Lahti to London: Finnish SRF Gasification technology advances further across Europe

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Biossence

- Develops renewable energy assets using advanced thermal conversion (gasification) technology in the UK, Germany, Spain and Malaysia
- We are technology neutral, target technology based on market conditions.
- 2 sites consented with more than 500,000 tonnes pa of biomass/waste capacity for the generation of renewable energy using advanced thermal conversion
- Pioneering, next generation advanced thermal technology in the UK, supported by the London Waste and Recycling Board, DEFRA and DECC Government departments
- Founded in 2006 by Network Economy AG, a European investment and management organisation.

Project background

Year	Event
2006	• Novera Energy is awarded planning permission for a SRF gasification plant processing 98,000 tpa using a steam cycle to generate heat and power. • Environmental permit obtained
2009	• Project from Novera Energy acquired by Biossence • Planning application for SRF gasification technology using gas engines submitted
2010	• Award of planning permission for SRF gasification using gas engines. • Award of 25 year fuel contract • First UK company to be awarded 2 ROC pre-accreditation by Ofgem • Environmental permit obtained • £8.9 million loan to develop gasification project from LWARB awarded
2011	• Biossence conducts technology evaluation: new technology selected • Mayor of London, Boris Johnson “opens” site
2012	• Pre-engineering complete and Planning application for new technology submitted.

Technology criteria

No	Parameter
1	High energy efficiency (value over conventional EfW)
2	Acceptable environmental performance (effluent/ash disposal)
3	Reference plant at scale required on SRF
4	Workable CAPEX
5	Sufficient track record and testing on major components on SRF
6	Technical robust design for SRF
7	Deliverable within project timeframe

Project overview: present status

- 100 ktpa fully consented & permitted site for previous technology
  - Re-securing 15 (+5) year fuel supply contract with Shanks backed by
  - 25-year PFI for processing of municipal waste from ELWA (4 East London boroughs)
  - Freehold of site purchased from Ford Motor Co.
  - 2 ROCs pre-accredited
  - Grid connection offer to local existing substation.
- Planning application submitted for Lahti technology
  - Increase processing capacity to 130 ktpa
  - Improve plant economics and deliverability
  - Consultation with local authority very positive
  - Local residents very positive

