

Dordtech is partner and overall contractor

Responsible for:

- Concept**
- Engineering**
- Planning**
- Construction and realization**
- Commissioning**
- Operations**
- Maintenance**

Skills of **Dordtech**

- Engineering and projectmanagement of sustainable energy production systems
- Producer of CHP units for alternative fuels
- Producer of gastreatment sets
- Cooperative partner for decentral power plants like biogas- and gasification plants
- Cooperative partner for using heat in driers, orc's and absorption coolers

In the last few years **Dordtech became
Overall contractor of green powerplants**

Vapour Processing System Total Lyon



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Bio oil (animal fat) CHP head office TNT



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Biogas installation Belgium 2x 1MWe biogas and 1MWe dual fuel bio-oil CHP



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Ecocycle is a leading energy from biomass and combined heat & power plant developer, utilizing operationally proven biomass gasification technology.



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General data Ecocycle gasification plant Usk



• Design/layout	Ecocycle/Dordtech
• Contractor	Dordtech
• Commissioning:	June/July 2014
• Fuel input:	Woodchips TS 85%
• Fuel consumption	48.000 tons/y
• Power output:	6.300 kWe
• Heat output	5.000 kWth
• Operational hours/year	7.500

Gasification plant in Usk (Wales)

Woodchips as fuel – power 6,3 MWe and 5 MWth



With exception of delivering the gasifier (Eco-Cycle/Torftech) **Dordtech provided: Engineering and construction; all piping and electrical connections; Over-All control technology of all major components**

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Gasification is complex dedicated issues are:

Fuel treatment

→ transport – cleaning – drying – storage – dosage

Syngas treatment

→ cleaning – cooling – ashcollecting

Syngas distribution

→ gasbuffer – emergency flare – CHP units

Heat distribution

→ boiler – dryer – absorption chiller – emergency coolers

**Woodchips for the gasifier need to have a TS of around 85%.
Heat from the CHP can be used for drying the feedstock**



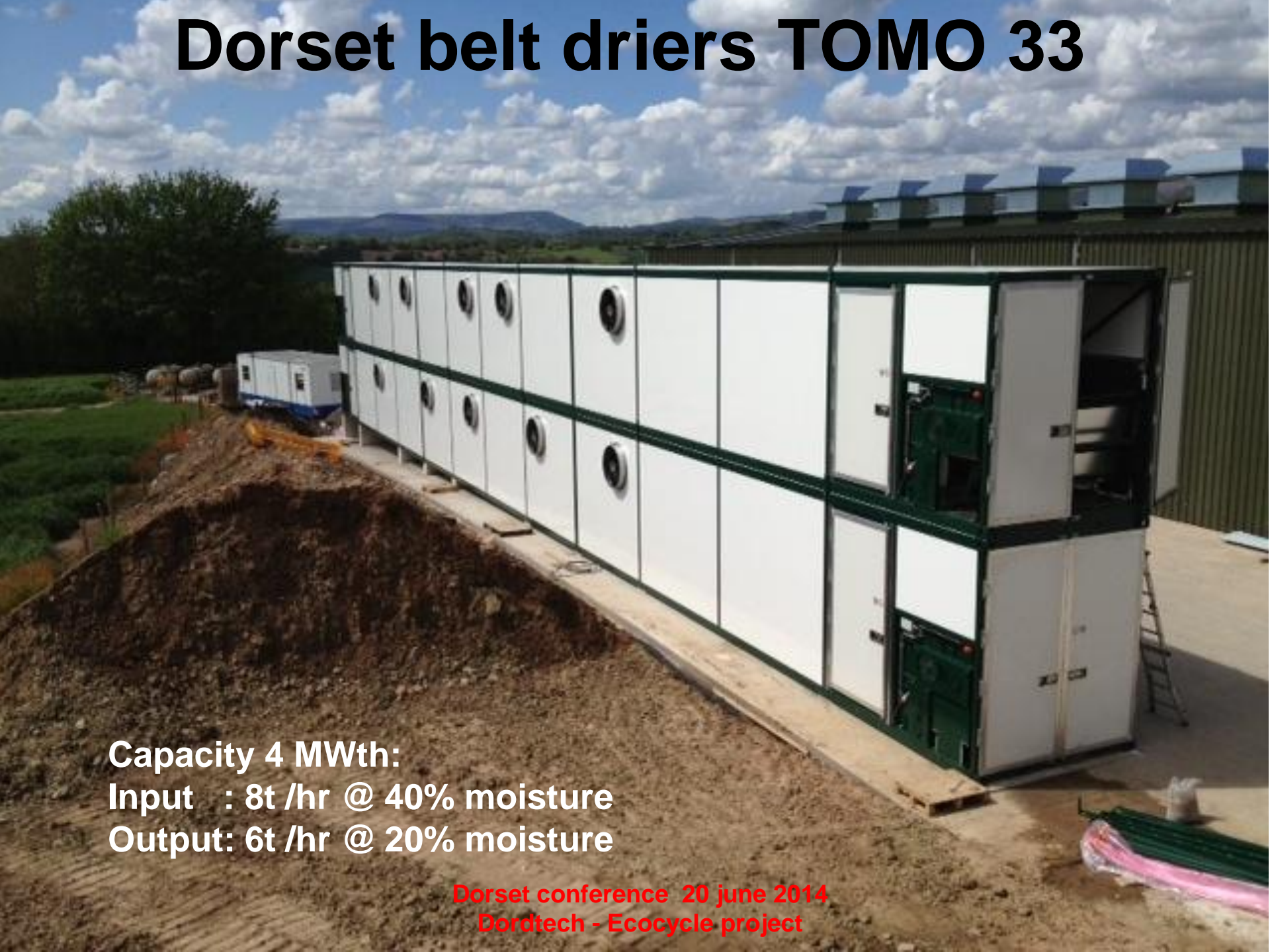
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Storage & dosing of woodchips



