ERDWICH
... SHREDDING UNLIMITED ...

Other application areas:
- **Metal swarf**
- **Fuel surrogates**
- **Packaging**
- **Special waste**
- **etc.**

Innovation is our standard!

As a highly specialised engineering and production company, ERDWICH has more than 30 years of experience in offering exceptional services in recycling and shredder technology. Shredding machinery, special solutions, complete recycling plants and a global service are our core competences for which our team give their all every single day.

Owner-operated, with personal, intensive support, short response times and comprehensive services, we provide first-class quality made in Bavaria. Get to know us.

Welcome!

Core competences:
- **Shredding machinery**
- **Plant engineering**
- **Service**

Seize your chance and test your material without any obligation in our ERDWICH test centre.

We look forward to meeting you.

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997.041/1113/vma/stahl

ERDWICH
... SHREDDING UNLIMITED ...

WEEE PROCESSING

PROCESSING TECHNOLOGIES FOR ALL KINDS OF ELECTRONIC WASTE!

www.erdwich.com

Made in Bavaria

ERDWICH TECHNOLOGY FOR EVERYONE WHO SEES **WEEE AS AN OPPORTUNITY!**

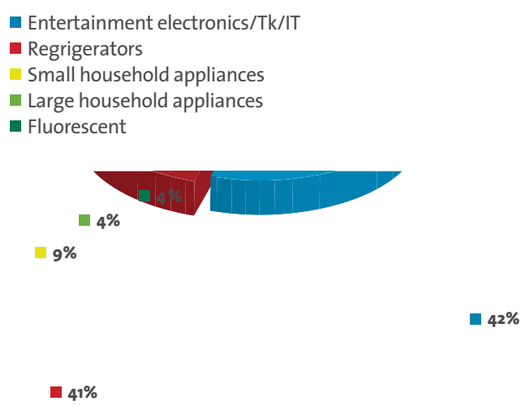
More than 40 million tons of electronic waste is just waiting to be recycled every year!

One of the biggest challenges facing our society is to recover valuable raw materials from electrical and electronic waste. More than 40 million tons p.a. worldwide and a forecast doubling of the volume by 2025 are both a challenge and a chance.

Since only around 40 % of the scrap is properly recycled in Germany at present, it can be assumed that the global waste disposal rate is even lower. General electrical and electronic equipment, large and small domestic appliances, fridges or fluorescent lamps, PCBs, LCD monitors, PV modules and hard disks should be recycled. In principle, any device that is powered by a power cable or batteries.

There is enormous potential for growth in all consumer-based markets for recycling companies, backed up by the WEEE Directive, and these markets have to be economically and safely developed with well-engineered technology.

Electronic waste breakdown:



ERDWICH offers perfect, customised solutions.

ERDWICH began specialising in the recovery of valuable raw materials from electronic waste several years ago with its shredding machinery and complete plants. Highly economical and mature solutions are now available for every challenge posed by the WEEE Directive. Generate new values from electronic waste with ERDWICH.

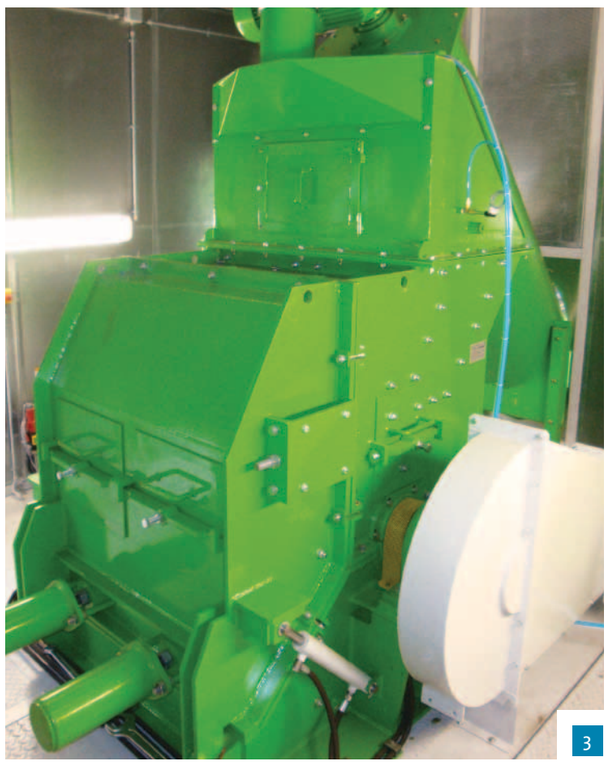
ERDWICH uses a combination of coarse shredders and hammer mills for fine shredding, which are also very economical thanks to their compact size and structural design. They produce a very precise material breakdown, a key factor for efficient further processing.

