

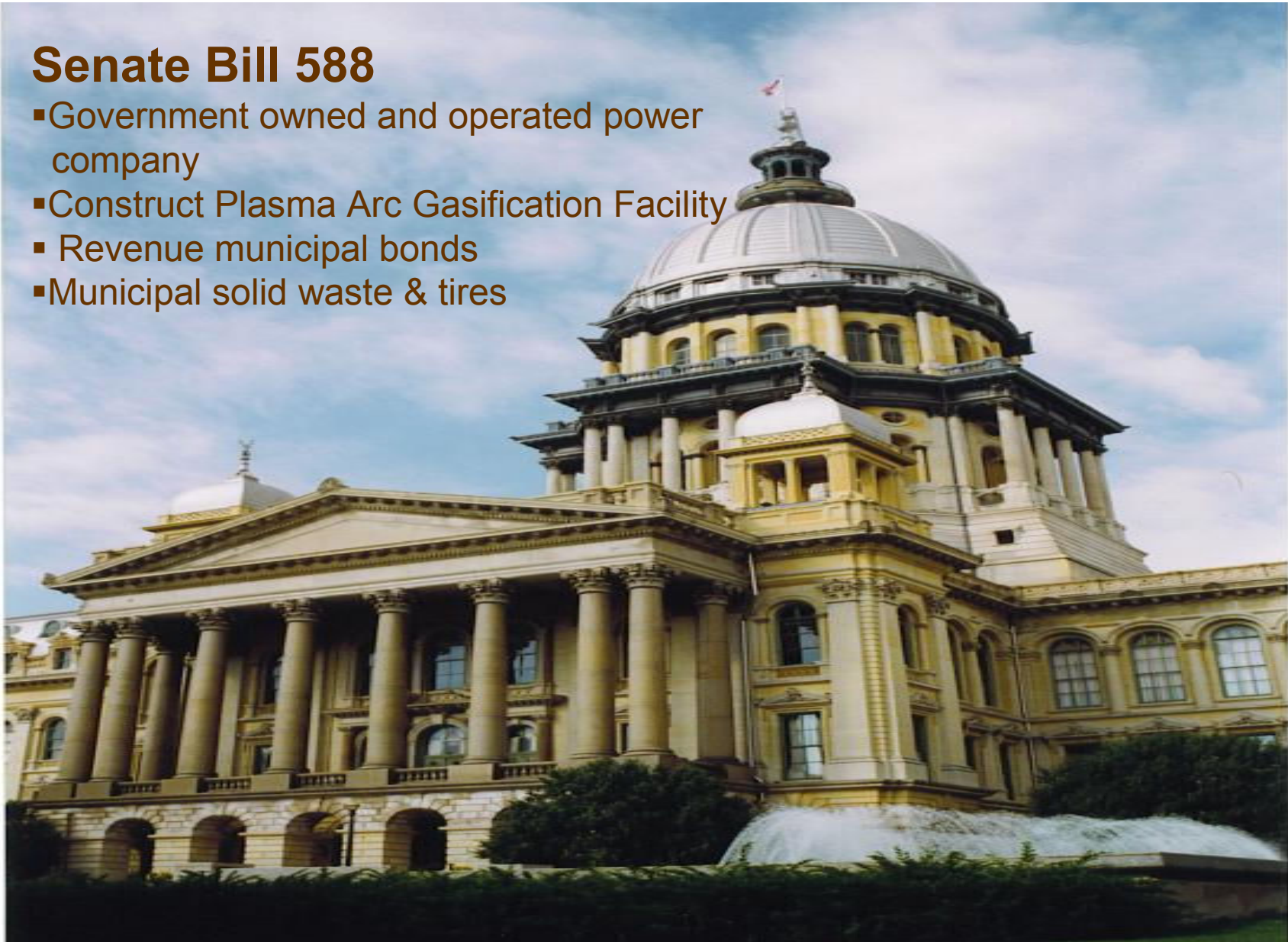
ENVIRONMENTAL LAW & POLICY CENTER

Protecting the Midwest's Environment and Natural Heritage

Melville Nickerson
Staff Attorney

Senate Bill 588

- Government owned and operated power company
- Construct Plasma Arc Gasification Facility
- Revenue municipal bonds
- Municipal solid waste & tires



Plasma Arc Gasification Company:

Alsip

Calumet Park

Blue Island

Unemployment: 10.80%
Median Income: \$43,407
Home Sales: \$180K in 2007
\$90 in 2010

