

MK Group

COMMERCIAL & INDUSTRIAL WASTE (C&I)

C&I Waste is waste that is produced by offices, manufacturing and other industries. It contains a variety of plastics, metals, wood, textiles, paper and cardboard that can be sold to end markets for recycled content.

The sorting process

Sorting begins with the removal of any **non-recyclable items**.

- Recover **cardboard** and **paper** – different types of paper are sorted
- **fe** (steel cans) are recovered using magnets.
- Different types of plastic are identified and separated using optical sorters.
- eddy current recovers non **fe** (aluminum cans)
- Once separated they are taken for reprocessing

M&K is the leading supplier of innovative static, mobile and modular waste recycling and material handling technology combining unparalleled technological manufacturing capabilities with decades of application expertise. Established in 1977, M&K design, manufacture & support static, mobile and modular Shredders, Trommels, Recycling Screens, Star Screens, Conveyors, Picking Cabins, Air Separators, Crushers & Washing Systems.

CO MINGLED WASTE/DRY RECYCLABLES COMPOSITION.

Once the compositional materials have been sorted the recycled materials become **valuable commodities**.

Composition

- **Mixed Paper** – a mixture of various qualities of paper
- **OCC** – cardboard boxes, old corrugated containers
- **Rigid Plastic** – mainly toys, crates and garden furniture.
- **Steel Cans** – food tins, biscuits tins and some aerosol cans.
- **Aluminium** – cans drink cans
- **Plastic Film** – 90% LDPE films with other films included.
- **Glass**
- **WEE** – hard plastics with electronics

Incinerator Bottom Ash (IBA)

Incinerator Bottom Ash (IBA) is a by-product of residual waste incineration with or without energy recovery that collects at the bottom of municipal incinerators. Approximately 20 per

cent of waste material sent for incineration is recovered as IBA, which can be processed to recover valuable metals, with the remainder being used for construction purposes.

Depending on the composition of the waste, Incinerator Bottom Ash (IBA) can contain a number of materials including metals (ferrous & non-ferrous), concrete, ceramics, glass and brick.

Modern waste incineration plants (WtE) are an important part of waste management and energy production. However, ash and slag are produced as by-products when generating energy because waste cannot be burned without leaving any residue. Recycling ash and slag plays a vital role in minimising environmental impact and recovering valuable resources.

Process to recover the recyclates

Screen out the oversize fraction +55mm. Usually to a Quality Control Point.

M&K TS620T.HD Track Trommel Screens are durable enough to screen this material. The screening action of the Trommel liberates big metal and prevents blockages downstream.

Rescreen the undersize material (0-55m) with RS514T Track Recycling Screens (0-4, 4-16, 16-55) to recover Fe & Non fe via Magnets and EC315T Track Eddy Current Separators

- **82%+ recovery rates** –
- **90%+ capture rates** – C&D waste processing with automated systems
- **98%+ recycling rate** – J Mould's Material Recycling Facility
- **45% increase in timber recovery** – Fieldman's Waste Management
- **40% increase in non-ferrous recovery** – Fieldman's Waste Management

Actual rates vary by application (C&D, C&I, MSW, organics, etc.) and system configuration. M&K's application specialists can provide specific performance guarantees for your waste stream.

. What's the cost per ton to process waste with M&K equipment

M&K systems deliver the lowest cost per ton in the industry through:

- **Reduced labour costs:** Automation eliminates dangerous manual sorting positions (up to 60% labour reduction)
- **Lower maintenance:** Heavy-duty construction means fewer breakdowns and lower servicing costs
- **Higher throughput:** Process more material per shift with the same operational footprint
- **Energy efficiency:** VSD drives and optimised designs minimize power consumption
- **Better recovery:** Extract more value from each ton, reducing landfill costs

11. M&K systems dramatically improve workplace safety by:

- Eliminating dangerous manual sorting: Coopers Waste's £1M M&K investment specifically eliminated hazardous hand-picking operations
- **Enclosed picking stations:** Climate-controlled cabins protect workers from weather, dust, and direct contact with contaminated materials
- **Ergonomic design:** Optimal conveyor heights and speeds reduce repetitive strain injuries
- **Automated material handling:** Reduces heavy lifting and exposure to sharp objects
- **Fire safety:** M&K's rapid-deployment mobile systems provide critical business continuity after disasters (see Bucks Recycling case study following devastating fire)
- **Compliance:** Equipment meets or exceeds all EU and international safety standards

M&K stands out through:

- **49+ years of expertise** (established 1977) in material processing innovation
- **Family business values:** *"I wanted to work with a family business where I actually mattered"*
- **Complete in-house capabilities:** Design, manufacture, and support under one roof
- **Proven results:** Documented capacity increases of 80-500%, recovery rates of 82-98%+
- **Unmatched support:** *"Absolute confidence... going to fix it as quick as is humanly possible"*
- **Innovation leadership:** Multiple patents, AI integration expertise, continuous R&D
- **Global reach, local service:** Installations on every continent with responsive support
- **Customer-centric engineering:** *"Nothing on the machine that doesn't need to be there"*

KIVERCO

Our mission, at Kiverco, is to provide customers with a complete recycling solution that is designed to produce higher quality recyclable products and faster financial returns.

As well as our own manufactured equipment, we also incorporate market leading technology from around the world.

So, whether you are a small or a large plant operator, we can provide you with a solution that suits your requirements and your waste stream.

SCALE WITH CONFIDENCE

A smarter step between mobile and static, built to grow with your business.

- Easily scalable, add modules as needed
- Lower cost, faster setup vs full static plant
- High-capacity recovery in a compact footprint

START SMART

Start processing quickly and create value from day one.

