Material Recovery & Separation Solutions

Separation and sorting solutions for the recycling industry

Extraction ▶ Separation ▶ Filtration

impact air systems

...making air work for you

IFAT Exhibition

RWM Exhibition

clever thinking : clear results

Impact Air Systems

Using air to improve the value of your recyclables

"As the UK's leading air systems specialist, Impact Air Systems has developed numerous cost efficient systems for the recycling industry around the world. Our innovative system design and well engineered components ensure maximum efficiency, speeding up the sorting task and improving the throughput and quality of recycled material grades – blowing away our competitors in the process. Supported by specialist suppliers of key equipment, our systems are tailored specifically to best suit your needs and save you money.

With 30 years of trading, Impact Air Systems have gained a wealth of experience in a wide variety of different industry sectors. Whether you are building a recycling facility from scratch or simply looking to refine the performance of an existing facility, Impact Air Systems have a solution for you.

We pride ourselves on listening to your requirements and providing sensible and practical advice to help you find the most appropriate and cost effective solution.

And there's more…

We also have a dedicated in-house technical services team who provide contract maintenance, spare parts and specific services such as LEV testing & fan balancing services ensuring your systems run smoothly for many years to come."

Contents:

Nick Ball
Managing Director

impact air systems

Zigzag Air Classifier (ZAC)

The Zigzag Air Classification system is the very latest version of the tried and tested zigzag separation technology which you will find in operation in many applications in waste management facilities around the world.

We pride ourselves on listening to our valued customer feedback and constantly striving to improve our products. The upgrades made to the latest ZAC800 are a result of exactly that. Using our highly skilled in-house engineering team, 3D modelling software and working in conjunction with our carefully selected external supplier base, the ZAC800 boasts impressive resistance to abrasive materials, less moving parts and the very latest filtration technology, whilst maintaining its exceptional separation efficiency.

Specially engineered for processing of glass rich or highly abrasive sub 60mm material streams, the ZAC800 system is constructed from carefully selected materials ensuring exceptional durability. The Zigzag cascade enclosure includes hardened chromium cast plates to greatly reduce wear from glass.


Ellesmere Port, UK


Hartlepool, UK

- High quality material stream ouput using state of the art combined technologies
- Minimal downtime due to easy access split access feature
- Long-life wear plates and rubber blades
- Maximised throughput of a variety of material due to Filtersep engineering
- Easy operation with full colour 10” HMI user interface

1 Material entry rotary valve
2 Zigzag density separation chamber
3 Heavy material discharge point
4 Light material discharge point
5 24 module pulse cleaning filter
6 Explosion relief valve
7 10” HMI touch control panel

Zigzag Separation System

The Impact Zigzag Separation System is a fully adjustable cascade cleaning solution, suitable for most recycling facilities, designed to efficiently remove lightweight material and debris from the in-feed material stream.

The zigzag separation system is typically applied to remove unwanted lightweight debris from 0-50mm dry, free flowing material streams.

Material is fed into the zigzag system via a variable speed material in-feed rotary valve where it then has to fall through an upward air stream.

Differences in particle shape and density cause the lighter material to be lifted by the air stream, leaving the heavier density material to discharge from the bottom under the action of gravity, providing excellent rates of separation.

1 Material feed valve
2 Zigzag classification chamber
3 Heavy material discharge
4 Light material ductwork
5 Cyclone unit
6 Light material discharge
7 Dust transfer ductwork
8 Filter unit
9 Dust collection bin
10 High efficiency fan
11 Clean air discharge


Aggregates recovered

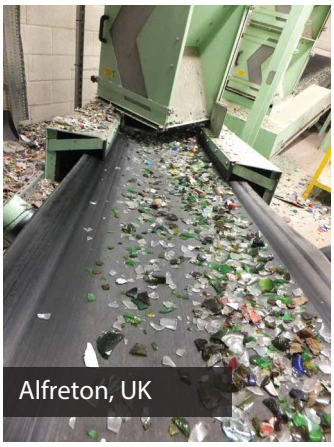

Glass recovered


Gypsum recovered


Plastics recovered


Darlington, UK


Sutton, UK


Alfreton, UK

Air Drum Separator (ADS)

The Air Drum Separator is a specially adapted air knife separator unit working in conjunction with a rotating drum and is designed to separate a wide variety of materials based on density, shape and aerodynamic properties.