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Dorset belt driers TOMO 33



Capacity 4 MWth:

Input : 8t /hr @ 40% moisture

Output: 6t /hr @ 20% moisture

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**Dorset driers are simple, robust and
excellent for drying biomass**



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A screw press and elevator conveys the dried woodchips to the fuel hopper



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Fuel hoppers and dosing screws



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Propane is used for start up phase, heating up the gasifier



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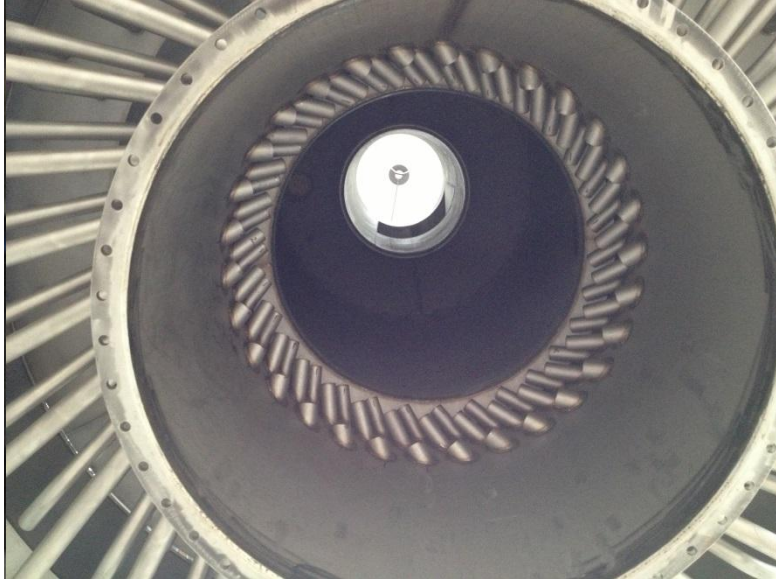


**Woodchips are gasified
In the Torftech gasifier at
aproximately 700°C with
minimum O₂.**

**The fuel is separated in
syngas and 3 – 5 % of ash**

Syngas fuel variability

Comp.	Min	max	
H ₂	8,6	61,9	vol%
CO	22,3	55,4	vol%
CH ₄	0	8,2	vol%
CO ₂	1,6	30,0	vol%
N ₂ + air	0,2	49,3	vol%
H ₂ O	0	39,8	vol%
H ₂ /CO	0,33	2,36	vol%
LHV	5,02	12,57	vol%



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The produced Syngas needs to be cleaned and cooled



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WESP = Wet ElectroStatic Precipitator for removal of solid particles and liquid droplets from the gas stream