- Compact mobile equipment.
- Low investment.
- Fast set-up.

PERFORM AT SCALE

Bespoke, high-capacity solutions engineered for long-term performance.

- Designed around material & site requirements
- High throughput & automation
- Built for long-term reliability

- **All-Electric Performance, Flexible Power**
- The move to an electric processing platform removes reliance on hydraulic processing systems, helping to simplify maintenance and support cleaner, quieter operation.
- At the same time, we recognise that mains electricity is not available on every

site. Flexible power options allow operators to use a mains connection where available, with independent generator power when needed.

- ***Electric where available. Independent power when needed.***
- This gives customers the benefits of electric processing while retaining the freedom to work across different locations and site conditions.
- **More to Come**
- The launch of our new generation all-electric mobile range is part of an ongoing programme of development, and the response so far has been encouraging.
- With the Mobile Eddy Current Separator now part of the line-up, another new addition to the range is coming very soon, giving operators even more choice in how they build their recycling systems.

Incinerator Bottom Ash

Incinerator Bottom Ash (IBA) is the material discharged through the grate of a Waste to Energy facility after incineration of municipal solid waste (MSW). Depending on the waste being incinerated IBA can contain varying quantities of glass, ceramics, brick, concrete and metals in addition to clinker and ash

FAQs

What products can be recovered?

- Ferrous and non-ferrous metals
- Secondary aggregates
- **What can the recovered products be used for?**
- After screening and separation through a Kiverco Incinerator Bottom Ash plant, the remaining ash can be used in a wide variety of applications.
- Incinerator bottom ash can be used as a secondary aggregate for bound and unbound layers in road construction, for concrete, cement, asphalt, bulk fill, landfill engineering and brownfield remediation.
- Kiverco's proven combination of screening and metal separation technology effectively processes bottom ash to leave a valuable range of metals and sized secondary aggregate fractions.
- **Is the plant flexible if our company grows?**
- A Kiverco IBA Plant is built to last and designed to grow as your company grows, embracing existing and future recycling requirements
- This gives you the security and flexibility to be able to change your plant in line with latest industry and market developments.
- You can upgrade your existing plant at any time, expand any parts of the facility or relocate individual products, sections or the entire MRF.

- Industrial & Commercial Waste

Recycling Machinery & Equipment

- Commercial and Industrial (C&I) waste consists of waste from premises used for the purposes of a trade or business, including retail premises, factories, government buildings and hospitals. This waste stream generally contains a high percentage of dry recyclable materials such as plastic, film, wood, card, and paper.
- Kiverco's state of the art C&I waste recycling plants comprise of the latest in shredding, screen, air, magnetic, ballistic, optical and baling technology. This allows operators to efficiently separate and sort a huge variety of material types, **with purity and recovery rates up to 98% achievable**. Our robust engineering and design principles are applied consistently giving customers maximum output at all times.
- **STATIC COMMERCIAL & INDUSTRIAL WASTE PROCESSING PLANT**
 - Kiverco incorporated this C&I plant into the client's existing building. The plant consists of a 4.0 metre Belt Feeder, a KL820 Trommel screening out the 0-50 mm fines. The oversize material is conveyed to a 6 bay double sided picking station. An overband magnet is situated at the end of the picking area.

FAQs

What products can be recovered?

C&I products which can be recovered include:

- Wood
- Paper
- Card
- HDPE and PET plastic
- Film
- Plastic bottles
- Tetra packaging
- Ferrous and non-ferrous metals including aluminum cans.

Where do the recovered products go?

Once retrieved these products are normally transferred for onward closed loop recycling, RDF fuel production and biomass incineration.

Is the plant flexible if our company grows?

All Kiverco plants are modular and scalable.

This gives you the security and flexibility to expand your plant as and when your company grows.

You can upgrade your existing plant at any time, expand any parts of the facility or relocate individual products, sections or the entire MRF.

Hospital Incinerator Bottom Ash (IBA): Quantity and Composition

Incinerating hospital waste leaves roughly 15–30% of its input weight as bottom ash, plus 2–5% as fly ash. Incineration cuts weight by more than 70% and volume by about 85–95% ([PMC](#)). The other residues are more hazardous and are handled separately.

Residue	Share of input weight	Per 1 tonne of waste
Bottom ash (IBA)	15–30%	150–300 kg
Fly ash and air pollution control residues	2–5%	20–50 kg

A high share of sharps and glass, wet waste, or poor combustion pushes IBA towards the top of the range. These are approximate industry rules of thumb; site testing should confirm them.

What's in it

Hospital IBA is mostly glass, metal and mineral ash, with heavy metals as the main contaminant of concern.

Risks and handling

Incineration concentrates metals in the ash rather than destroying them, so the IBA becomes a secondary waste problem of its own ([NM-AIST study](#)).

- **Classification:** depending on test results, IBA may be hazardous or non-hazardous. Fly ash is almost always hazardous.
- **Testing:** classification relies on leaching tests and total metals analysis. In a Rabat study, the metal content was high but leaching was low enough to meet EU landfill criteria ([Rabat study](#)).
- **Sharps:** sharps that survive incineration remain a physical hazard to handlers.

Why segregation matters

Better segregation before incineration reduces how much IBA is produced and makes its quality more predictable. The Rabat ash showed that ordinary domestic-type hospital waste was being burned unsorted, and heavy metals ranged from 0.5 to about 25,000 mg/kg.

- Separate recyclable glass and metals before incineration.
- Divert non-infectious general waste away from the incinerator.

- Track waste streams by source so the content of the ash can be predicted.
- Base local figures on site ash testing rather than literature ranges.