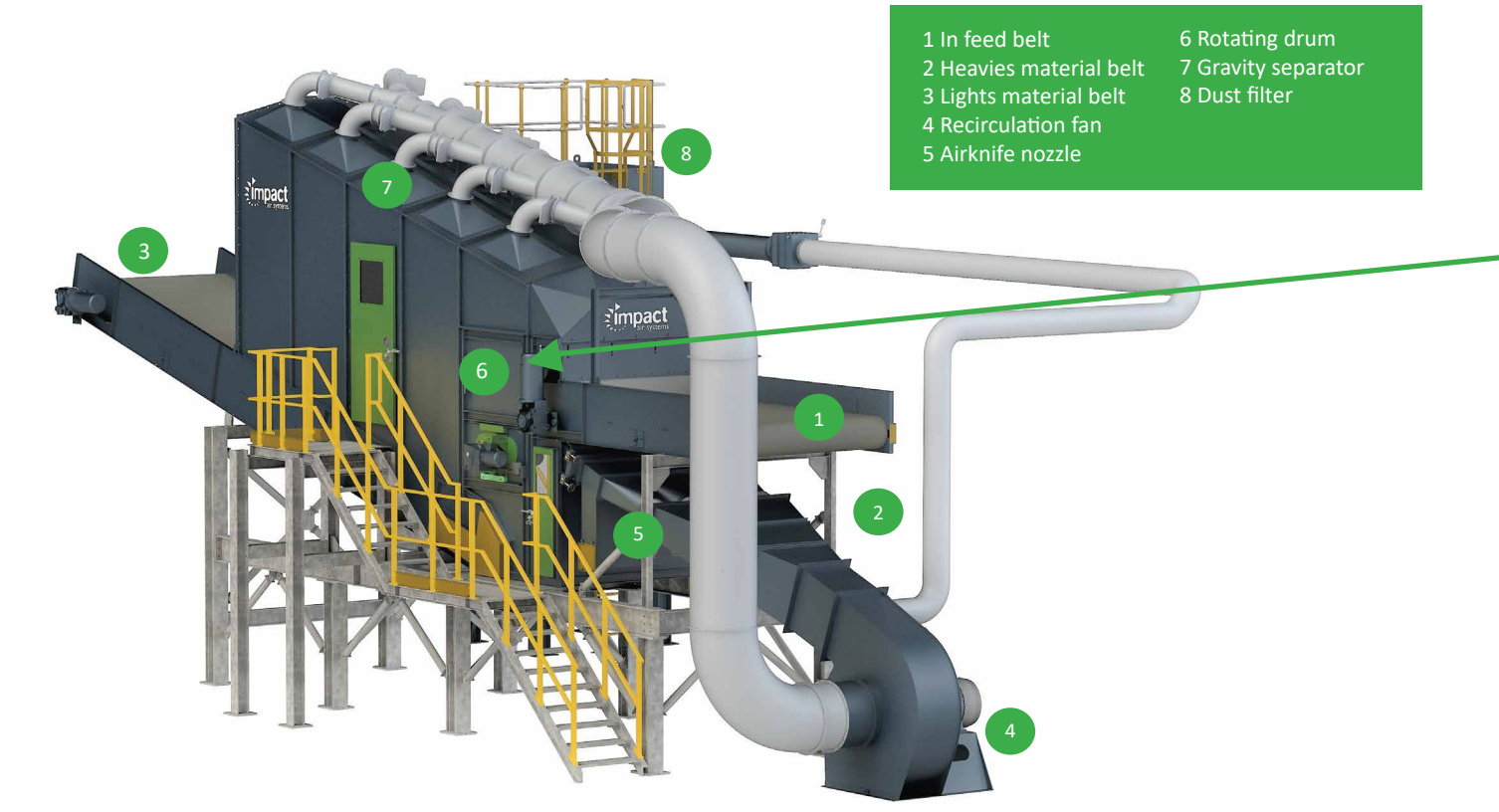
This is done using a forward upward facing air knife nozzle mounted at the end of a material in-feed conveyor. Mixed material falling from the in-feed conveyor then passes through the high velocity air stream and is either carried over the drum or is unaffected and falls in front of the drum.