East London Waste Authority – Fuel

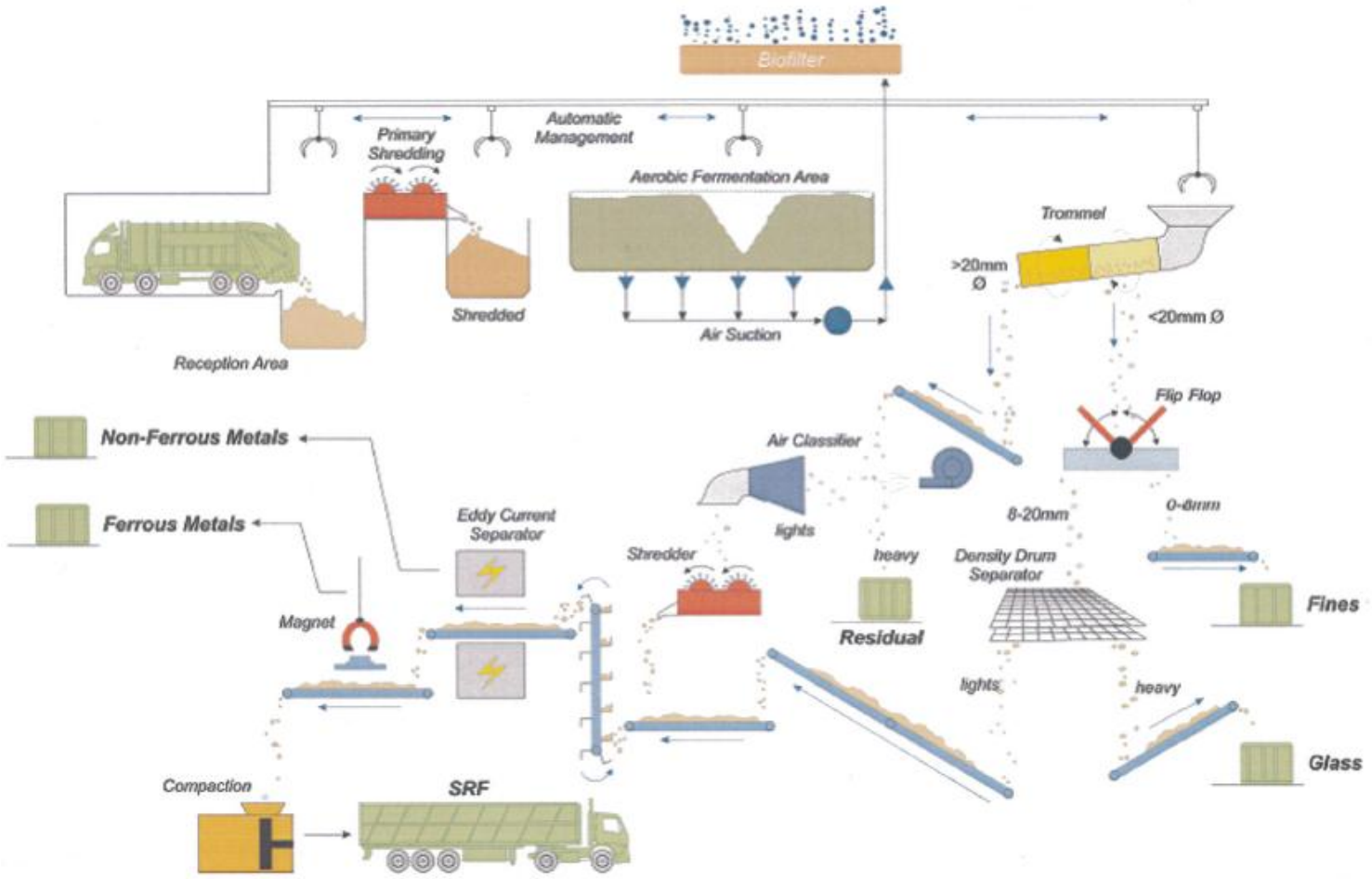
- ECODECO process
- 360,000 tpa to two MBT facilities
- 27% recycling, 50% cement SRF grade, 20% coarse SRF grade, 3% landfill

- 14 day residence time for drying at 50˚C, waste coming in at 40% moisture
- Shredders for ripping MSW bags to 250 kg/sqm
- Coarse shredder to 300m
- Ferrous separator and eddy currents

Fine grade SRF

- Fine shredder to 40mm and dried to 15% moisture
- Particle separator (air knife)
- 6mm screen to extract organic fines
- 800 tpw Coarse and 1000 tpw fine SRF

MBT Process


Biofilter
Automatic Management
Primary Shredding
Aerobic Fermentation Area
Trommel
>20mm Ø
<20mm Ø
Shredded
Air Suction
Reception Area
Flip Flop
Air Classifier
Non-Ferrous Metals
Ferrous Metals
Eddy Current Separator
lights
8-20mm
0-8mm
Shredder
heavy
Density Drum Separator
Fines
Magnet
Residual
lights
heavy
Glass
Compaction
SRF

ELWA – MBT facility Jenkins Lane

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Site: Fuel and plant context

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Site: Visual Impact

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East London Gasification Plant Design Data