Robbins

Midlothian

Posen



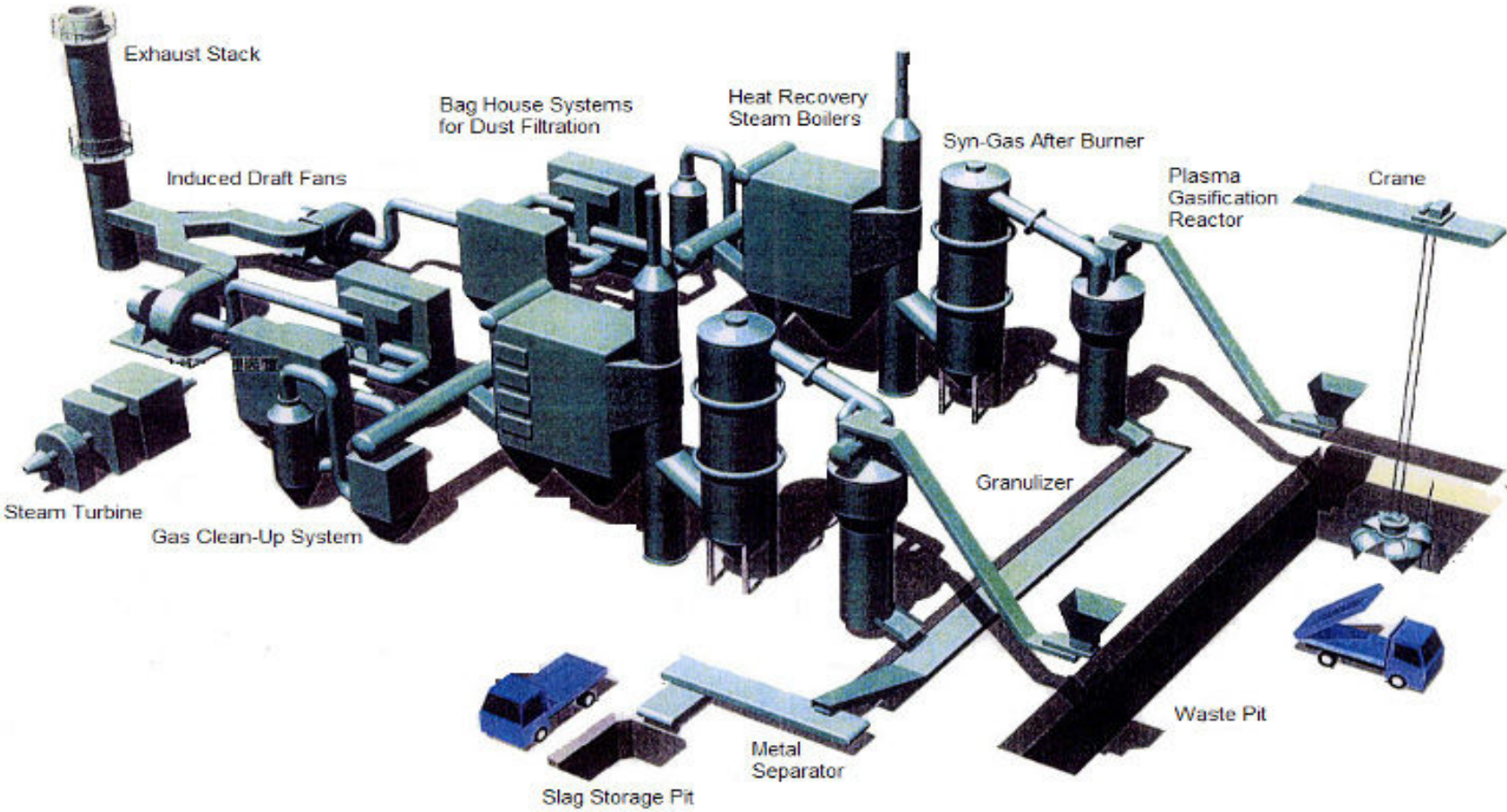
Risky Investment

- Operational Problems
- Pollution
- Energy Production



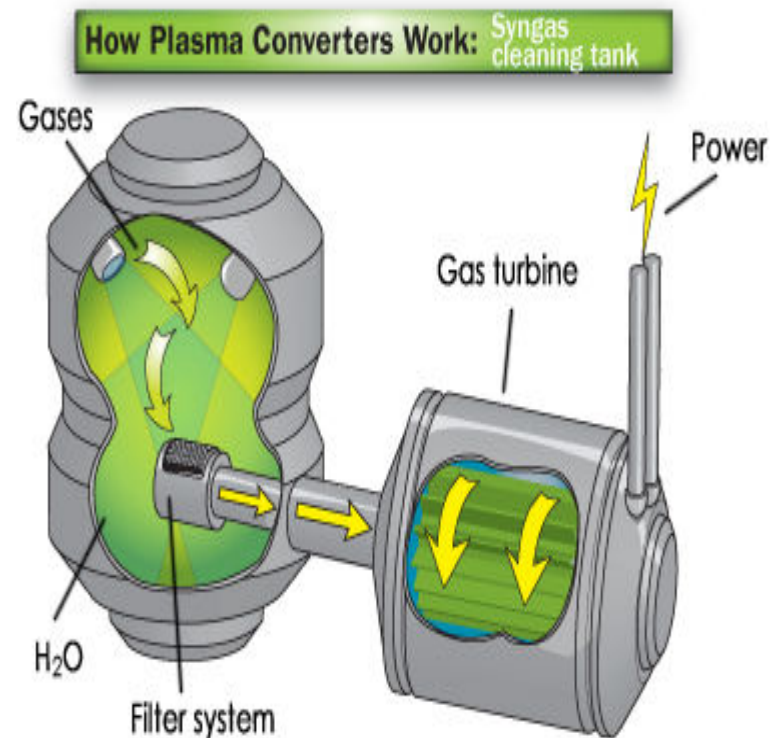
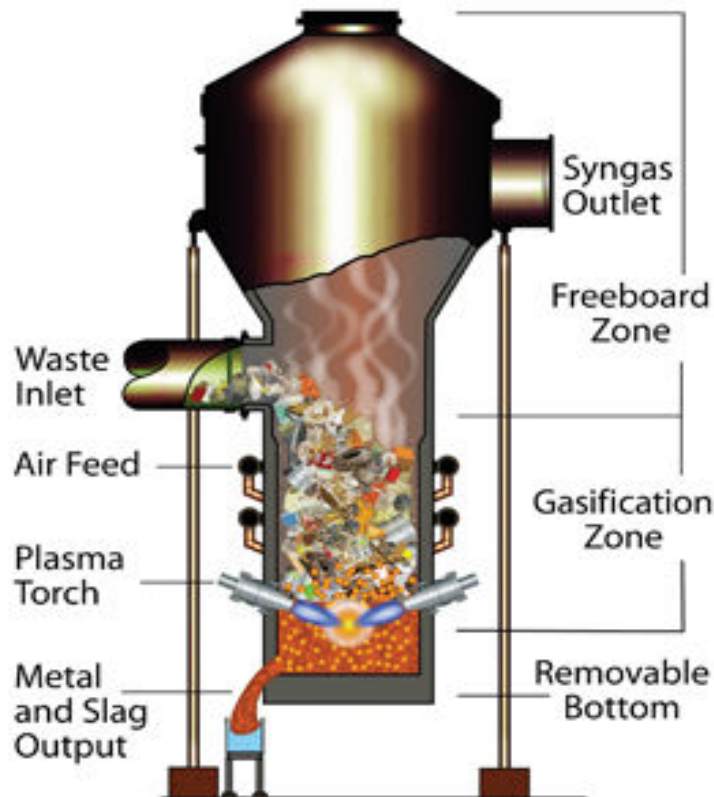
The plasma-heating unit creates the plasma arc used to turn trash into gas and rock-like material.