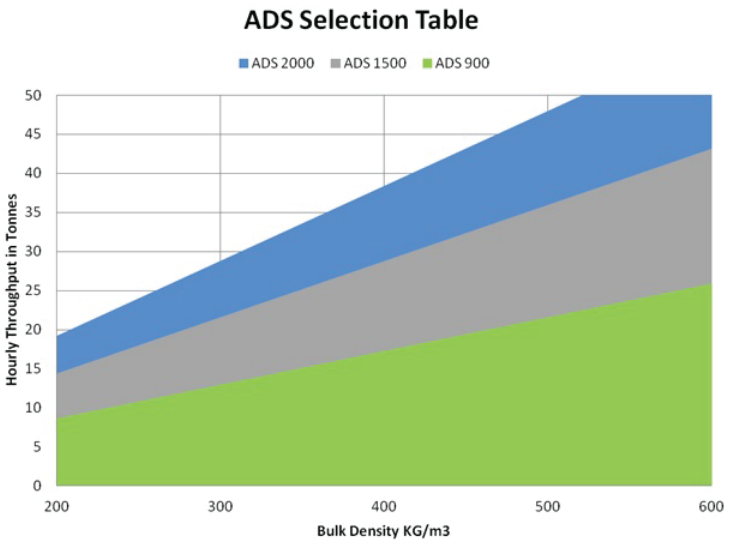
The use of the drum is the latest development in material separation technology and utilises fluid dynamics principles to greatly improve the efficiency of the air stream once it has left the confines of the air nozzle, resulting in greatly improved separation.


Nottingham, UK


Northamptonshire, UK

- Outstanding results to significantly improve the separation of the material stream
- Very high hourly throughput levels achieved
- Fully adjustable airflow controls via electronic fan speed controls
- Separation of material based on density & shape
- Suitable for a wide range of material applications including WEEE, C&D, Glass & fibre separation, MRF waste, ASR and many others