Technical facts coarse shredder:

- Two-Shaft-Shredder system for slow and gentle shredding
- Individually driven shredder shafts with external shaft bearings
- Compact housing for a fast change of tools from coarse to fine
- Higher efficiency through electromechanical drive
- Cutter assembly can be serviced without removing the shafts

Technical facts hammer mills:

- Extremely wear-resistant, individually replaceable milling elements and inner lining
- Enclosed design for dust-free operation and inerting
- Mechanical overload protection with ejection system in case of solid materials and impurities
- Hydraulically pivoted housing wall enables easy access for maintenance and inspection work
- Application-specific drive and milling element variants



ELECTRICAL AND ELECTRONIC WASTE

VALUABLE RAW MATERIALS ARE JUST WAITING TO BE RECOVERED FROM ELECTRONIC WASTE!

ERDWICH systems generate new values from electronic waste!

The lifecycle of electrical equipment has changed drastically over the past 20 years. Whereas it used to be common to repair electrical equipment if it was damaged, devices nowadays tend to be thrown away and new ones bought.

Although this may be a blessing for the global electronics industry, it is a particular challenge for the environment and mankind. The forecast doubling of the volume of electronic waste to 80 million tons by the year 2025 presents some first-class potential for the recycling industry.

The challenge here is to recover the valuable raw materials and to separate out the pollutants for their safe disposal.

Shredding and processing of:

- Large domestic appliances such as washing machines and dishwashers, dryers, ...
- Small domestic appliances such as toasters, vacuum cleaners, ...
- Office and communication equipment such as PCs, flat screen monitors, printers, phones, fax machines, USB sticks, hard disks, DVDs, ...
- Consumer electronics such as TVs, hi-fi systems, CD players, ...
- Electrical tools such as drills, lawn mowers, ...
- Fridges
- Toys and leisure equipment such as model railways, fitness equipment, ...
- All kinds of medical devices and instruments
- Monitoring devices
- Automatic output systems such as ticket machines, ...
- Car keys
- Engine controllers
- Solar modules
- PCBs

"The ERDWICH system concept, as well as the service and easy maintenance of the system, convinced us on all points."

Jean Ziemann, Plant Manager
ALBA R-plus Wiedergeltingen

REFERENCES:

- ALBA R-plus, Germany
- Ekan, Greece
- EHG, Germany
- Cimelia, Singapore
- Scholz Recycling, Germany
- Sound Environmental, China
- and many more

Scan the QR code for a film of the system.

ALBA R-plus processes up to 8 tons of electronic waste per hour!

The best example of ERDWICH system competence is the electronic waste processing plant for ALBA R-plus in Wiedergeltingen. The demands made by ALBA R-plus were a pre-treatment volume of up to 8 tons of electronic waste per hour. The goal of the pre-treatment is to reduce the volume on site and to further process the marketable reclaimed waste for re-sale.

The economic benefits from optimum pollutant elimination and recovery of recyclable fractions were one of the key demands placed on ERDWICH by ALBA R-plus. The system is in operation at least 10 hours a day depending on the amount of material collected. Idle periods in such cases would be absolutely dramatic.

