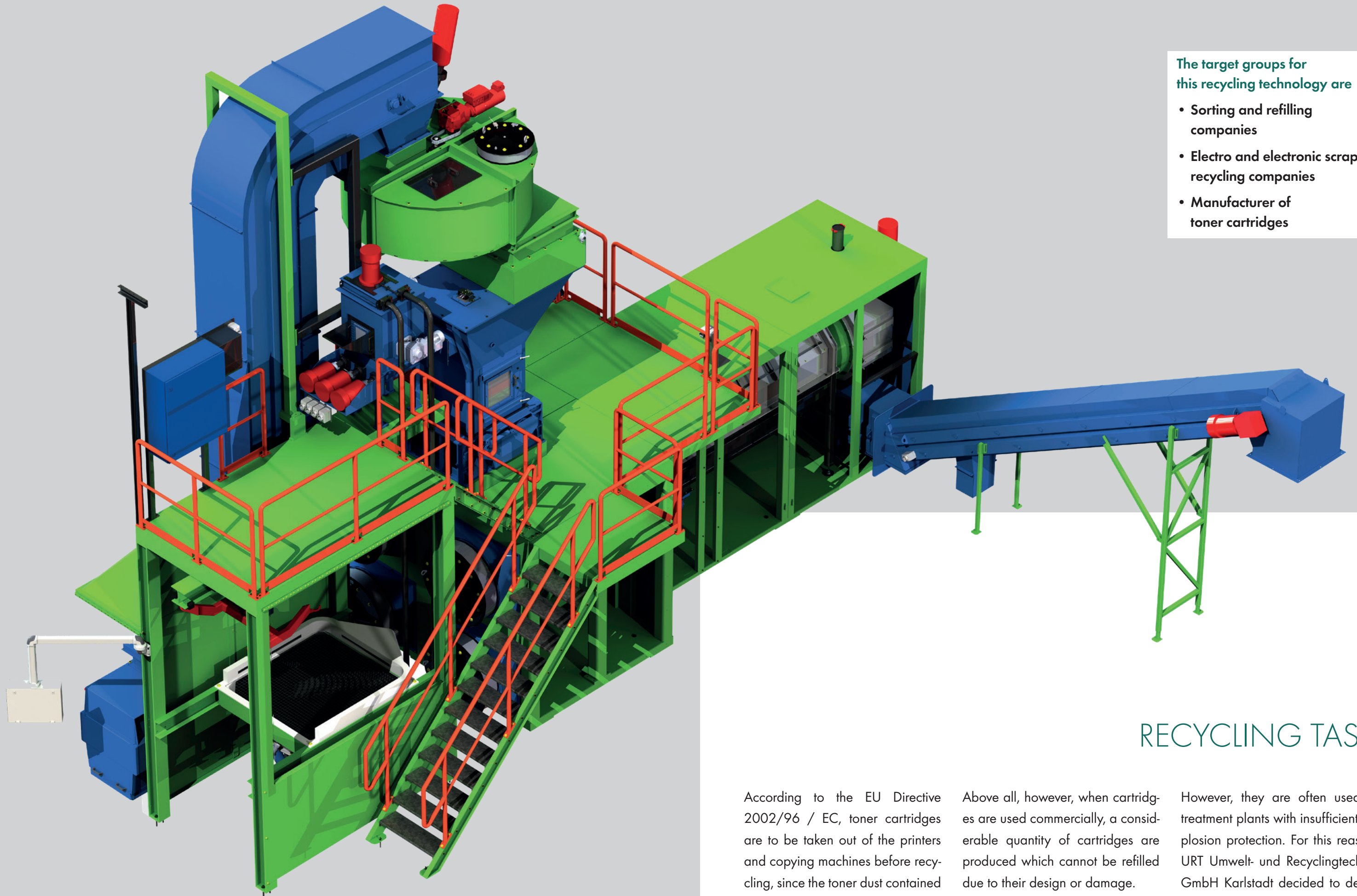


Toner Cartridges - Treatment concepts

WE KNOW HOW





The target groups for this recycling technology are

- Sorting and refilling companies
- Electro and electronic scrap recycling companies
- Manufacturer of toner cartridges

RECYCLING TASK

According to the EU Directive 2002/96 / EC, toner cartridges are to be taken out of the printers and copying machines before recycling, since the toner dust contained is harmful to health.

Above all, however, when cartridges are used commercially, a considerable quantity of cartridges are produced which cannot be refilled due to their design or damage. Toner cartridges are normally destroyed in waste incineration plants.

However, they are often used in treatment plants with insufficient explosion protection. For this reason, URT Umwelt- und Recyclingtechnik GmbH Karlstadt decided to develop plant concepts for recycling toner cartridges.



Reference Plant

MECHANICAL TREATMENT

The plant concept described is enabling an automatic removal of the toner powder from the toner cartridge. Every single toner cartridge is put into a feeding device by a co-worker. These cartridges are then fed into a lock system. Thereafter, the cartridges are cracked by a shredding unit, whereupon a sieving machine separates the toner powder from the cartridge components.



Cartridges after separating from toner dust



Plant control

EXPLOSION PROTECTION

Powder dusts are not only harmful to health, but also explosive. Even during the feeding and shredding process of toner cartridges, a mineral inert powder is injected in the system. This inert powder immediately binds with the toner powder and molecules are formed, which are no longer explosive. The sieving machine already mentioned separates the mixture of toner powder

and inert powder inside the closed system. The material is then filled up into a collecting container.

This effect has been verified and confirmed by an European institute. The method for the suppression of explosions in the treatment of toner cartridges was applied for a patent. The inert material used is extremely cheap and thus reducing the oper-

ating costs compared to an explosive suppression with nitrogen. Additionally to the secondary explosion protection, which is the dosing of the inert powder, further explosion protection devices are integrated in the system. Explosion pressure relief devices, a pressure-resistant version and the extinguishing system form the tertiary explosion protection.



Mixed fraction



Plastics 48.7 %

Material	Share in %
Plastics PS	37.1
Plastics PPE	1.3
Plastics PET	0.3
Plastics PC	2.1
Plastics PE	0.5
Plastics PP	0.7
Plastics ABS	4.1
Plastics POM	2.4
Plastics PS transparent	0.2
Foam	0.4
Printed Circuit Boards/chips	0.3
Aluminum	3.5
Copper	0.0
Iron	41.0
Toner powder	6.1
Total	100.0

MATERIAL COMPOSITION OF TONER CARTRIDGES

The three main fractions PS (37.1%), Al (3.5%) and Fe (41 %) already result in a mass share of approx. 80 %. As a result, high recovery rates can be achieved.

FURTHER PROCESSING STEPS

The dust-free material mix produced with this treatment plant, consisting of shredded and residually emptied toner cartridges can be separated in e. g. existing WEEE treatment plants.

After further shredding steps, the separation of ferrous metals, non-ferrous metals and plastics are taking place.

However, these shredding and separation steps would also be possible immediately after the toner cartridge treatment.



One-stop planning, production, delivery and service



Factory Karlstadt, Germany



Shop Assembly



After-Sales-Service



Design Department