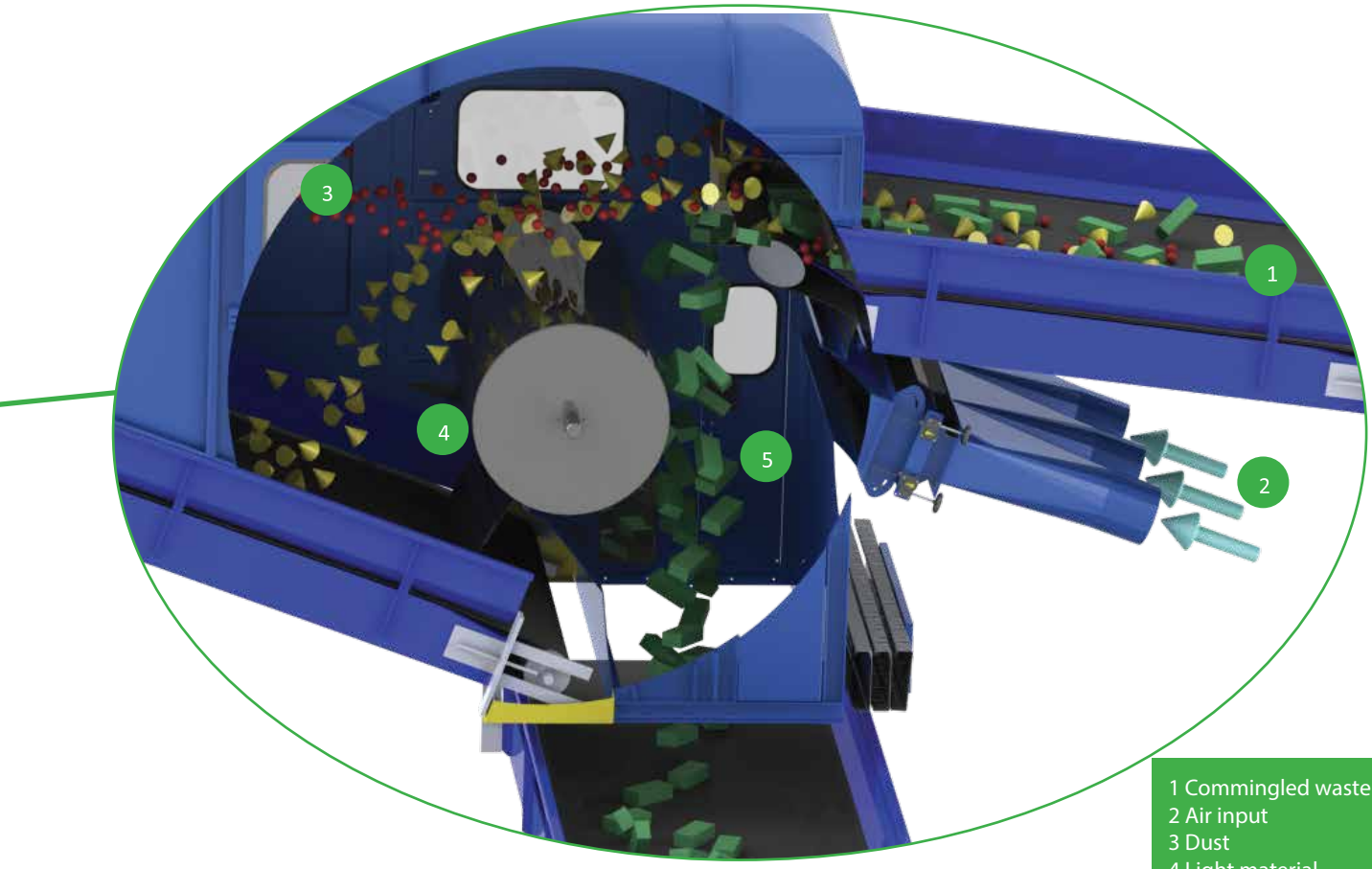


Model Ref	ADS 900	ADS 1500	ADS 2000
Belt width	900mm	1500mm	2000mm
Overall length	11,940mm	12,585mm	15,090mm
Overall height	4920mm	4920mm	4920mm
Weight	2730kg	3290kg	3870kg
Fan motor	22kW	37kW	45kW

Applications:

Suitable for a wide range of material desnity separation including;

- C&D (Construction & Demolition)
- C&I (Commercial & Industrial)
- Compost refinement & wood waste
- WEEE (Waste Electronic & Electronic Equipment)
- MBT (Mechanical Biological Treatment)
- RDF/SRF (Residue Derived Fuel/Solid Residue Fuel)



1 Commingled waste
2 Air input
3 Dust
4 Light material
5 Heavy material

Air Knife Separation

The versatile air knife system is a necessity for any recycling process. Its main function is to remove low value fractions from the material stream. Typically installed at a conveyor junction, the air knife consists of an input air volume channeled through an adjustable nozzle, working in conjunction with an extraction hood, all mounted inside a single enclosure.

The air knife is employed to remove lightweight unpickable items such as paper, plastic and foil from the material stream. The input air creates a high velocity air stream through which the falling material has to travel.

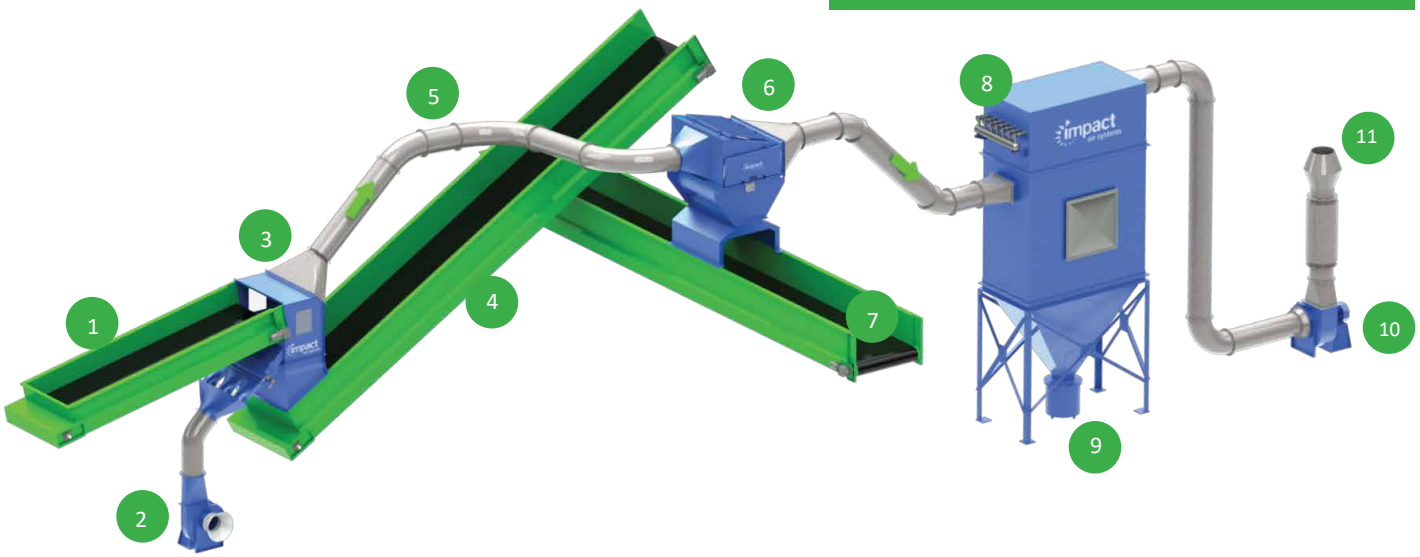
The lighter material fractions are blown or separated from the falling material and are captured by the extraction hood and conveyed away. The heavier material is unaffected by the incoming air stream and falls through the air stream onto the conveyor below.

