# Kamal Kalsi

## Waste Gasification Demonstration Project

# Sustainable Energy Centre

Waste Gasification Demonstration Project


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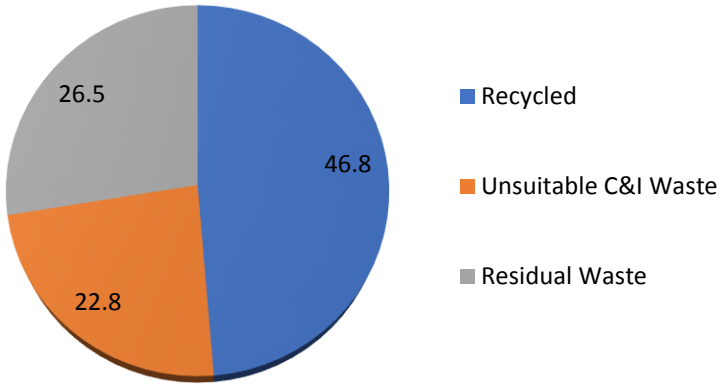
Dr. Kamal Kalsi

# Overview

- In 2012 ETI launched Phase 1 of the Waste Gasification project, looking to assist the commercialization of more effective, small scale (5-20MWe) conversion technologies for waste and biomass.
- The waste problem is a global one. The UK currently sends more than 20 million tonnes of residual waste to landfill.
- Biomass will also play a significant role in meeting future GHG reduction targets.
- There is high demand for captive combined heat and power – especially baseload.
- Current technology options are simply too inflexible and geared towards waste destruction – not resource recovery.
- The ETI's approach has allowed a risk-managed approach to the deployment of a commercial demonstrator.

**UK Forecasted Waste in 2020**
**millions of tonnes (Tolvik 2014)**

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# The Solution

- The demand for a flexible, small-scale and highly efficient waste gasification system is globally accepted and understood.
- Gasification technology as implemented by the project allows high efficiency energy generation from end-of-life waste derived fuels (after all recyclates have been recovered) and low grade biomass at small scale (1.5MWe upwards).
- The market seeks embedded generation (into new and existing infrastructure) where heat and power can be utilized most effectively.
- An effective pathway to 2$^{nd}$ generation fuel synthesis from waste and biomass is also a critical part of long term carbon reduction.

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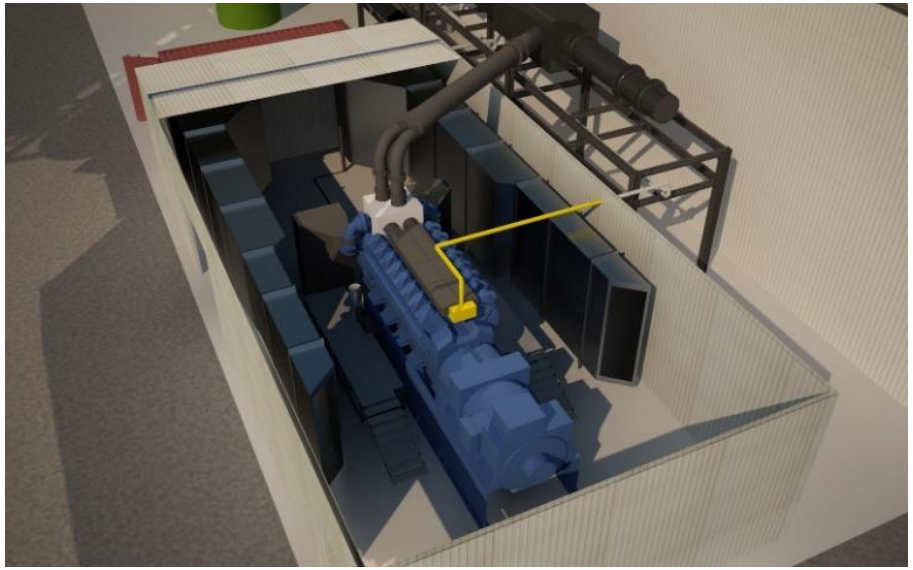
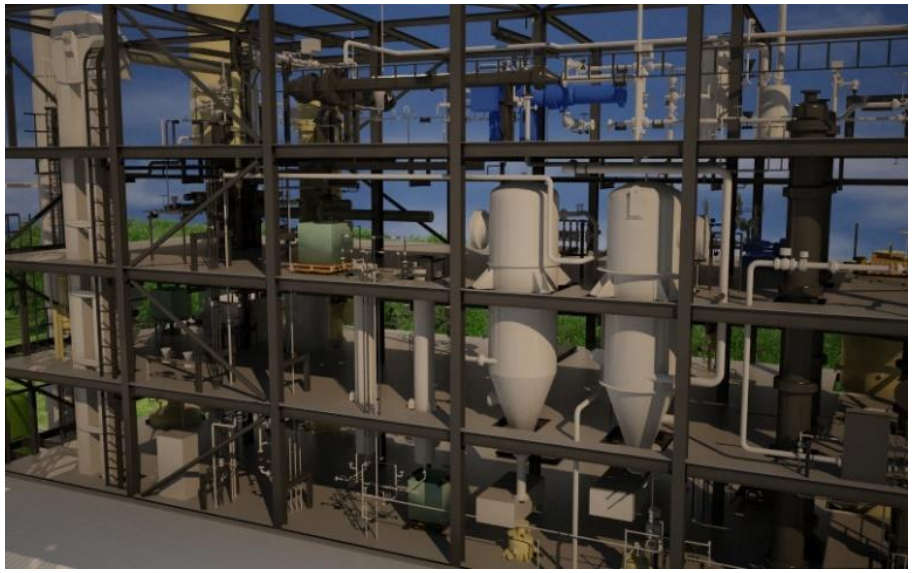
# The Sustainable Energy Centre

