50 years experience delivering
Resource Recovery Solutions
ABOUT TETRONICS

Tetronics International are the global leader in the supply of Direct Current (DC) plasma arc systems for a wide range of Resource Recovery applications. Our recovery solutions offer class leading recovery rates and are perfectly suited to treat a range of waste streams, including: spent catalysts, electronic wastes, mining wastes, steel plant wastes as well as other precious and base metal bearing waste materials.

Our capabilities encompass everything from initial modelling/feasibility assessment, pilot testing of the process material, through to design, supply onsite installation/commissioning and on-going support of full commercial plants.

Tetronics’ track record in advanced environmental waste treatment and material recovery processes for a range of toxic, hazardous/industrial wastes, as well as other resource rich streams, has resulted in more than 90 installations across a wide and varied range of applications.

Tetronics continues to work in association with many of these customers, both private and public, in developing upgrade/optimisation improvements, providing specialist advice, spares and service. Their experience has led to the development and enhancement of the plasma technology, delivering a number of benefits:

BENEFITS

Why Tetronics?

- Five decades of experience in developing and delivering resource recovery systems
- Breadth and scope of our Intellectual Property – 109 patents granted or pending across 12 families
- On-going technical support to our customers
- Market, operational and compliance knowledge and deep technical competence of our staff

Why Plasma?

- Industry leading recovery rates
- Rapid financial returns in a closed loop system
- Low capital and operating costs
- Provides a ‘future proof’ solution for managing business risk
- Clean, functional heat source with strong environmental benefits
APPLICATIONS

Tetronics technology has been tried and tested over five decades with more than 90 installations globally across a wide and varied range of applications. Our customers can rest assured that Tetronics offers versatility and experience to deal with their specific resource recovery challenges.

Applications include, but are not limited to:

- **Base Metal Recovery**
  - Steel Plant Wastes (e.g. Electric Arc Furnace Dust)

- **Precious Metal Recovery**
  - Electronic Wastes
  - Spent Catalysts (e.g. industrial, automotive, chemical)
  - Mining Wastes

We are confident that Tetronics’ plasma solution provides higher levels of technical recovery than any competing technology.

*SOLAR APPLIED MATERIALS TECHNOLOGY CORP.*

*Chief Operating Officer*
Electrical Waste

Precious Metal Recovery from e-Waste

Electrical Waste consists of discarded electrical or electronic devices from domestic, commercial and industrial sources. The waste contains several hazardous elements and is therefore considered a risk to human health if left untreated or disposed of incorrectly. Over the past decades, electronics have revolutionised the world and electrical products have become ubiquitous of today’s life around the planet. With an increasing demand for electronics, comes the escalation of the waste it creates and according to the UN Environment Programme, the worldwide total waste generated from electronics could be 50 million tonnes per year.

Tetronics has developed their innovative plasma technology to address the concerns over the growing levels of e-waste. Their technology provides a solution that is capable of separating the valuable material from electrical wastes whilst destroying any hazardous components. The process enables companies to overcome the rising costs involved in extracting primary sources of metals as well as helping them to contribute towards natural resource conservation.

Tetronics’ recovery process holds exceptional environmental and commercial credentials due to its low emissions and close to zero waste output as well as its small carbon footprint. The process is considered as a future proof solution for recovering value from both electrical waste and many other waste streams.

Please contact us to find out how we can assist you with your e-waste challenge.
Tetronics’ technology has been used for decades to recover Platinum, Palladium and Rhodium from precious metal bearing waste materials with class leading recovery rates. The principal advantages of Tetronics patented plasma technology are that it couples the highest technical recovery/operational flexibility with the lowest environmental impacts and cost base.

Catalyst wastes, including automotive catalytic converters and industrial catalysts (e.g. from the chemical and petrochemical industries), contain Precious Metals and specifically the Platinum Group Metals (PGMs) that are valuable as a result of their low natural abundance, unique properties and the complex processes that are required for their extraction and refining from primary sources.

The process chemistry in Tetronics’ plasma waste recovery technology is designed to smelt and preferentially separate the precious metals from the less valuable catalyst material, which is vitrified into an approved, inert, safe, reusable product called Plasmarok®, in a single processing step. The technology will also destroy any hazardous organic material, such as dioxins etc. that may be contained within the waste material.

Contact Tetronics to find out how we can assist you with your catalyst waste.
Steel Plant Waste

Base Metal Recovery from EAF Dust

Tetronics has extensive experience using their plasma technology to treat steel plant wastes and other base metal bearing industrial and urban wastes. In essence, plasma technology allows value to be obtained from wastes that would otherwise not be considered as a viable resource and would therefore be disposed of in landfill or stockpiled. Tetronics’ process not only eliminates the need for landfill but also offers the possibility of gaining maximum value from the steel plant waste through the recovery of valuable metals, such as Fe, Ni, Cr and Mo.

Steel plant waste is difficult to recycle back through the primary steel plant facility because of environmental compliance issues and their physical form as particulates/dusts. The challenge is finding a viable solution that is capable of separating the valuable recyclable metals for either resale or reuse, from the hazardous waste.

Tetronics’ plasma technology offers the ultimate solution for treating steel plant wastes by simultaneously extracting the valuable materials and destroying any hazardous components in an environmentally and sustainable manner. Please contact us to find out how we can assist you with your steel plant waste challenge.

“As a result of Tetronics’ innovative technology, one of our customers has recovered an estimated $190 million worth of value and diverted hundreds of thousands of tonnes of hazardous waste away from landfill in the two decades their plant has been in operation.”
Precious Metal Recovery from Mine Tailings

Tetronics offers metal recovery plants that are ideal for recovering valuable materials from a range of difficult-to-process powdered or particulate mining wastes. Examples of the many such materials treated by Tetronics over the last 30 years include wastes arising from the mining of Chromite Ore, Basalt, Platinum Group element bearing Ores, Ilmenite and Quartz.

Mining waste contains a number of hazardous materials, which can have a highly damaging effect on local eco-systems, but also contains elements of value, typically precious metals. Increasingly stringent environmental regulations, high commodity prices and low natural abundance of these valuable elements have created a growing incentive for the recycling of mine tailings. However, the waste itself presents specific ecological and technical challenges that have made recycling and recovery operations uneconomic in the past.

Tetronics patented DC arc technology offers an alternative approach to resource recovery that is capable of managing the challenges of treating and destroying any hazardous elements within the waste, whilst further refining the mining spoils for the extraction of valuable materials.

Please contact Tetronics to find out how we can assist with your mining waste challenge.