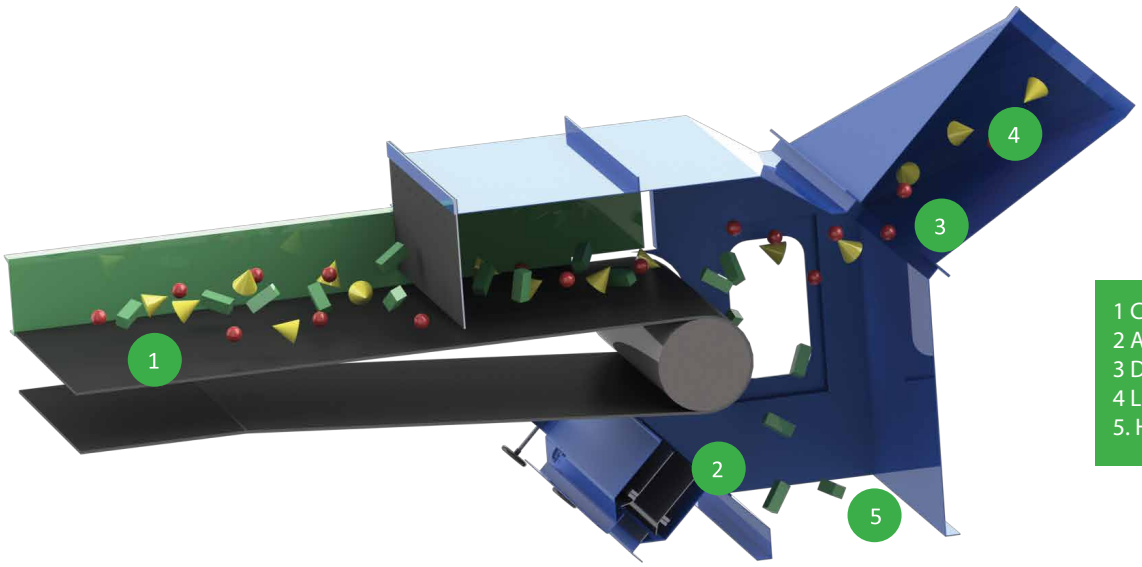

La Rochelle, France

Fort Worth, USA

- Improve the performance of downstream processes by removing unwanted contaminants
- Significantly reduce manual sorting labour requirements and costs
- Custom designed enclosures to suit a variety of airknife locations and wide range of material applications
- Fully adjustable design for optimum performance
- Low maintenance

1 Contaminated material infeed conveyor
2 Blower fan
3 Air knife enclosure
4 Heavy fraction conveyor
5 Light fraction and contaminants
6 Rotary material separator
7 Light fraction conveyor
8 Filter unit
9 Dust collection bin
10 Extraction fan
11 Clean air discharge





1 Commingled waste
2 Air input
3 Dust
4 Light material
5. Heavy material


Ohio, USA


Berkshire, UK

Phoenix, USA

Film Vacuum System

The film vacuum system offers the ultimate flexible solution for collecting and conveying handpicked material during the manual sorting process. The system consists of a series of specially designed material collection hoods, which are typically mounted in the ceiling of the sorting cabin, above the waste belts.

The unique internal 'Jetcone' hood design minimises operational noise levels and the amount of air withdrawn from the sorting cabin, by utilising a closed loop system. Conveying air, used to transport the material, is recycled back through a return air system to significantly reduce the cabin's make up air requirements.

A series of collection hoods can be connected together via a range of ductwork, meaning all material is transported to a single point within the MRF, eliminating the need to duplicate material storage bunkers to match the hand picking locations.

