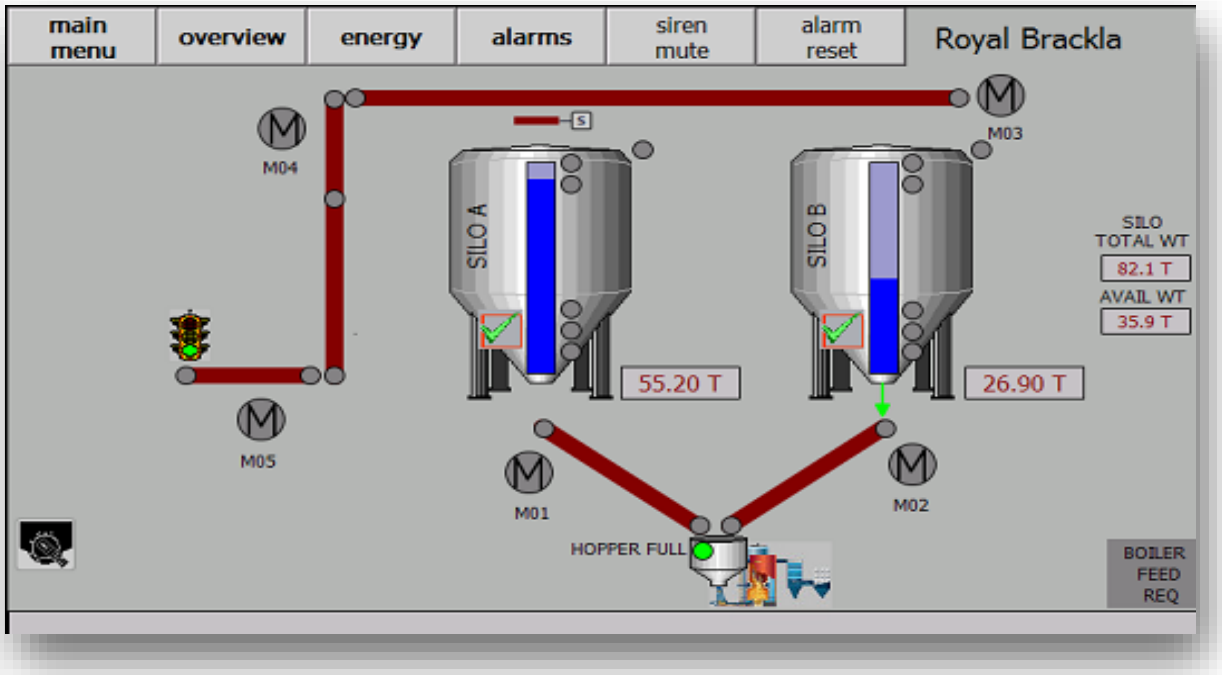
- Tried and tested technology
  - -25 years of industry experience.
  - - 100 plus proven installations throughout Europe.
- Copes like fossil fuel with variable loads up to 50MW



Modern Controls with Remote monitoring

- Balcas controlled, automated top-up - remote monitoring by our team





Options available from Balcas Energy

1. Fuel supply –we supply wood pellets as required at market price
2. Fuel Supply Contract – price agreed for a set period of time
3. Energy Supply Contract – ESCO

   Client funded / Balcas Energy funded / 3rd Party funded installation

   We work with the client and are involved in the entire process, including -

   - Selecting the best installation partner for the project
   - Boiler sizing, selection and system design
   - SSRH application
   - Boiler and infrastructure installation and commissioning
   - Fuel supply
   - Ongoing maintenance and servicing
   - Heat is billed monthly per metered KWh
   - SSRH payment goes direct to client from SEAI.

   For Balcas Energy Funded installations the Capex and Finance cost is charged monthly to the client over an agreed period of time (usually 10 years)

ESCO Model – Indicative Savings

ESCO Model - Balcas Funded (Estimate)	10 Years	300 KW Boiler
Per Annum Cost of Boiler + Finance		€ 32,000
Total Cost - 10 years		€ 320,000
10 Year Maintenance Costs		€ 20,000
Total Overhead Cost 10 years		**€ 340,000**
10 year fuel cost savings		€ 78,300
10 year Carbon Tax Savings		€ 86,484
10 year SSRH		€ 357,116
Potential Total Savings 10 Years		**€ 521,900**
NET PRESENT VALUE AFTER 10 YEARS		**€ 181,900**
Fuel Cost Savings years 11 - 15		€ 39,150
Carbon Tax savings years 11-15		€ 72,070
SSRH years 11 - 15		€178,560
Maintenance years 11 -15		€10,000
NET PRESENT VALUE AFTER 15 YEARS		**€461,680**

- Average annual savings over 10 years = €18,190
- Average annual savings over 15 years = €30,780

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Specific Benefits of an ESCO and or Fuel Supply Agreement from Balcas Energy

- Significant monetary savings on energy bills
- Protection from carbon tax increases
- Significantly reduced carbon footprint
- Enhanced Green Credentials for your business
- Protection from fossil fuel price fluctuations
- Guaranteed security of supply for the term of the contract
- Peace of mind
  - We are the largest manufacturer / supplier of wood pellets in Ireland and the UK
  - We have thousands of domestic, commercial and industrial customers across Ireland and the UK and we supply every type of heat from domestic hot water and space heating to fully integrated industrial steam solutions
  - We are the only wood pellet producer on the Island of Ireland certified EnPlusA1 from production right through to delivery
- Service and maintenance agreement in the contract
  - If the boiler isn't working and generating heat we aren't getting paid
  - Client is protected from unexpected breakdowns and system downtime

Summary

- Covid 19 has dominated society for 18 months
- The next big challenge is climate change
- Climate Action Bill published
  - Carbon emissions targets will be by sector
    - Regular reviews to ensure targets are hit
    - Every sector is obliged to play it's part
- Businesses with "end of life" fossil fuel boilers are particularly well placed to avoid future carbon taxes and benefit from SSRH funding
- Balcas Energy have a strong track record across multiple sectors in NI and GB
  - We are well placed to assist Irish businesses to reduce their carbon footprint and avoid carbon tax increases
  - Our Capex free ESCO option makes wood pellet heat viable for all

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future friendly fuel