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Heat from the CHP units is used for the absorption chiller to produce water of 6°C to cool the syngas



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**To create a balanced system / constant gas flow
a gasbuffer of 200 m³ is installed**



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**In emergency cases, or for Off – Spec
syngases a flare is installed**



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Before (clean) Syngas is brought into the CHP unit it needs to have a constant pressure and temperature

Gastrain and blower isle



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DR – Guascor adapted gas engines are de-rated to 700 kWe on syngas (LHV 4,8 – 7 MJ/Nm³)



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Housing for 9 CHP units



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**The gensets are located in dedicated
sound – isolated canopees**



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Chimneys and heat take – off



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**All heat can be dump cooled
in case of emergency**



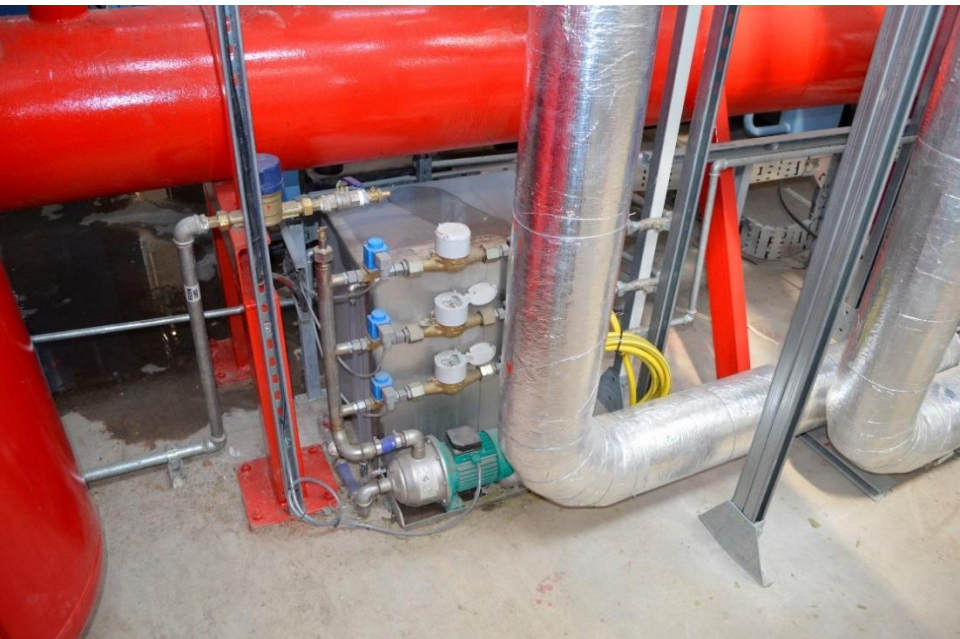
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Pipe work and heat transferr



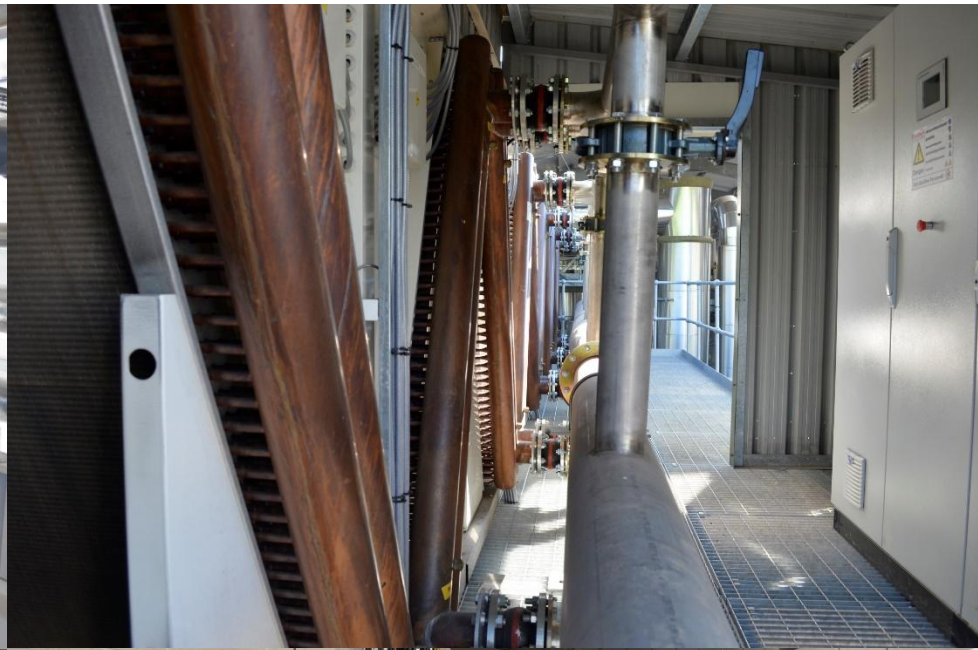
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And pipe work and heat transferr



