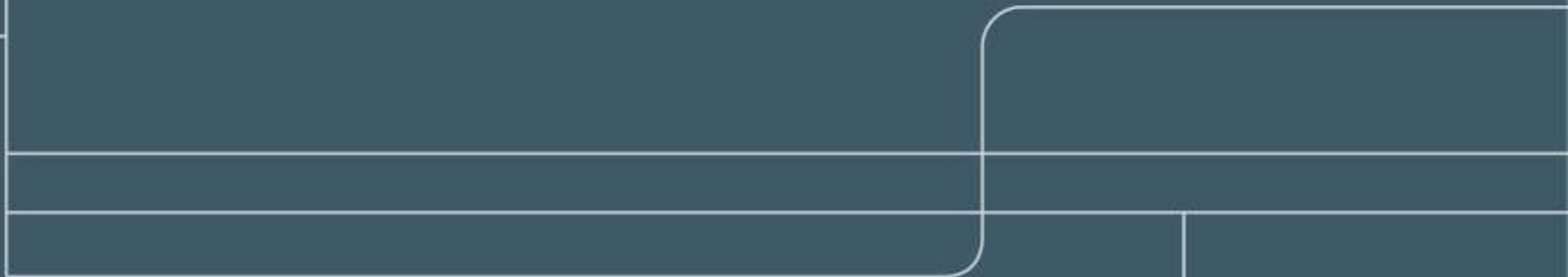




Imperative Energy

THE TRUSTED NAME IN BIOENERGY SOLUTIONS

Imperative Energy: Clean Tech Start Up Case Study



Connect to the biomass pipeline



PRESENTATION CONTENTS

- **The Big Picture**
- Company Overview
- Case Studies
- Future Projects
- Policy Wish list

THE BIG PICTURE

- The transition from fossil fuels to renewable / clean energy technologies is a global imperative, driven by underlying fundamental issues:
 - Global energy demand
 - Fossil fuel prices
 - Security of supply
 - Climate Change



OIL PRICES

- So, have oil prices halved or have they doubled???
- Halved in 12 months to August '09



OIL PRICES

- Doubled in 5 years to November '09



WHAT IS DRIVING THE NEED

- Regulatory imperative
 - *Renewable Energy is central to aggressive Government targets for reduction in Carbon emissions*
- Economic imperative
 - *Biomass is far cheaper than oil, and more secure in its supply, over the medium term*
- Last year, investment in **clean energy** reached record levels of \$148 billion - 60% higher than in 2007. According to *New Energy Finance*, investment between now and 2030 is expected to reach \$450 billion a year.



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BRIEF HISTORY



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- Founded in September 2007
- Offices in Maynooth, Ireland and London, UK (new Manchester office opening next month)
- Largest installations: 1.6 MW Downpatrick; 1.2 MW Kent.
- Currently working on >10MW steam plants and biomass CHP plants in UK and Ireland
- Strategically aligned with leading sector partners to extend capabilities
- August 2009 – complete €30m equity finance package
- Finalising €70m debt finance package with specialist European bank

EQUITY PARTNER



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€1.8 billion of committed funds



€150 million committed fund to invest in renewable energy assets and companies



€30 million committed fund to invest in Biomass projects

FUEL SUPPLY PARTNER

- Green Belt Ltd
- Deep Expertise in forest management and SCM
- Developing customer focused delivery logistics
- Secured access to sufficient quantity of biomass to supply 135MW of capacity



ENGINEERING PARTNER



- Exclusive partnership with BIOS of Austria
- Leading international engineering consultancy
- Specialise in design and implementation of biomass energy systems
- Completed over 20 biomass CHP plants using range of technologies in varied applications
- Our partner in assessment, design and project management for biomass CHP



PRODUCT/SERVICE OFFERING



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1. Turnkey solution provider for biomass heating & biomass CHP
 - Design, implementation, project management and maintenance
 - Proven technology and flexible customised design
2. Energy Supply Company (ESCO)
 - ESCO means we finance, build and operate entire system
 - Customer only pays for metered heat on a long term contract
 - Eliminates the need for capital cost and produces lower energy costs and carbon emissions
 - Imperative Energy assumes all the operational risk
 - Only interested in biomass led ESCO, preferably to single client



