



eCYCLING USA



CHANGE THE GAME

RECYCLING TECHNOLOGY & ENGINEERING – MADE IN GERMANY



www.eCyclingUSA.com

www.chema-environment.de

eCyclingUSA Bringing German Technology To America



INCREASING AMOUNT OF WASTE VS THE GROWING NEED OF RAW MATERIALS ON THE CONSUMER MARKETS...



Produced E-Waste 2012 (Million tons)

Source: (World Wide Web)



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Faster development causes shorter product cycles

Electronics industries worldwide are booming

Shorter product cycles - products with shorter lives

...CHEMA HELPS YOU CHANGE THE GAME

The consumption of technology with shorter product cycles creates an increasing amount of E-waste – **E-waste contains up to 95% reusable materials** which can be reused in industry. Chema provides environmentally sound recycling and resource recovery from refrigerators, appliances, electronic waste, tires to regain,

- Copper
- Plastics
- Iron
- Glass
- Gold
- Palladium
- Silicium

...

... up to **95%** reusable materials out of electronic waste

THE BEST SOLUTION – OUR INNOVATIVE TECHNOLOGY!



**REUSE
RECYCLE
RECOVER
RESOURCES**

Sustainable treatment

Production of marketable materials

Purity of materials

Chema provides environmentally sound recycling and resource recovery from refrigerators, appliances, electronic waste, tires.

Environmentally sound treatment of e.g. refrigerators and electronic scrap in accordance with current environmental regulations and requirements in terms of collection and disposal of materials. Production of marketable materials.

The purity of substances exceeds the requirements and directives of the legislator.

Sturdy and service-friendly construction. Reliable service 24/7.

Approved solutions made in Germany



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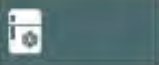


COMPETENCE **GROWN** IN MANY YEARS

PRODUCT RANGE RECYCLING PLANTS

Refrigerators Recycling Plant – Chema RR

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Electronic Scrap Recycling Plant – Chema ES

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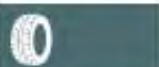
White Ware and Electronic Scrap Recycling Plant – Chema WWES

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Tires / Waste Rubber Recycling Plant – Chema TRR

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Cathode Ray Tubes Recycling Plant – Chema CRT

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CHEMA ENVIRONMENT - OUR SOLUTIONS AT A GLANCE

Items which can be refurbished:



Refrigerators Recycling Plant – Chema RR

- Refrigerators
- Freezers
- Air conditioners



Electronic Scrap Recycling Plant – Chema ES

- Small household appliances
- Large household appliances
- Information and communication systems
- Consumer electronics



White Ware & Electronic Scrap Recycling Plant – Chema WWES

- Refrigerators, Freezers, Air conditioners
- Household appliances (small & large)
- Information and communication systems
- Consumer electronics



Tires / Waste Rubber Recycling Plant – Chema TRR

- Car & Truck tires
- EM tires
- AT tires
- OTR tires



Cathode Ray Tubes Recycling Plant – Chema CRT

- Cathode ray tubes of TV sets
- PC monitors
- Recyclable CRT sizes 9 - 42 inches



Reusable materials can be extracted



Copper



Plastics



Aluminum



Iron



Palladium



Copper



Plastics



Aluminum



Iron



Gold



Silver



Silicium



Copper



Plastics



Aluminum



Iron



Circuit boards



Textile



Rubber granule



Steel



Front glass



Cone glass



Powder



Aperture mask

REFRIGERATORS RECYCLING PLANT – Chema RR



Items which can be refurbished:

- Refrigerators
- Freezers
- Air conditioners



Cooling circuit suction with
proven drilling head technology

Chema Rotary Shear

Chema Granulator

Separation of recycable material

Iron
Plastics
Aluminum
Copper

Exhaust air treatment

Pre-cooler and cryogenic cooling device

Dust suction

Alternatively: gas preparation by hydrolysis for CFC
or oxidation for C-pentane



Refrigerator Recycling Plant – Chema RR

The recycling system for refrigeration devices consists of a rotary shear, a separation unit for PUR foam, iron, synthetic material and aluminum/copper, a pelleting press and an exhaust air decontamination system.

CFC-recovery level of over 99%

Throughput up to 120 refrigerators/h

Certified under German requirements

Lowest time of maintenance
and highest recycling rate.

Reusable materials can be extracted



Copper



Plastics



Aluminum



Iron

ELECTRONIC SCRAP RECYCLING PLANT – Chema ES



Items which can be refurbished:

- Small household appliances
- Large household appliances
- Information and communication systems
- Consumer electronics



Removal of non-recyclable waste and recyclables

Chema Pre-Crusher &
Pre-Sorting unit

Chema Granulator

Separation of recyclable material

Iron
Plastics
Aluminum
Copper
Circuit boards

Exhaust air treatment
Dust suction system and baghouse



Electronic Scrap Recycling Plant – Chema ES

The plant consists of pre-crusher, a separation unit, a granulator, a separation for shredded plastic (foils, dust), iron, synthetic material and aluminum/copper.