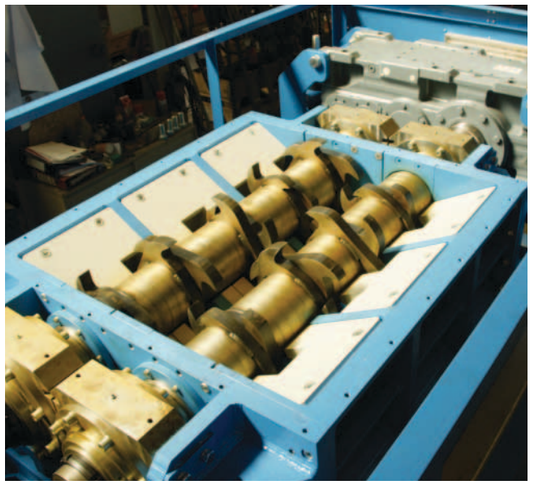
On the basis of long-standing co-operation and excellent experience, ALBA R-plus thus decided on the convincing concept from ERDWICH and is delighted with the result. The current annual throughput of 10,000 tons speaks for itself.

ERDWICH processing processes:

- Pre-sorting and selection of valuable raw materials
- Pollutant elimination
- Careful coarse shredding and disintegration
- Manual sorting and renewed selection of recyclable fractions
- Automatic separation of the various fractions
- Specified subsequent granulation
- Superfine separation of high-grade recyclable fractions
- Low-wear, shredder tools that can be welded on locally
- Complies with the new DIN EN 50574

ELECTRICAL AND ELECTRONIC WASTE

ERDWICH SEPARATES VALUABLE RAW MATERIALS FROM **6 TONS OF ELECTRONIC WASTE PER HOUR!**



Greece‘s biggest waste disposal company relies on ERDWICH shredding technology!

70 – 80 % of all scrapped electrical equipment should be recycled according to the EU Directive. The main reasons for this are the valuable materials such as copper and various precious metals that this scrap contains. Up to now, the electrical equipment has had to be opened by hand to recover these raw materials and the individual components separated out manually.

This meant heavy physical work with negative consequences for the health of workers and the raw materials yield was too low because certain aggregates could not be separated manually. This is why EKAN S. A. decided to automate the processes and purchased a shredding machine from ERDWICH. More than 25,000 tons of electronic waste enters the Hellenic Recycling Center (EKAN) in the Greek city of Corinth every year.

Copper, brass, aluminium and stainless steel are the materials that matter. The ERDWICH shredding system especially designed for electronic waste can process large individual appliances weighing up to 450 kg – and has a capacity of 6 tons per hour.

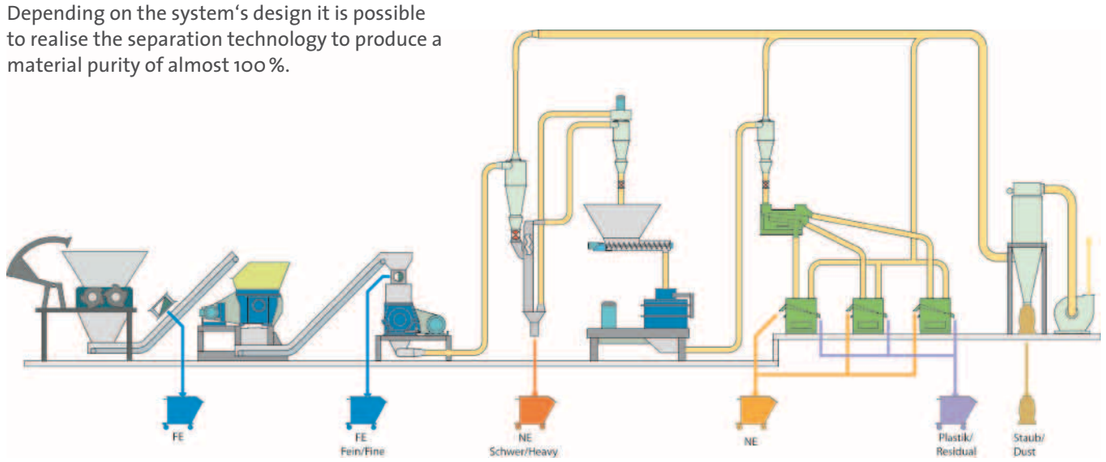
The electronic waste is initially transported to the shredder‘s hopper by a grabber and conveyor belt. Following very gentle shredding, a magnet separates out the exposed iron material. This is taken to the first working area where valuable copper is separated out and the remaining, intact iron residues are pressed into packages and removed for melting down. In a second working area, exposed and intact pollutants such as batteries, capacitors and recyclable fractions such as cables and stainless steel components are removed from the mixed material. Following manual sorting, the remaining materials are separated into defined sizes via screening stations with separating systems and forwarded for recycling.