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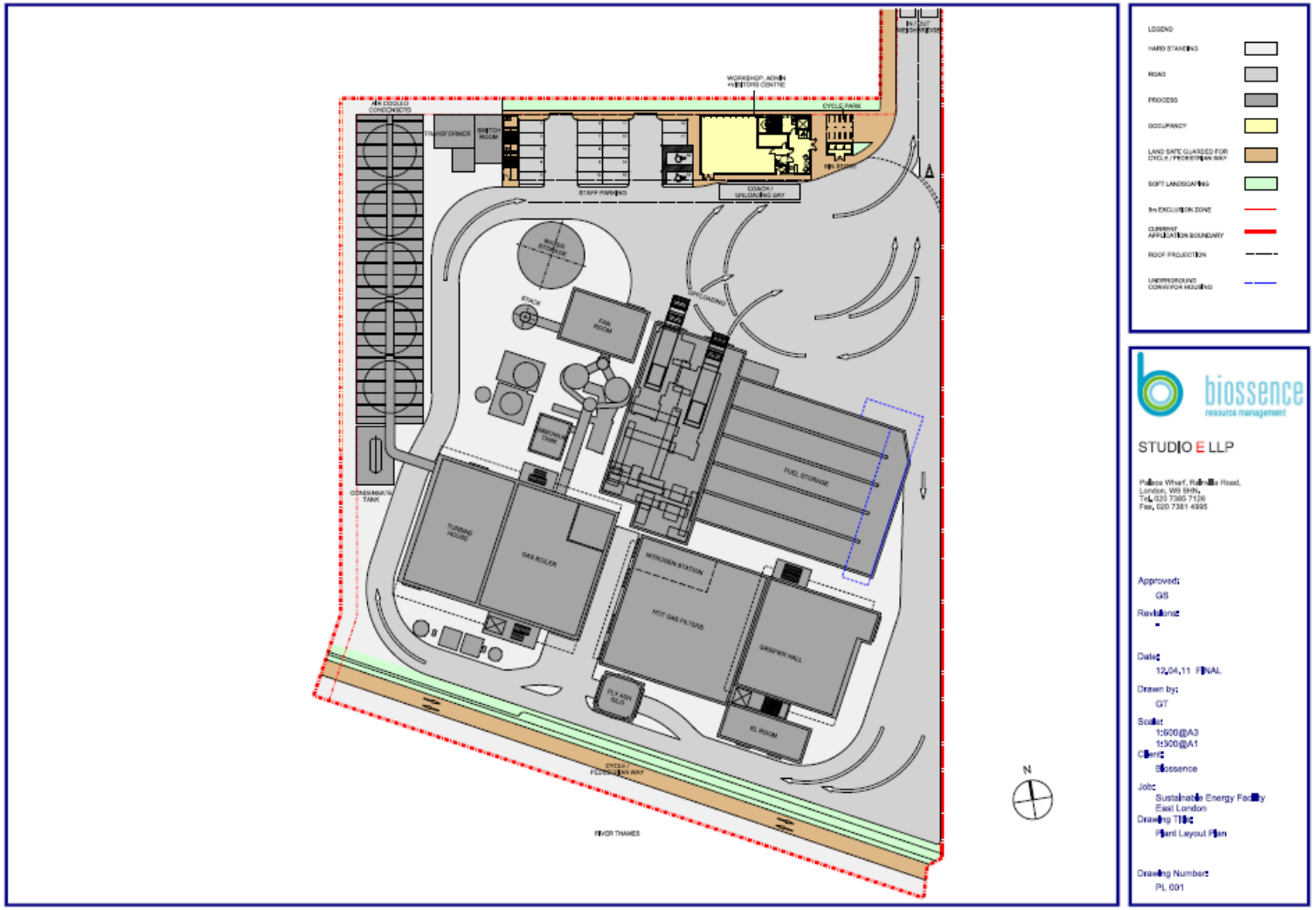
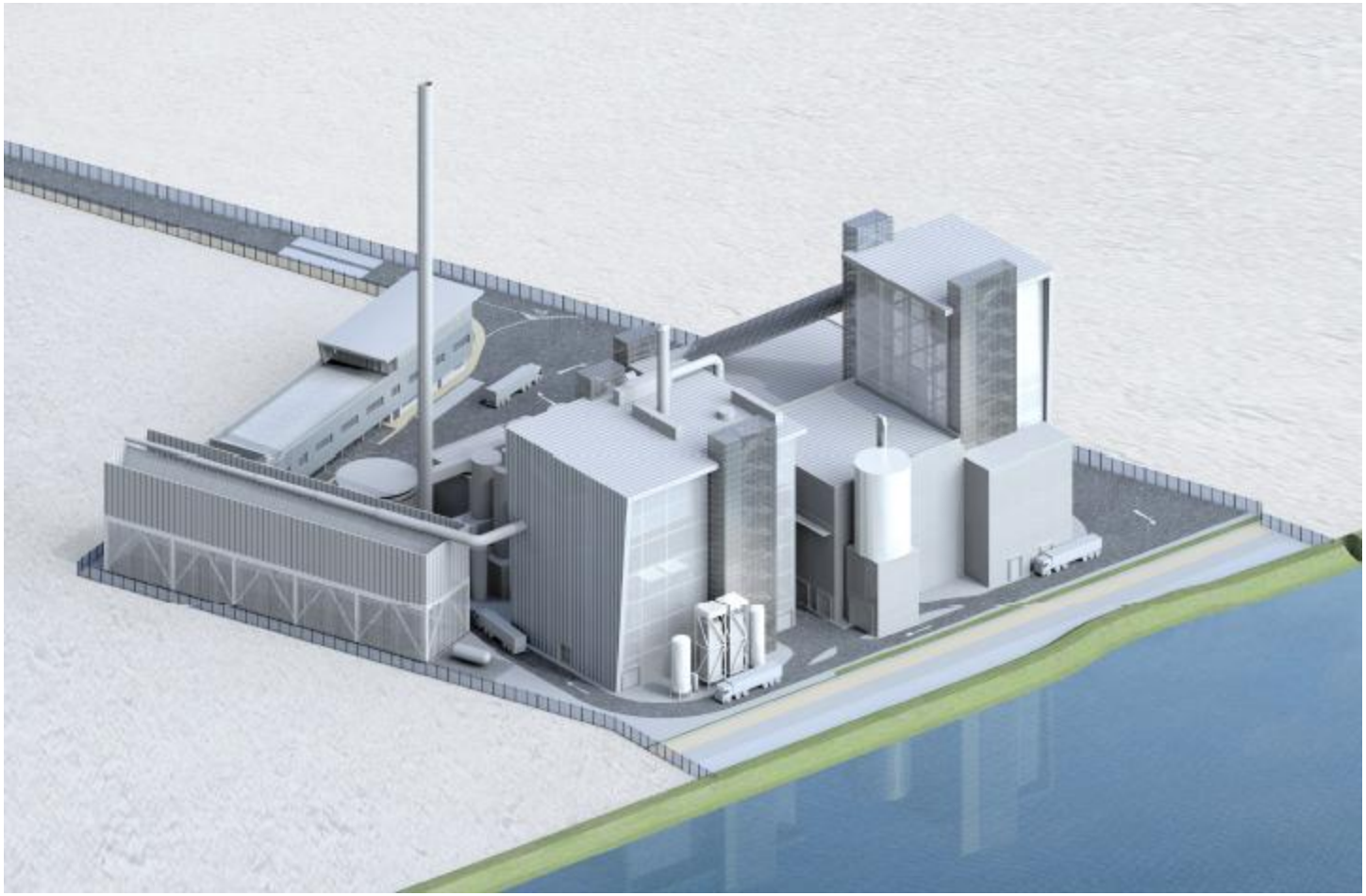
Parameter	Value	Units
Chemical fuel energy input	78.5	MWth
Fuel gas (latent and chemical energy)	68.6 (5.7 + 62.9)	MWth
Feedwater (inc heat energy from HRU)	20.1 (13.6 + 6.5)	MWth
Turbine shaft power	27	MW
Generation Gross	24.9, Heat export TBC	MWe
Parasitic load	3.5	MWe
Generation Net	21.4	MWe
Gross electrical efficiency	31.7	%
Net electrical efficiency	27.2	%