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All the electrical connections



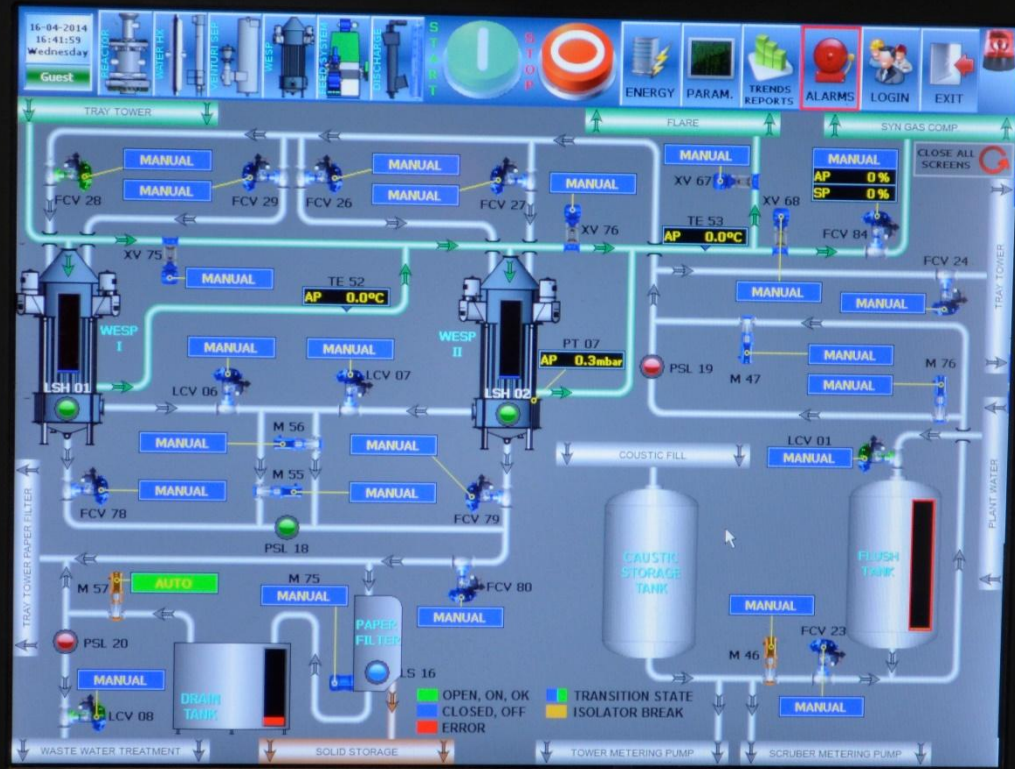
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All the electrical wiring