Plasma arc gasification facilities are energy intensive requiring the use of energy at various stages from start to finish



Plasma Arc Gasification Technology:

- Torches heat the air causing thermal decomposition
- Thermal decomposition creates synthetic gas
- The synthetic gas is processed to reduce harmful pollutants
- The gas is used to generate steam
- The steam generates electricity

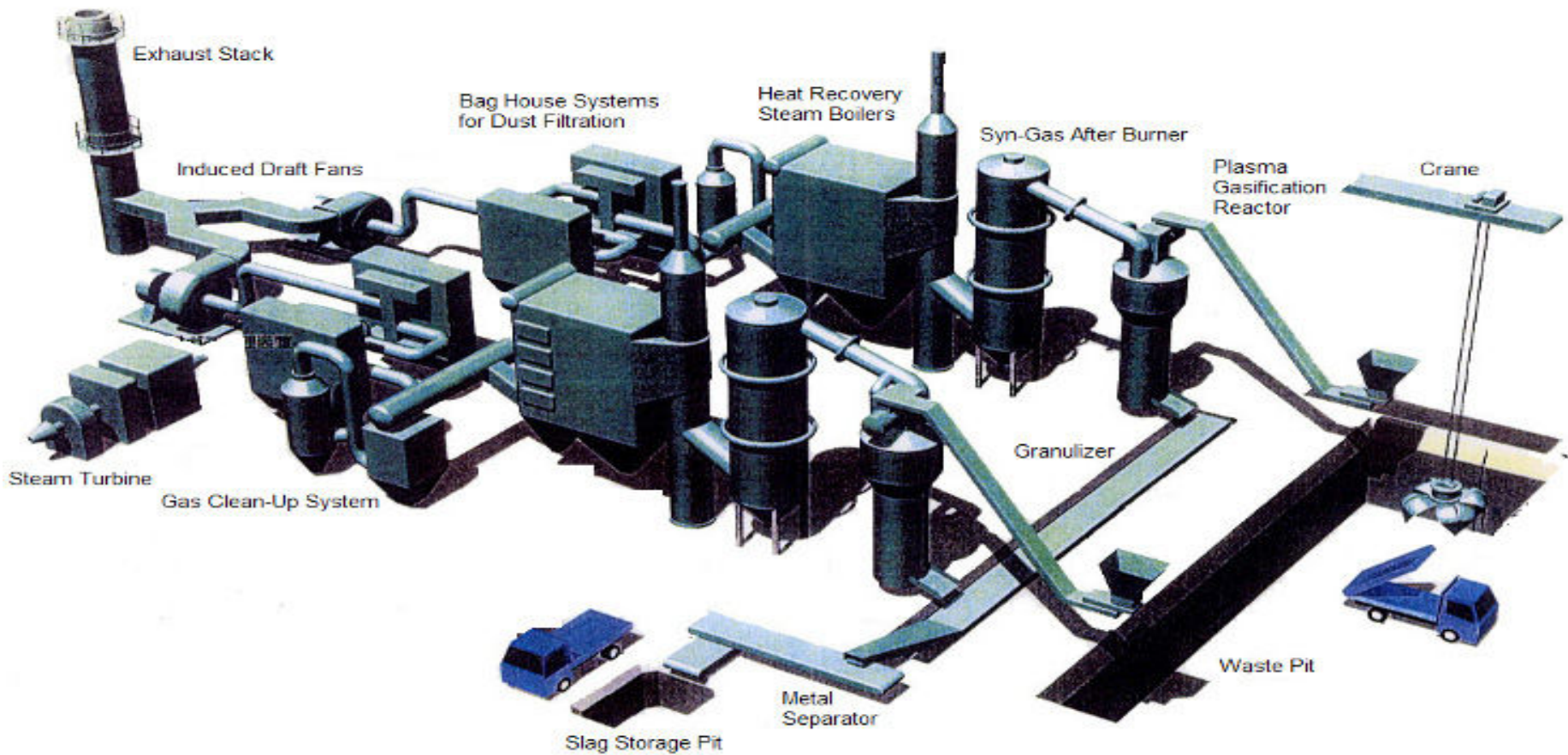


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Plasma Arc Gasification Technology

Six Major Steps to convert Waste to Energy

1. Waste Pit
2. Gasification Furnace
3. Synthetic Gas Afterburner
4. Heat Recovery Systems
5. Steam Turbine Generator
6. Bay House system