ELSEF Layout

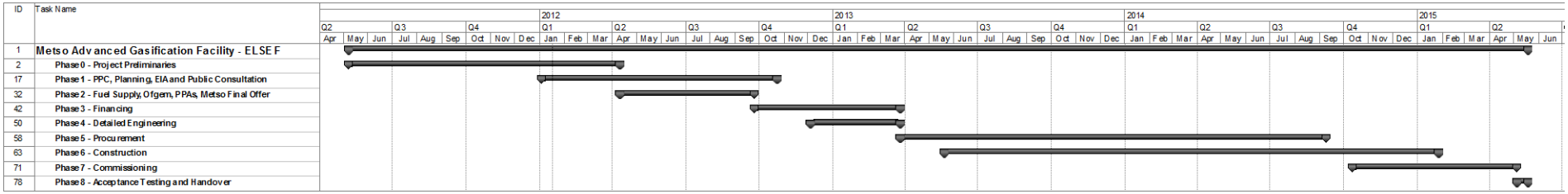


ELSEF



ELSEF

Project Timetable



Schedule	Projected dates
Planning submission	Submitted
Planning decision	30/10/2012
Financing complete	25/03/2013
EPC period starts	30/03/2013
Construction complete	26/01/2015
Commissioning complete	04/05/2015
Handover	18/05/2015

Thank you

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