Material is typically fed directly into a bale press or the Impact Film Screw Compactor to reduce material volumes, minimising labour and transport costs.

This solution has proven to be a highly valued addition, offering MRF designers maximum design flexibility and improved segregation of recyclables.

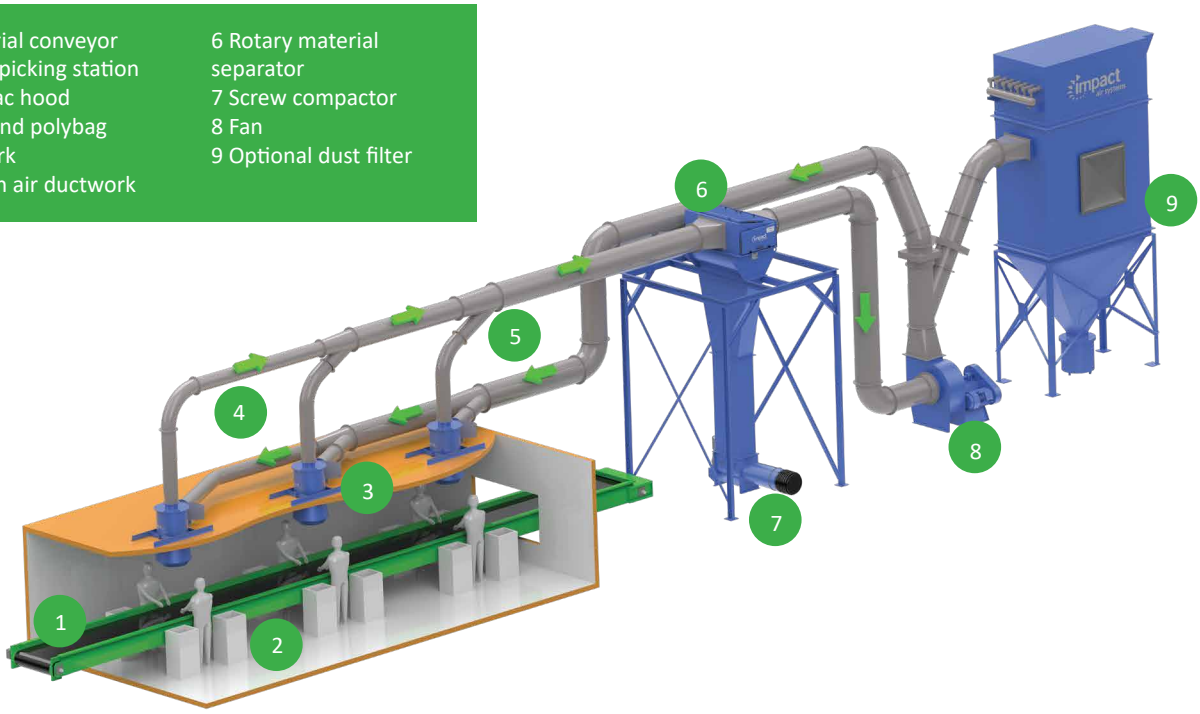

Tucson, USA


Newry, N.Ireland

Fort Worth, USA

- Collection of handpicked polywrap, films, plastic bags and packaging
- Multiple collection points to transport material back to single baler or storage bunker, eliminating the need for duplicate storage bunkers
- Helps improve overall quality of other recyclables through removal of plastic contamination
- Closed loop operation to reduce sorting cabin make-up air requirements
- Quiet operation

1 Material conveyor
2 Hand picking station
3 Filmvac hood
4 Film and polybag ductwork
5 Return air ductwork
6 Rotary material separator
7 Screw compactor
8 Fan
9 Optional dust filter



Film Screw Compactor

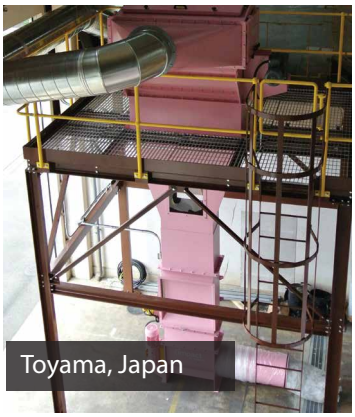
A valuable addition to any film vacuum system, this simple design allows collected material to be compressed into an expanding plastic bag to produce a ‘sausage’ like bale.

A single screw auger, discharge tube and retaining ring provide a simple yet highly reliable, cost effective solution to reduce bulky material into manageable volumes.