Waste Pit

- MSW & Tires
- Crane moves waste to shredder



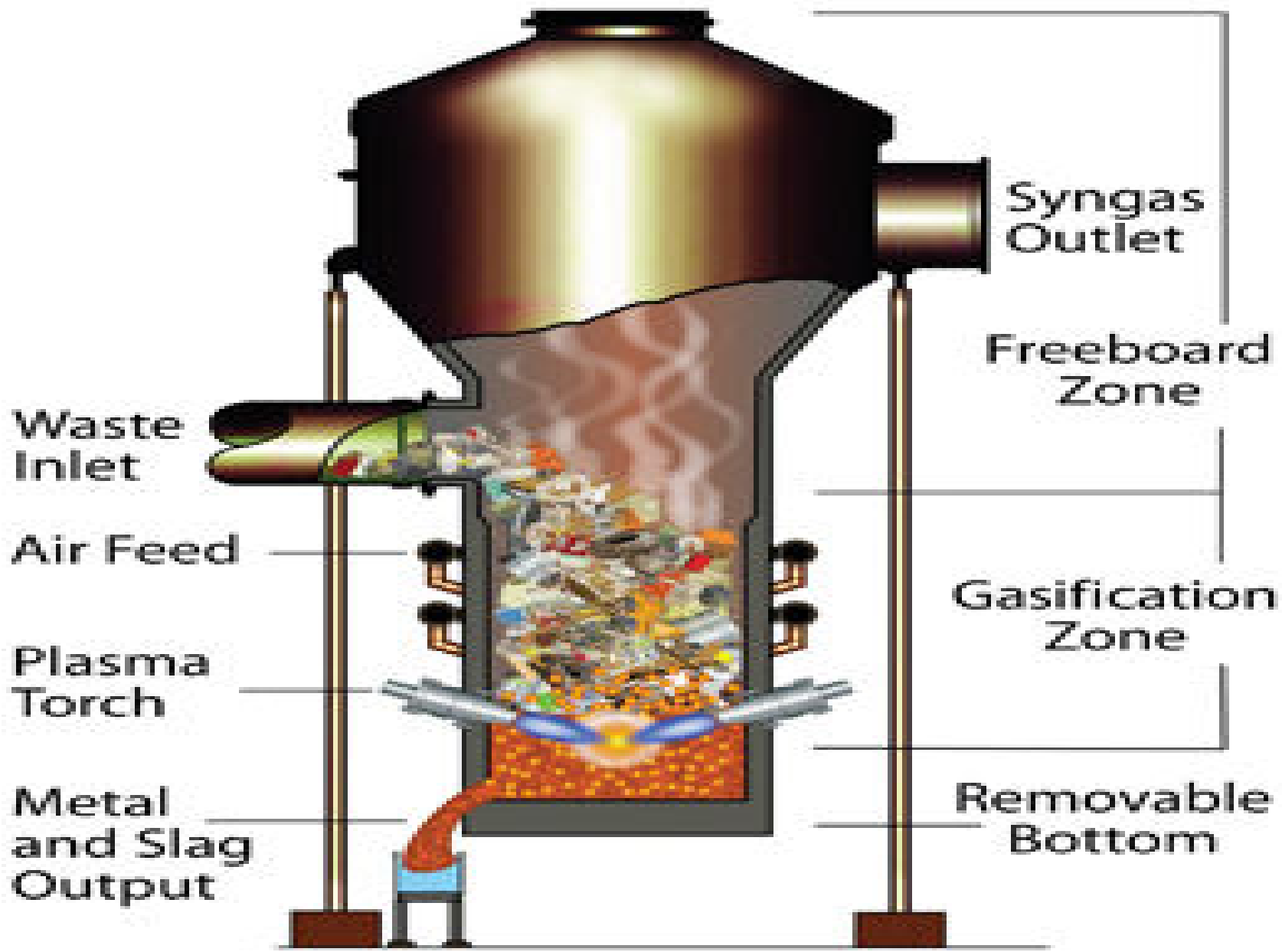
Shredder reduces waste to less than three inches



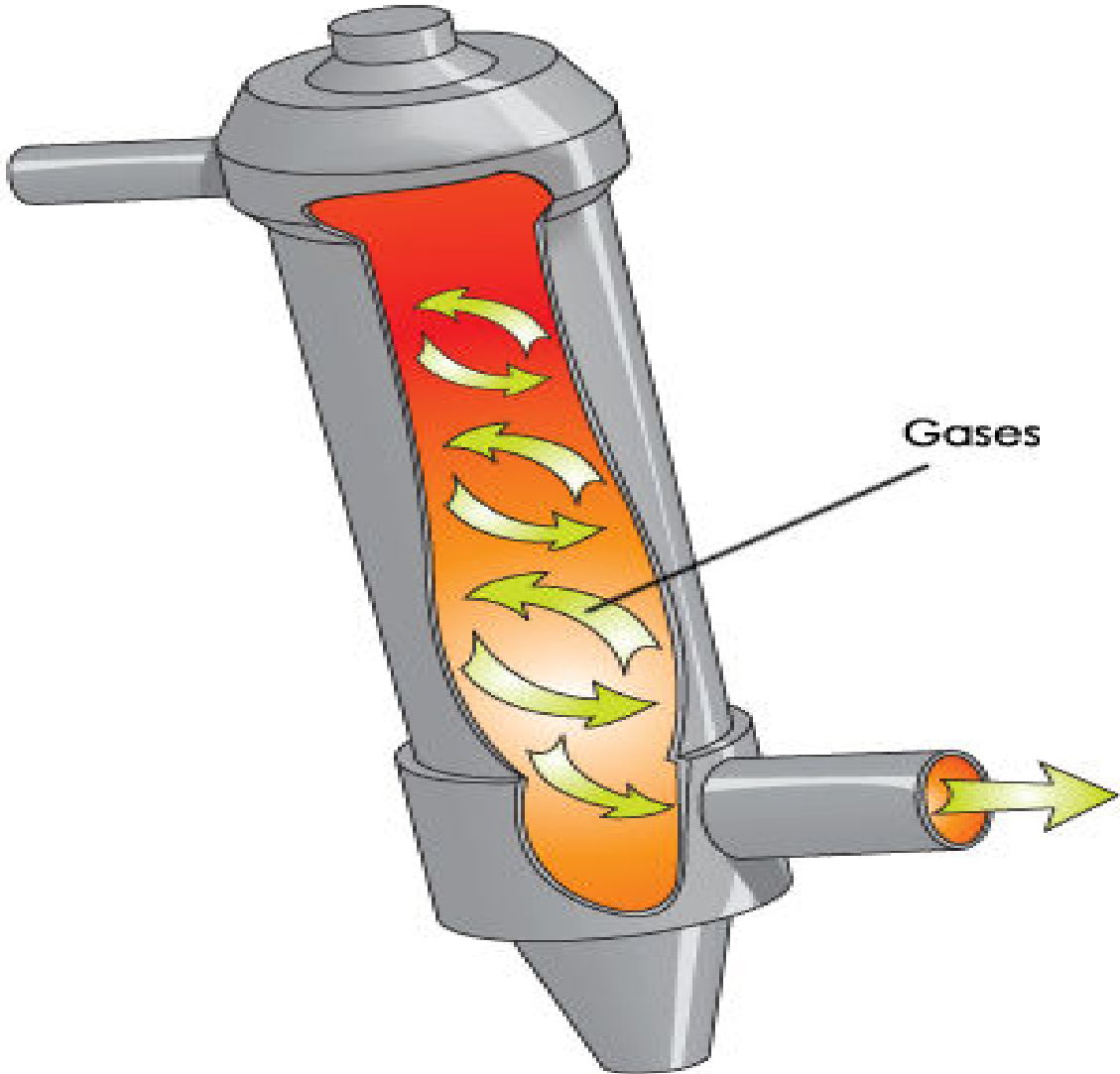
Conveyer System transports waste from shredder to gasification furnace