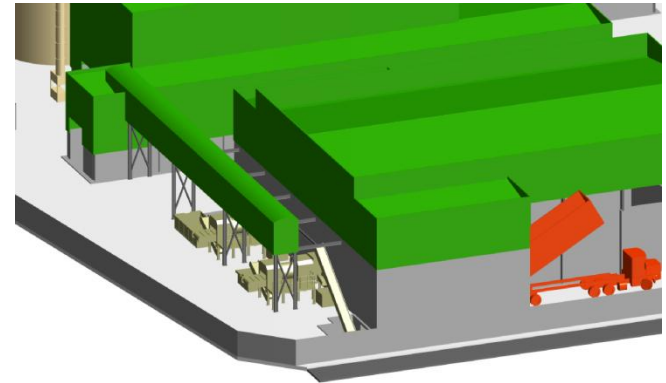
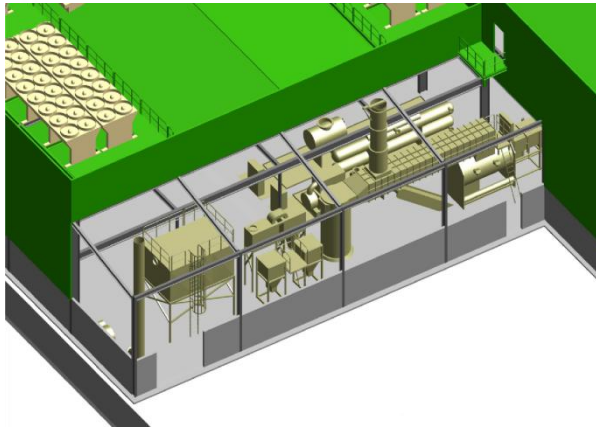
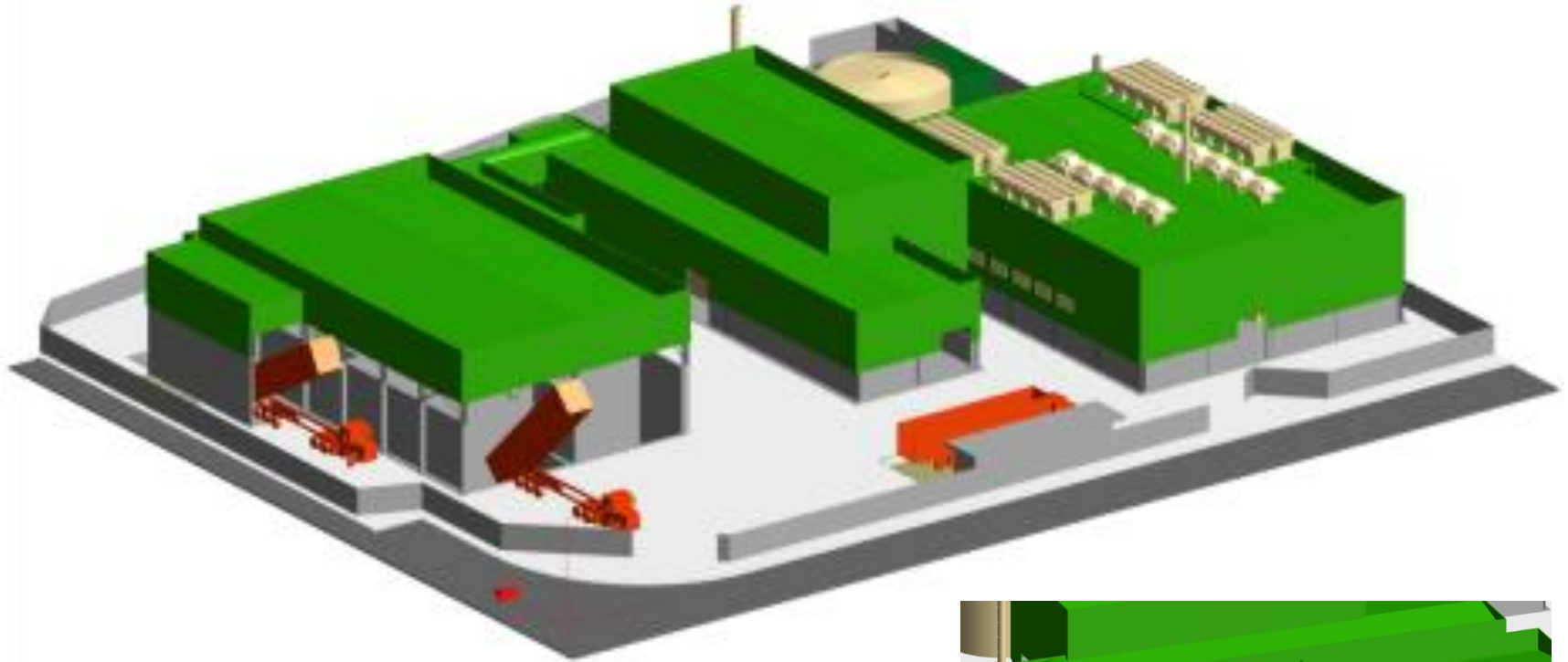
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Control technology



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Next project 2015 Exeter 10 Mwe engines & ORC \ WID



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