EKAN S. A. is delighted by the high output and reliability of the ERDWICH system, which exceeds all of the set parameters in daily operation.

Electronic waste solution process diagram:

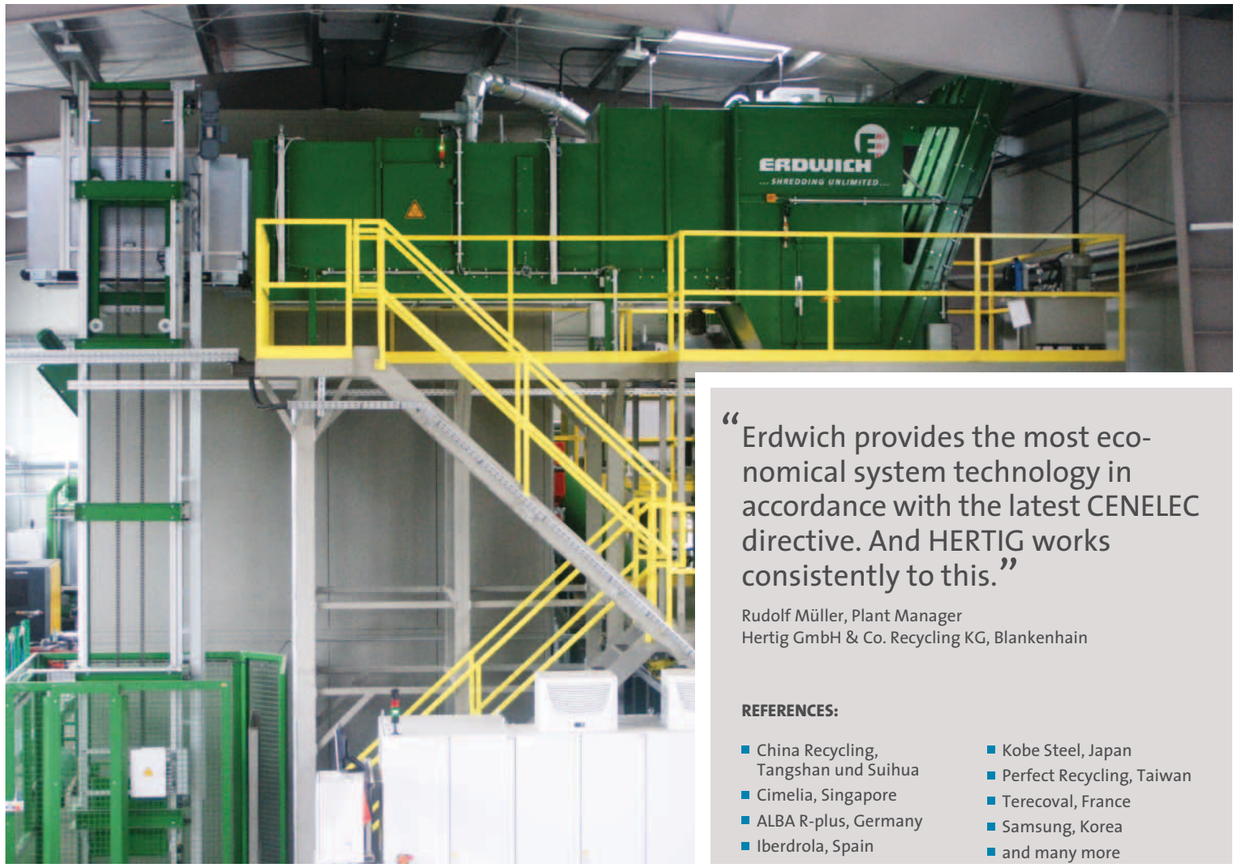
The electronic waste is carefully shredded in the coarse shredder. The fractions are further granulated and separated in subsequent stages of the process.