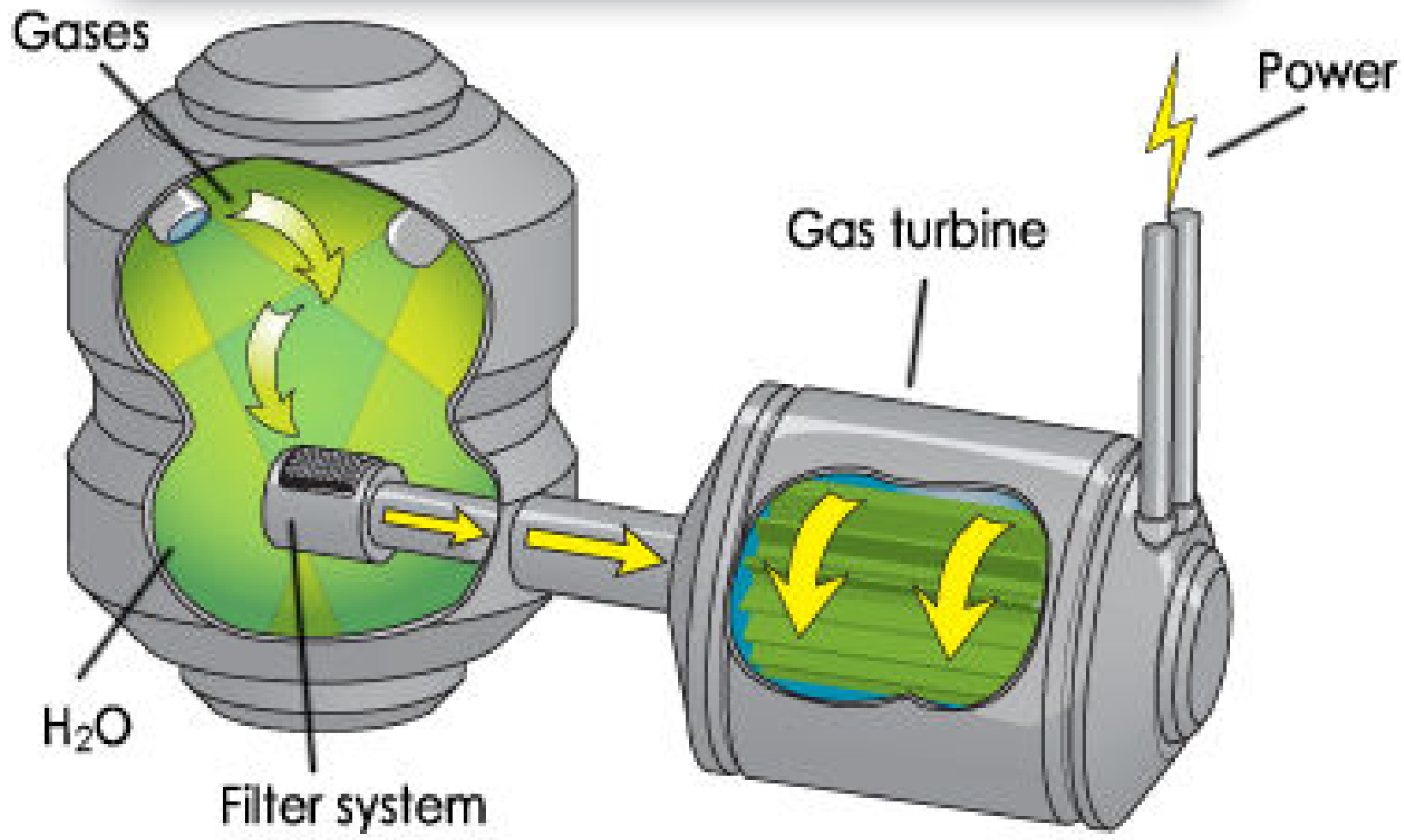
LIFE



How Plasma Converters Work: Afterburner



How Plasma Converters Work: Syngas cleaning tank



Bag House System





Plasma Arc Gasification Facility
Risky Investment
Experimental Technology & Operational Problems
Multi-million Dollar Losses

Thermoselect's Plasma Arc Gasification Facility Karlsruhe, Germany

- **Shut down in 2004 after repeated breakdowns and technical problems**
- **Investors lost in excess of \$500 million**