- Over 70 years experience in manufacturing biomass energy systems
- Market leader in Switzerland and growing presence in Europe, Asia and America
- Employ over 200 people and complete all manufacturing in house using latest technology and innovation
- ISO 9001 certified, CE marked and PED compliant
- Biomass boilers up to 25MW rated output
- Can burn variety of different types of biomass
- Can produce hot water, steam or thermal oil
- Customisable fuel handling and control systems for maximum performance
- Proven CHP reference plants for ORC & steam turbine

Schmid AG



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- Unlike most UK based agents for European product manufacturers:
- Our company and processes are deeply imbedded into Schmid AG
- We bring full weight of Schmid AGs design team to each project
- Financial security of credit worthy supplier
- Every system designed for specific project
- **Strategic partnership** – not agency



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Youghal Leisure Centre



- 360kW boiler
- Fully containerised
- 800t woodchip per annum



DOWNSHIRE HOSPITAL



Boiler
Fuel
Moisture
Grate
Medium

UTSK 1600kW
woodpellets
10%
underfeed stoker
hot water



INTERLAKKEN DISTRICT HEATING



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CHILEAN SAWMILL



Boilers
Fuel
Moisture
Grate
Fuel transport
Medium

2 x UTSR 20MW
wood residues
62%
moving grate
chain conveyors
hot water



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IEL PIPELINE

- Primary activity in the range 150kW – 6MW
 - Supply & Install or ESCO
 - Increasing proportion will be CHP
 - Commercial and Industrial only
 - Currently over 50MWth in the pipeline
- Next Installation: Dáil Eireann
- Number of larger project (IEL as project developer, EPC contract by others)
 - 10MWe CHP, UK (hosted by large thermal energy offtaker);
 - 20MWe CHP, Ireland (large thermal energy demand)
- Smaller number of green field, self developed projects
 - E.g. BioSpark

Green Field Projects

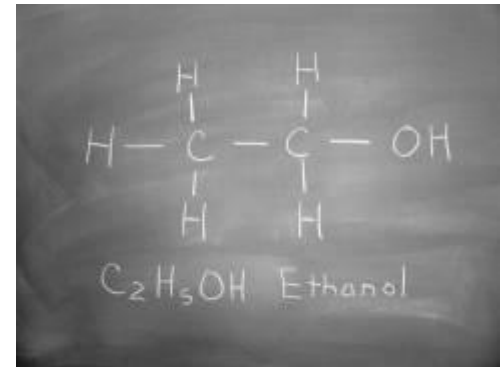


- The BioSpark development is to be located at a 22-acre site close to the town of Claremorris incorporating:
 - 20,000 tonne per annum bio-processing facility, utilising next generation technologies and techniques for the conversion of organic material such as straw and wood biomass into multiple high value bio-based products such as ethanol, lactic acid, lignin, methane and hydrogen
 - state-of-the-art laboratory facilities for bio-processing research and innovation
 - 60,000 tonne per annum wood pellet production facility, which will be the largest and most advanced on the island of Ireland
 - 20MWth/5MWe CHP plant which will be fired on biomass and connected to the national grid via a sub-station in close proximity to the site



The Benefits

- 120 jobs during construction
- 80 full-time positions post-construction – mostly high skilled, engineering roles engaged in R&D, manufacturing and operations management
- 100 upstream jobs in harvesting, transportation and supply chain management
- a further potential 120 high value jobs within three years of its completion
- €18m yearly spend on locally sourced goods and services
- significant Intellectual Property (IP) relating to process enhancements as well as new product developments, which will be primarily coordinated through the Energy Research Centre at NUI Galway
- significant displacement of imported fossil fuels and fossil fuel derived products
- ready availability of green energy to the Claremorris area to support further heating/cooling for further inward investment





CONTENTS

- Company Overview
- Schmid Biomass Boilers
- Case Study Overviews
- Combined Heat & Power
- Future Projects
- **Policy Wish list**



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IRELAND'S OPPORTUNITY

- Biomass yields in Ireland higher than elsewhere in Europe
- Agricultural heritage
- Low level of forest cover
- Bioenergy is more employment intensive than any other form of renewable energy

How to maximise value in terms of jobs?



STIMULATING ECONOMIC ACTIVITY



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- Immediate **ZERO COST** policy initiatives
 - direct all public bodies to procure Renewable Heat
 - switch future gas network distribution to water (District Heating)
- **MARKET ACCESS, NOT TAX PAYER CAPITAL GRANTS**
- Benefits:
 - Reduce energy imports & carbon emissions
 - Generate market pull for biomass (forestry and energy crops)
 - Stimulate rural employment
 - Strengthen Irish bioenergy companies for export markets



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