Depending on the system‘s design it is possible to realise the separation technology to produce a material purity of almost 100 %.



FRIDGES

YOU TOO CAN RECOVER **PENTANE AND CFC** WITH 99 % PURITY!



“Erdwich provides the most economical system technology in accordance with the latest CENELEC directive. And HERTIG works consistently to this.”

Rudolf Müller, Plant Manager
Hertig GmbH & Co. Recycling KG, Blankenhain

REFERENCES:

- China Recycling, Tangshan und Suihua
- Cimelia, Singapore
- ALBA R-plus, Germany
- Iberdrola, Spain
- Kobe Steel, Japan
- Perfect Recycling, Taiwan
- Terecoval, France
- Samsung, Korea
- and many more

Efficient processing of CFC-and HC-foam fridges!

Millions of old fridges have to be disposed of every year in Germany alone. They account for more than 40 % of the total volume of electronic waste and are the most important fraction alongside consumer electronics.

Chlorofluorocarbons such as R11 and R12 along with various other refrigerants that have been used over the years as foam insulation represent a particular challenge for the recycling process. Because these substances damage the ozone layer if released, they have to be removed in an enclosed processing plant and collected safely.

The fact that the processing of old fridges always has to take place in accordance with the best available technology means that plant operators have to co-operate with an innovative and experienced manufacturer.

With ERDWICH they always get the latest and leading technological solutions, even for the very demanding and safety-sensitive recycling of fridges. More than 30 million fridges processed in ERDWICH systems are the best example of our competence.

It doesn‘t matter whether you operate a small system for fridges or a complex large-scale solution; you can always keep cool with ERDWICH, even when things start hotting up.

The higher demands on the processing of old fridges according to the CENELEC directive (EN 50574:2012) that apply as of 2013 pose a big challenge - for both the manufacturer of the system as well as its operator.

This European standard defines the requirements in terms of the handling, transport, storage, sorting and treatment of WEEE domestic appliances that contain volatile chlorofluorocarbons, volatile hydrocarbons or both at the end of their lifecycle.

The standard describes the requirements for the removal of volatile chlorofluorocarbons and volatile hydrocarbons. These ozone-damaging substances can be found as refrigerants in the cooling system and as foaming agents in the insulating foam of the scrapped domestic appliances.