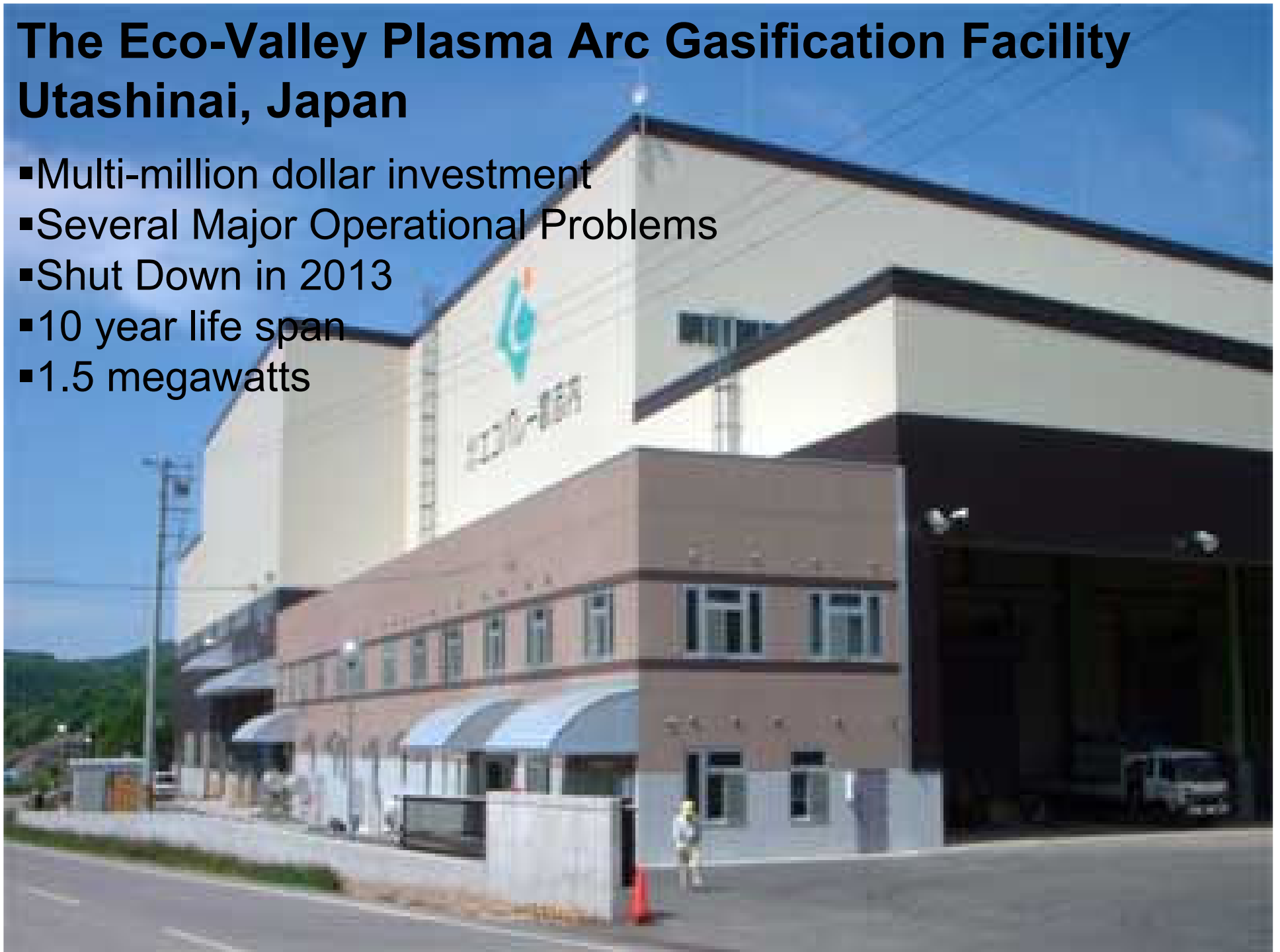
Brightstar / Energy Developments Limited's Gasification Facility Wollongong, Australia

- Shut down in 2004 after repeated operational problems
- Investors lost over \$134 million



The Eco-Valley Plasma Arc Gasification Facility Utashinai, Japan

- Multi-million dollar investment
- Several Major Operational Problems
- Shut Down in 2013
- 10 year life span
- 1.5 megawatts



A large white wind turbine stands prominently in the foreground, its three blades reaching towards a bright blue sky filled with scattered white clouds. The turbine is situated in a lush green cornfield. In the background, several other smaller wind turbines are visible, along with a small building and utility poles. The overall scene is bright and clear, suggesting a sunny day.

