

# Tetronics International

High Efficiency Precious Metals Recovery from Electronic Waste

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## Who we are

UK environmental company with 55 years' global experience delivering clean plasma technology for maximum resource recovery and the highest levels of hazard destruction.



- ✓ Developed, enhanced and continually refined technology over 55 years with 103 patents, granted or pending across 11 families.
- ✓ Widely recognised as World Leaders in Plasma.
- ✓ Tailored solutions for Resource Recovery and Hazardous Material Treatment.
- ✓ Technically and Economically proven with an impressive track record.
- ✓ Global Service Provision.
- ✓ Tailored Support.
- ✓ World Class Plasma Materials Testing Facility in UK.
- ✓ ISO 9001; ISO 14001; OHAS 18001.



## Innovate Project - 101899

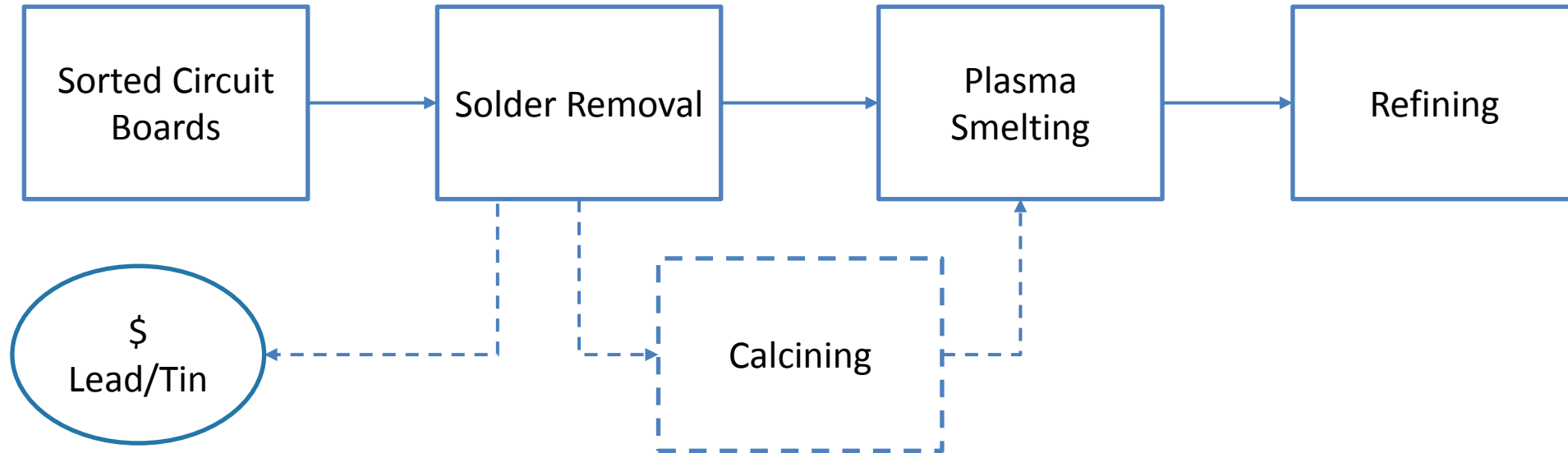
- ✔ Growing market based on technology change and uptake
- ✔ Business stimulated by regulation, resource criticality and consumer trends
- ✔ The norm = collect, ship overseas, treat and refine, i.e. export value. Recovery at large centralised facilities
- ✔ New approach – Integrated domestic approach, i.e. collection, treat and refine at small scale
- ✔ Circa 1.7 million tonnes of e-waste, generated annually in the UK
- ✔ Applicable fractions (4%) = 3 to 6 plasma recovery plants and annual revenues of £200 - £300 million
- ✔ Each tonne of PCB has an intrinsic value of  $\approx$  £10k
- ✔ Project built the core plasma plant and operated it with real waste. Demonstrated pretreatment and refining
- ✔ Validated the techno-economic business case.