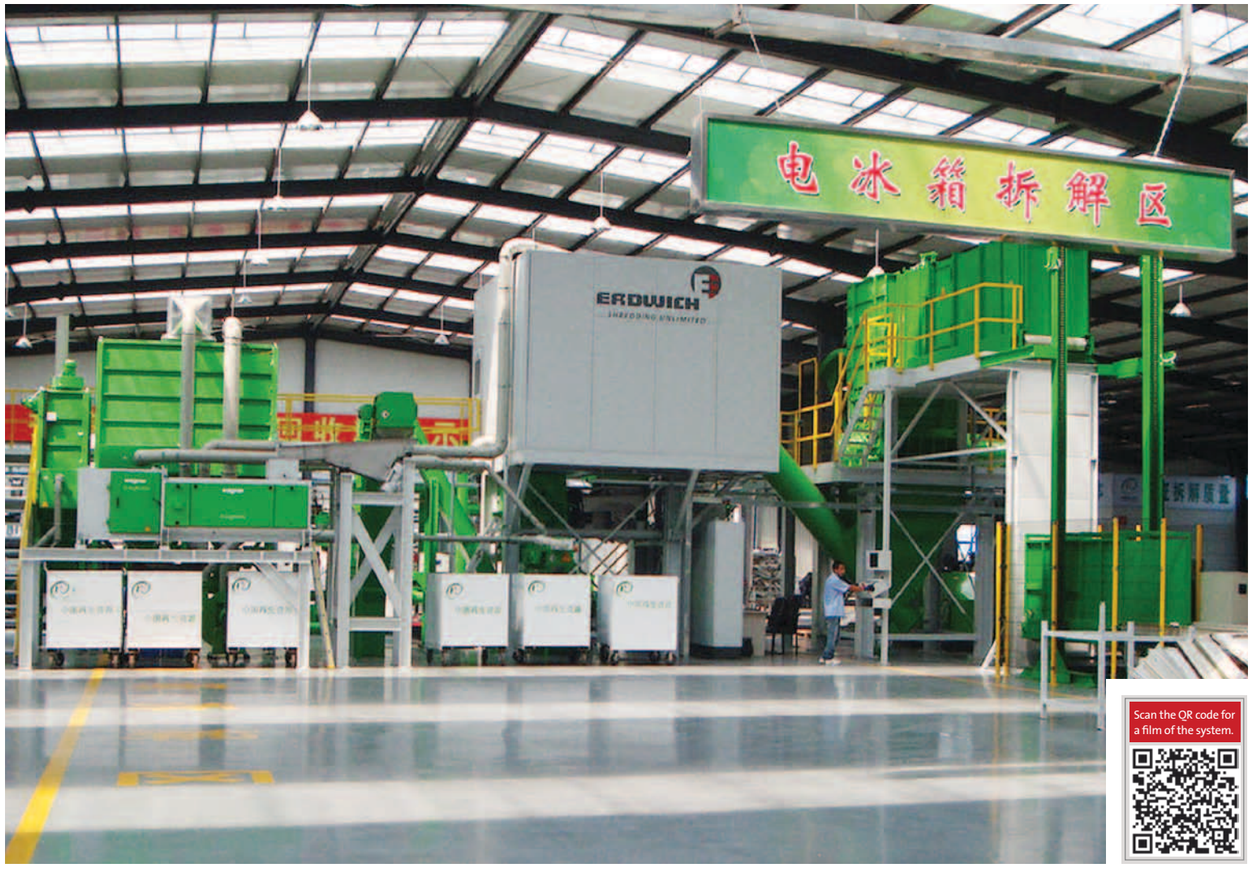
HERTIG faced up to the new CENELEC challenge when it built its new recycling plant in Blankenhain near Jena and decided on ERDWICH as a supplier for the corresponding new machinery, a supplier who is technologically equal to these requirements.

Further criteria that spoke in favour of ERDWICH as the supplier of the machinery were long-standing co-operation with the company and the economical and compact system technology. Thanks to a clever, multi-stage separating technology, very clean fractions can be recovered that can then be marketed for the highest prices.

One additional bonus of the system: by simply altering the program it can be used to cleanly and economically process electronic waste too.

FRIDGES

AWARD-WINNING TECHNOLOGY **FOR FRIDGE RECYCLING** COMES FROM ERDWICH!



Scan the QR code for a film of the system.

Environmentally safe and sound recovery of all recyclable fractions and pollutants from fridges!

With more than 30 million processed fridges, ERDWICH technology has proven itself worldwide and reflects the great innovative capacity and quality that covers every stage of our processes, starting with our advisory service and project planning, production and installation and going right through to on-the-spot training.

ERDWICH has been honoured for this by the Korean Association of Electrical Equipment Manufacturers, amongst others.

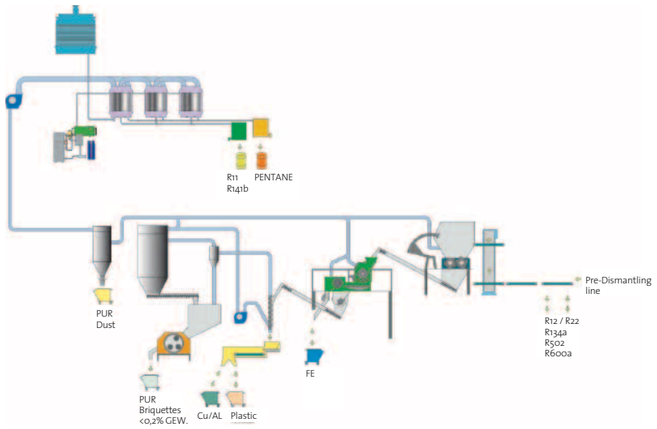
The best example of our innovative capacity and ability are the fridge recycling systems supplied to Suihua and Tangshan in China as well as to Singapore. They are used to process fridges with maximum dimensions of 1,000 x 1,200 x 2,200 mm.