Wind Turbine

- 1.5 megawatt
- \$1.5 Million
- 25 to 30 year life span

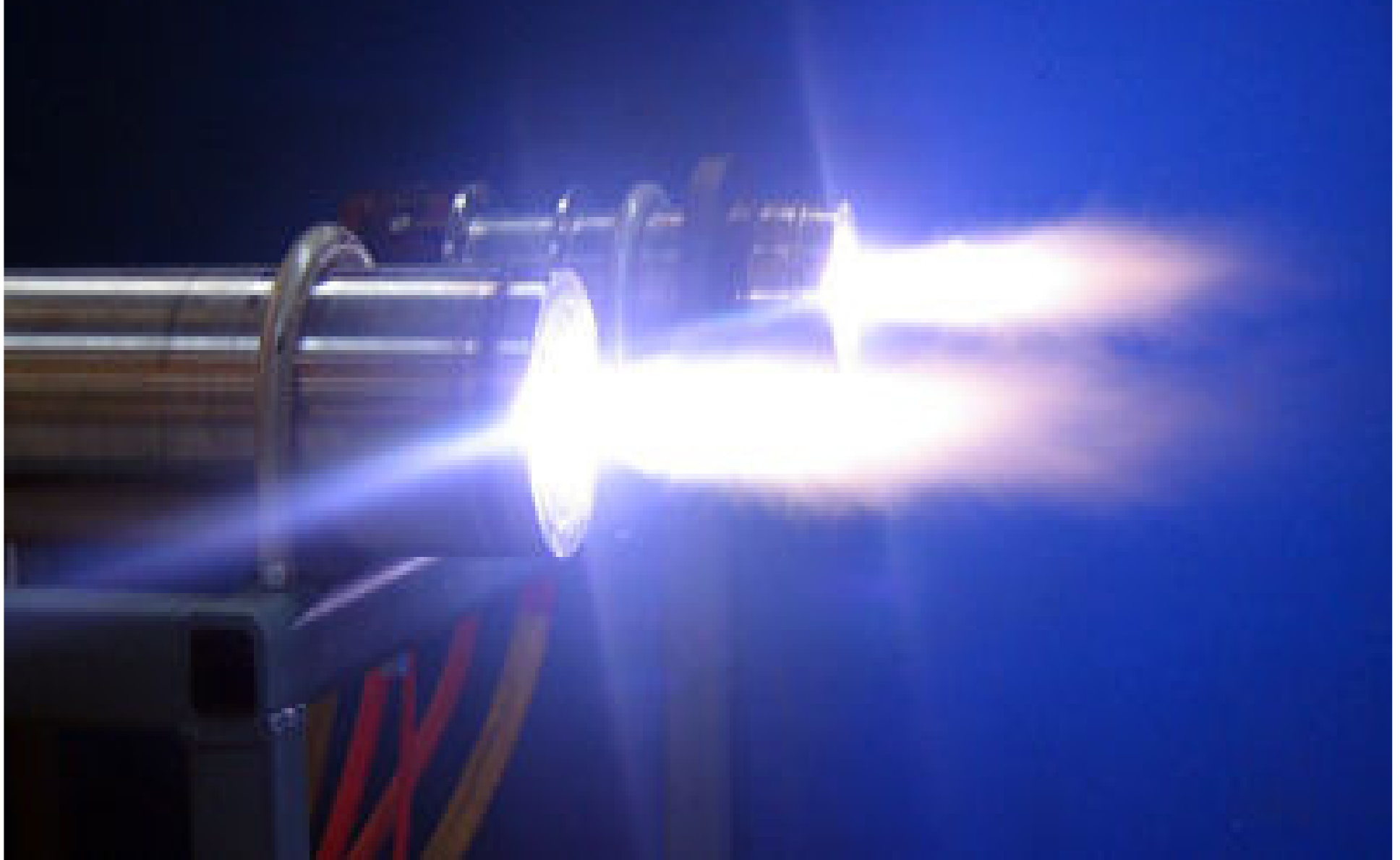
Solar Photovoltaic

▪ 1.5 megawatts ▪ \$9 to \$10 million ▪ 20 to 20 year life span



Technical Problems

Concern raised regarding the reliability of the plasma torches



Technical Problems: Brightstar Environmental Facility, Australia

- replace second gasification unit for char
- high levels of fine particles in the char gasification unit
- Gasifier feeding system malfunction
- Preprocessing drying system malfunction