Option: A unit for CRT separation can be integrated.

Regular plant with a capacity of 5 t/h is flexibly upgradeable.

No manual pre-crushing

Adjustable grain size

Modular design of plants

Reusable materials can be extracted



Palladium



Copper



Aluminum



Iron



Plastics



Gold



Silver



Silicium

WHITE WARE & ELECTRONIC SCRAP RECYCLING PLANT – Chema WWES



Items which can be refurbished:

- Refrigerators
- Freezers
- Air conditioners
- Small household appliances
- Large household appliances
- Information and communication systems
- Consumer electronics



Cooling circuit suction with
proven drilling head technology

Chema Pre-Crusher &
Pre-Sorting unit

Chema Granulator

Separation of recyclable material

Iron
Plastics
Aluminum
Copper
Circuit boards

Exhaust air treatment

Pre-cooler and cryogenic cooling device
Dust suction

Alternatively: gas preparation by hydrolysis of CFC
or oxidation of C-pentane



White Ware and Electronic Scrap Recycling Plant – Chema WWES

The recycling system for refrigeration devices and e-waste consists of Pre-crushing, a separation unit for PUR foam, iron, synthetic material and aluminum/copper, a pelleting press and a exhaust air decontamination system.

No manual pre-crushing

Adjustable grain size

Electronic Scrap: Throughput up to 5 t/h

White ware: Throughput up to 50 units/h

Reusable materials can be extracted



Copper



Plastics



Aluminum



Iron



Circuit boards

TIRES / WASTE RUBBER RECYCLING PLANT – Chema TTR



Items which can be refurbished:

- Truck tires
- Car tires
- EM tires
- AT tires
- OTR tires





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Tires / Waste Rubber
Recycling Plant – Chema TTR

Chema TTR ambient 1" - 5"

Chema TTR ambient 30 - 50 mesh

Chema TTR cryogen < 100 mesh – 99.9% clean

Reusable materials can be extracted



Textile



Rubber granule



Steel

CATHODE RAY TUBES RECYCLING PLANT – Chema CRT



Items which can be refurbished:

- Cathode ray tubes of TV sets
- PC monitors
- Recyclable CRT sizes 9 - 42 inches



Manual disassembly

Separation stations for
removal of implosion protection

Separation CRT with heating tapes
and pneumatic cylinders
Alternative laser

Exhaust air treatment

Separation of recyclable material

Front glass
Cone glass
Dust
Chassis
PCB
e-scrap



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Separation of up to 70 CRTs/h

Highest throughput

Absolute separation

Cathode Ray Tubes Recycling Plant – Chema CRT

Semi-automatic throughput: 20 – 25 pcs/h
for cathode ray tubes sizes of 14 - 27 inches.

Fully-automatic throughput: 40 - 60 pcs/h
for cathode ray tubes sizes 9 - 42 inches.

Reusable materials can be extracted



Front glass



Cone glass



Powder



Aperture mask

CHEMA ENVIRONMENT GmbH



Patented innovation

Experience and reliability

Flexibility

International know-how

Machinery and plant engineering

The Arnstadt/Thuringia-based company Chema is able to look back on 100-year-old history in industry.

Due to the company's experience of so many years and its well-founded expertise, Chema has earned among its customers the reputation as a competent partner for sophisticated and demanding tasks.

Its environment division has specialized in the development and construction of innovative recycling solutions. Chema Environment GmbH benefits from the use of a great pool of various manufacturing and technology resources and is thus able to maximize the customer's benefit.

Chema provides environmentally-sound recycling and resource recovery for refrigerators, appliances, electronic waste, tires.

Momentarily, more than 50 employees of Chema Environment GmbH contribute their expertise regarding technical and procedural specialties of recycling technology, and plan, construct and produce customized single machines and complete plants in many areas of the recycling sector.



WE ARE HAPPY TO HELP YOU. AT ANY TIME!

For Chema Environment GmbH,
the commissioning is not the end of customer contact:

Please contact our after sales service whenever you have any queries.

We are there for your inquiries about maintenance, wear and tear parts, for all technical questions, for individual optimizations or expansions of your plant, whenever adjustments of components are necessary, and, whenever whatever troubleshooting is needed.

- Maintenance and service
- Troubleshooting
- Maintenance contract
- Provision of wear and tear parts
- Regeneration
- Plant expansion and modification
- Teleservice and remote maintenance
- Prevention by telemaintenance





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REUSE RECYCLE RECOVER RESOURCES

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Quality
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