ERDWICH was commissioned to supply the complete system with the mechanical and automatic separating units. The cleaning filter and the liquefaction plant for R11/R12 and pentane were also part of the complex orders.

ERDWICH installed systems to cope with the planned capacities of 30 fridges per hour that exceeded every expectation and proved their worth in daily operation at full load thanks to the excellent technology and process reliability.

ERDWICH can offer system technology with a throughput of 15 to 120 units per hour depending on the customer‘s wishes.

Fridge solution process diagram:



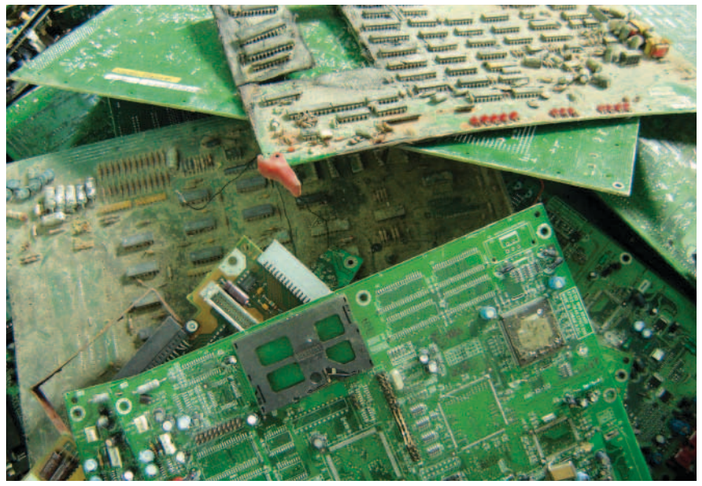
Process description:

The fridges enter the enclosed system consecutively and are processed fully automatically in several stages so that the individual fractions can be separated from each other. The overall separation of the individual fractions is carried out by mechanical and ventilation aggregates so that the overall system remains fully enclosed until the removal of the individual fractions.

The complete processing technology is constantly monitored by a specially developed process control system. All operating states can thus be continuously monitored for compliance with set limits and documented.

STORAGE MEDIA

RELIABLY DESTROYS **DATA CARRIERS** THAT DON‘T BELONG IN THE WRONG HANDS!



“The mobile ERDWICH solution works absolutely reliably and permits maximum flexibility in terms of the place of use.”

Nicholas Strathern, Managing Director
ITL Logistics GmbH, Schwaig

REFERENCES:

- ITL Logistics, Germany
- Recycle It, Germany
- VW, Germany
- Detcom, Germany
- ITDI, Germany
- TISC, Netherlands
- Klingborg, Sweden
- Neumayer, Germany
- and many more

ERDWICH technology prevents the reproduction of sensitive data!

There are a wide variety of storage media that contain confidential data and information. Apart from the classic data carrier paper, digital media now play an increasingly important role in this day and age. But hard disks are all too often handled very carelessly when disposing of old equipment. This means valuable information ends up in the wrong hands and can cause damage that runs into millions of euros.

DIN standard 66399 takes this diversity into account and defines security for all contemporary media, describing the requirements for machines and processes that destroy data carriers. ERDWICH can offer an absolutely safe and efficient solution with its stationary and mobile solutions for each of the protection classes with their total of 7 security levels.

The mobile solutions installed in the service vehicles of the firm of ITL Logistics are also an excellent example of the innovative capacity of ERDWICH.

Protection requirements for your data are classified into three protection classes. In order to determine the protection requirement a check is carried out as to what kind of data is managed in the company. This results in the protection requirement and the corresponding protection class.

Protection class 1: Normal protection requirement for internal data.

Unauthorised disclosure or forwarding would have limited negative consequences for the company. The protection of personal data must be guaranteed.

Protection class 2: High protection requirement for confidential data.

Unauthorised forwarding would have serious consequences for the company and could violate contractual obligations or laws. The protection of personal data must satisfy stringent requirements.