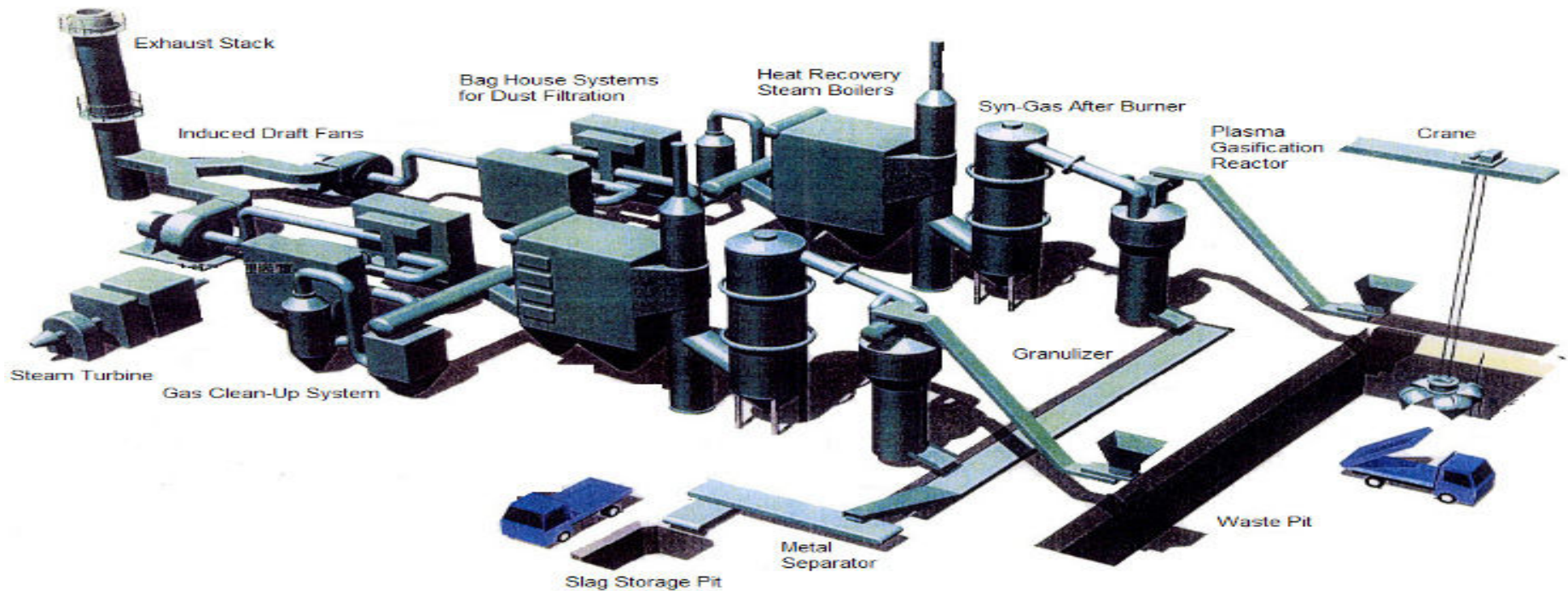
Technical Problems

Eco-valley Facility, Japan

- Furnace malfunctions
- Excessive amount of particulate matter

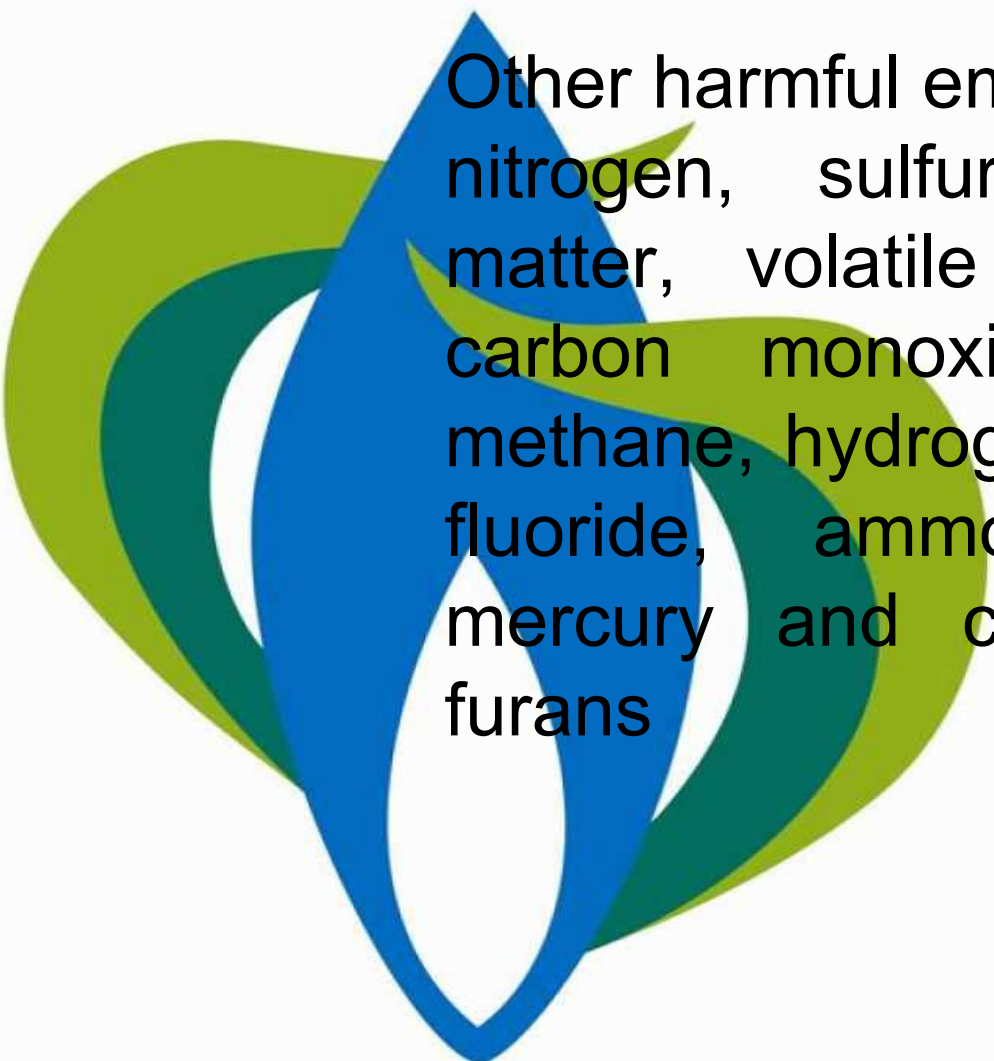


Plasma Arc Gasification Pollution, Public Health & the Environment

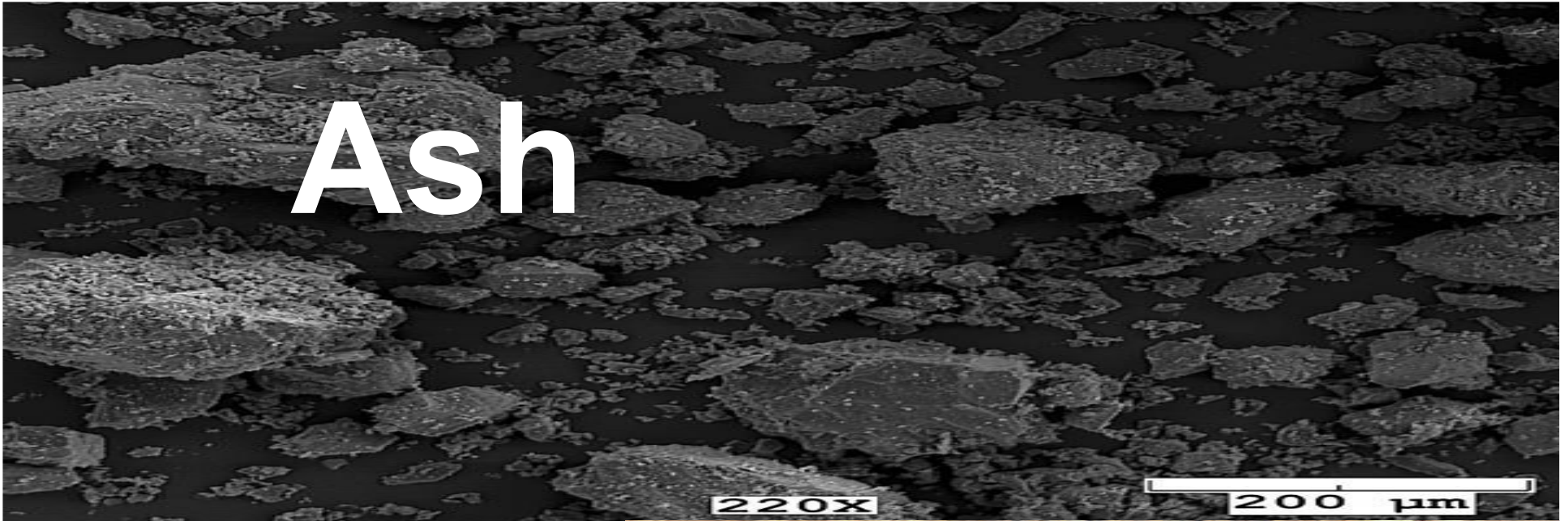


Synthetic gas emissions:

primarily comprised of carbon monoxide, hydrogen, hydrocarbon oils, char and ash



Other harmful emissions generated:
nitrogen, sulfur dioxide, particulate matter, volatile organic compounds, carbon monoxide, carbon dioxide, methane, hydrogen, chloride, hydrogen fluoride, ammonia, heavy metals mercury and cadmium, dioxins and furans



Ash

Slag



Waste Water

Economic Benefits of Recycling

- Preserve natural resources
- Conserves Energy
- Economic development
- Sustainable growth