- SEC is a flagship commercial demonstrator project currently under construction in the UK Midlands.
- The £11.5m project will be operational by mid-2018.
- Uses a robust pressurised fluidised bed technology with a high temperature treatment to produce a consistently high quality, hydrogen-rich syngas.
- Power will be generated using a specially built syngas engine.
- Will produce ~1.5MWe net power at high efficiency from a variety of waste based feedstocks.
- Project includes a unique syngas testing facility.
- The project's unique technology (IP is co-owned by the ETI) revolutionises the efficiency of 2nd generation fuel synthesis (as demonstrated at our pilot facility) and will be demonstrated at the SEC site.





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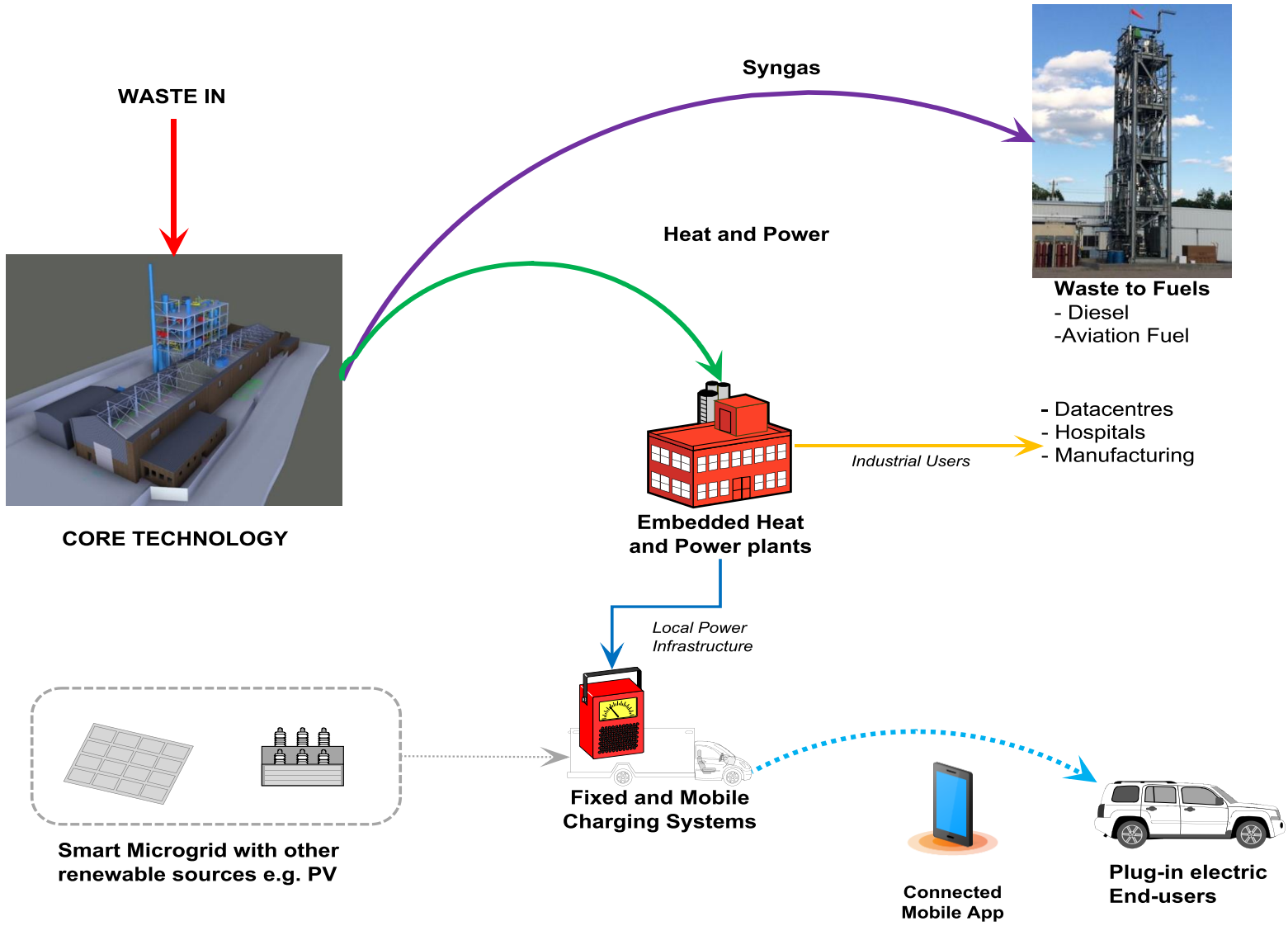
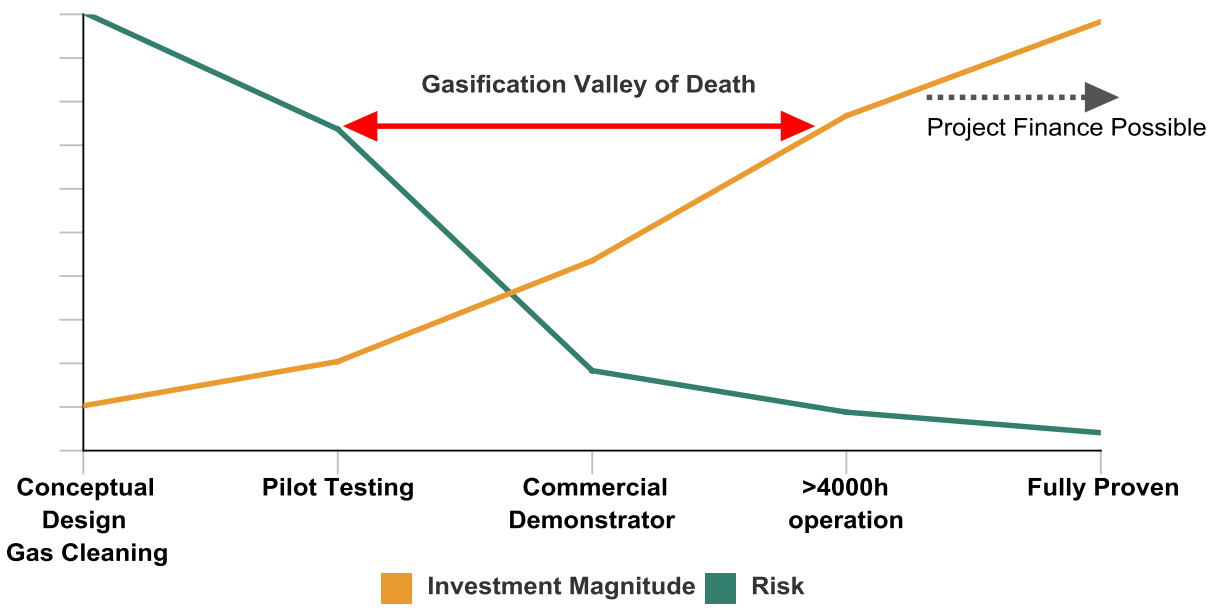
# A Future Proof Solution



# The ETI Effect

- The project has undergone 2 phases with the ETI and a very long incubation period meaning that risk mitigation – both technical and commercial has been very rigorous.
- Projects using waste gasification have been stuck in the ‘valley of death’. ETI has been instrumental in providing strategic investment to overcome this.
- Due to complexities related to gas cleaning, management of ash and high process costs, commercialisation of such technologies has been challenging – even where technical challenges have been resolved.
- ETI’s approach since Phase 1 has been to bring extensive rigour in evaluating technology and commercial risk, unlike all other projects of this type built to date. This is the critical success factor for the project.
- ETI has also brought rigorous operating processes to the delivery of the project.

## Commercialisation Timeline

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