Protection class 3: Very high protection requirement for particularly confidential and secret data.

Unauthorised forwarding would have serious consequences that could jeopardise the existence of the company and would violate professional secrecy, contracts, and laws. The protection of personal data absolutely must be guaranteed.

USB

USB sticks are today a typical requirement that can be controlled with absolute reliability using ERDWICH technology. Plants at home and abroad shred data on USB sticks to security level 7.

Hard disks

The destruction of hard disks in computers and laptops is one of the biggest challenges. The careless handling of sensitive data is incomprehensible when one considers that service providers offer a perfect, mobile, on-the-spot service with ERDWICH technology.

DVDs

DVDs with sensitive information are also piling up in companies, some of which don‘t even know exactly what data has been saved. ERDWICH shredding systems turn sensitive data into illegible granulate material and at the same time generate valuable raw materials.

Car keys

The destruction of car keys with coded information is an application that has become increasingly important in recent years. Here again, ERDWICH offers reliable solutions that have already proven their worth.

Engine controllers

Another challenge from the automotive sector is the destruction of engine controllers. ERDWICH shredding technology with Two-Shaft shredder systems guarantees reliable results here too.

Other applications

ERDWICH can offer specific system solutions for a number of other applications.

SOLAR MODULES, PCBS, FLAT SCREEN MONITORS

PERFECT SOLUTIONS FOR THE INNOVATIVE ELECTRONICS OF TODAY AND THE FUTURE!

ERDWICH as an indispensable factor for success to increase the recovery of raw materials!

The global market for raw materials has long since become an object of speculation with resources in the hands of only a few countries that control the supplies and prices. The situation is particularly dramatic for resources such as rare earths, for example scandium or neodymium, though also gallium or indium, where the global demand will quadruple by the year 2023.

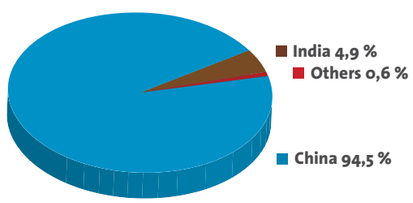
China, the world's main exporter, dominates the supply side with 90 % of the rare earths that are needed for numerous technology products.

What alternatives remain?

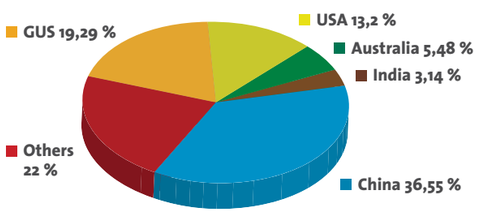
There is only one: the recycling of electronic waste will become a decisive factor for success to secure the availability of raw materials for the further growth of important key industries at affordable prices.

And ERDWICH is the right partner at your side to face up to these challenges. Because ERDWICH systems generate almost 100 % of the recovered raw materials with absolute reliability and the highest purity, and at the same time guarantee impressive operating efficiency.

Distribution of rare earth supplies



Distribution of rare earth resources



Source of charts: Bundesverband Sekundärrohstoffe und Entsorgung e.V.

Solar modules
In the booming market for solar energy an increasing number of faulty solar modules are already being returned, modules that are shredded centrally with ERDWICH technology, broken down into their constituents, recycled and disposed of. But the immediate destruction of rejected materials by systems that are integrated directly in the manufacturer's production plants is another new market that is covered by ERDWICH too.

PCBs
PCB scrap is produced during both the production as wastage as well as during the correct dismantling of old devices that contain the PCBs and components.
A differentiation is hereby made between three classes of PCBs with different valuable metal contents which affect the scrap prices that can be asked. All of the requirements on PCB recycling can be reliably satisfied with ERDWICH.

Flat screen monitors
Flat screen monitors contain small amounts of the metal indium as indium-tin oxide (ITO). On account of the small global deposits but simultaneously the sharp rise in demand for indium, in particular for display technologies, its recovery from LCD monitors will become increasingly important in future. ERDWICH can also offer first-class, economical recycling concepts for this challenge.