# Our E-waste Philosophy



# E-Waste Treatment



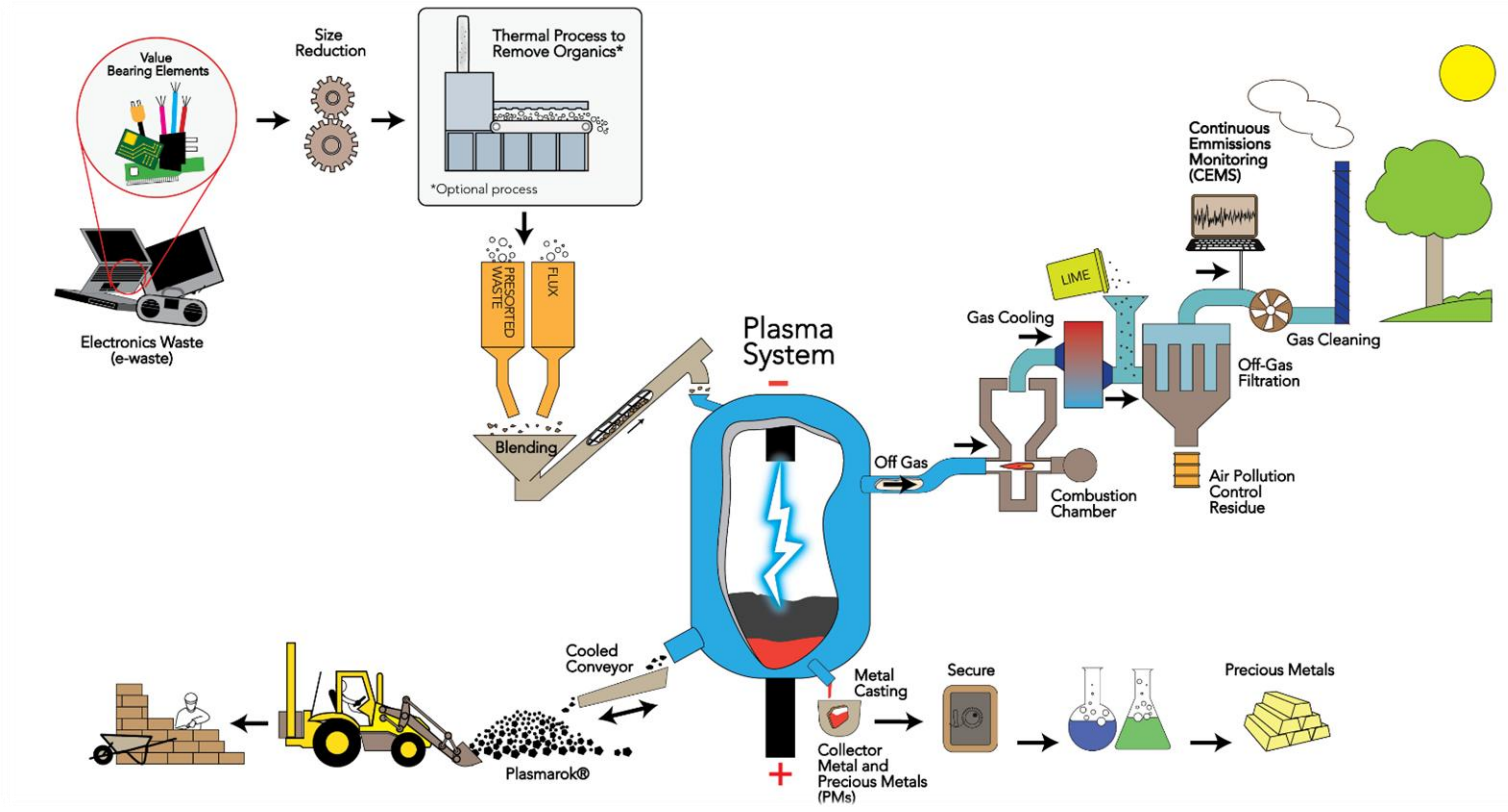
- ✧ Assumes an input of sorted and segregated circuit boards.
- ✧ Optional calcining step.
- ✧ Output of furnace to suit refining process, e.g. granulation, ingots, anodes.





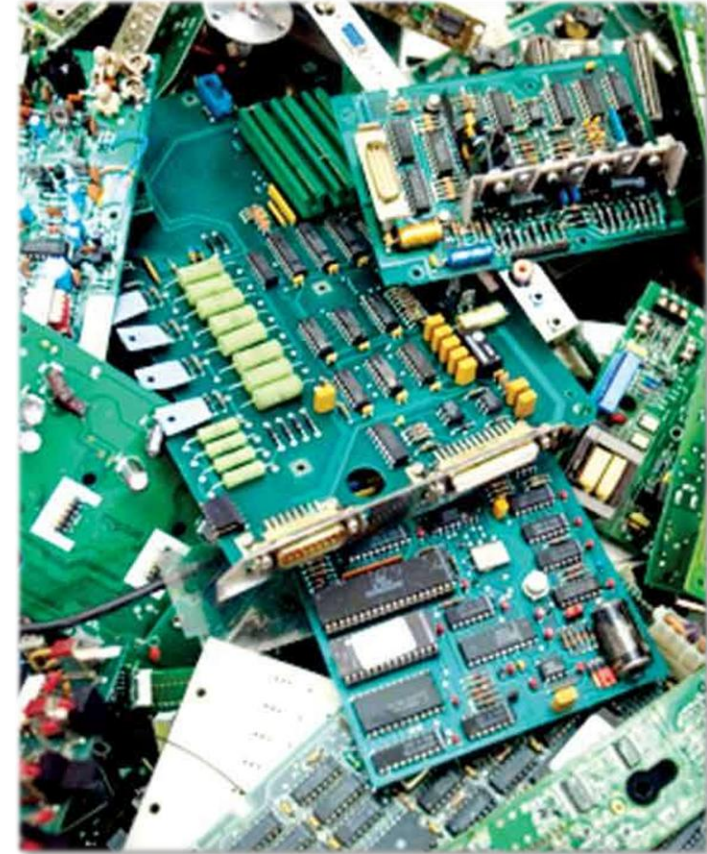
# Localisation

- Reduced waste transportation costs and environment impacts.
- Local waste, local jobs, local resource and community sustainability.



# Integration

- Maximum value recovery.
- Part of an integrated e-waste process.
- Allowing waste processors to vertically integrate, leading to differentiation and a move up the value chain; with potential independence from refining service providers.
- Allowing refiners to vertically integrate to offer a complete service to aggregators and/or compliance scheme operators.



## Simplification

- ✔ More homogenous material to handle.
- ✔ Simpler and more accurate analysis of recoverable metal value.
- ✔ Industry-leading recovery efficiency with single pass smelting.





## Why Choose Plasma?

- ✔ Proximal solution-offering quicker turnaround
- ✔ Flexible operational profile
- ✔ Robust, reliable and easy to maintain technology
- ✔ Small physical foot-print and no unusual building requirements - readily retrofittable to existing plants
- ✔ Sustainable recovery with Low environment impacts
- ✔ Lowest capital and operation cost at 'small' operational scales
- ✔ Tolerance of feed compositional variations



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*Thank you*