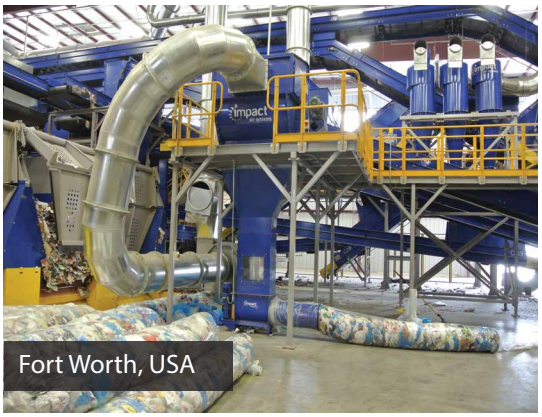
Benefits

- Few wear items, low maintenance and highly reliable
- Variable length bales to suit manual handling requirements
- No complicated wire tying systems

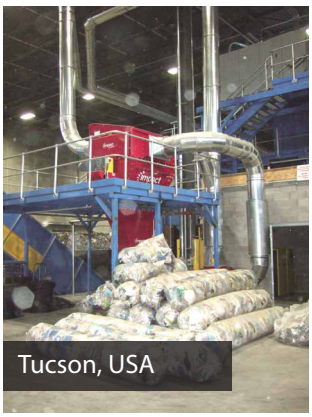
Tucson, USA



Toyama, Japan



Fort Worth, USA



Tucson, USA

Clean input air

Contaminated extract air

Pneumatic Conveying System

The pneumatic transfer system is utilised in many recycling operations allowing pre-separated dry materials such as plastic containers, aluminium and steel tins and beverage cans to be conveyed through a range of ductwork directly to storage bunkers or balers using the most direct route, eliminating the need to utilise conventional belt conveyors, which can often take up valuable floor space.

Typically receiving material directly from Eddy current separators, magnetic separators or optical sorting equipment, this solution offers ultimate flexibility to most recycling facilities.

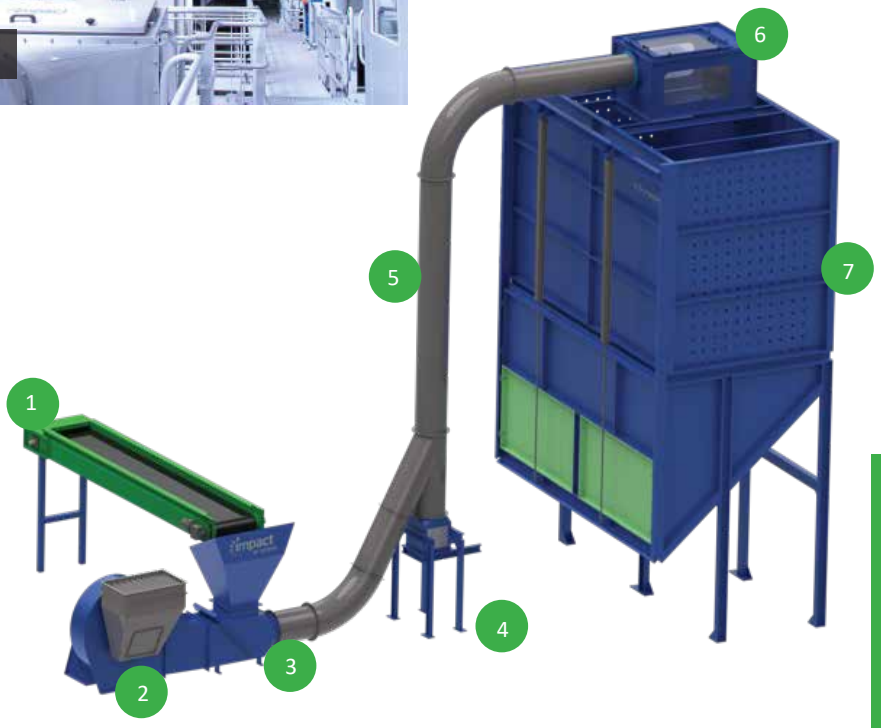
Material is fed into the system via a Venturi style receiving hopper and transfer box, where it then falls into a moving air stream provided by a high efficiency fan and is blown via a range of ductwork directly to the storage bunker or baler.

Leeds, UK

Corby, UK

Leicester, UK

- Incorporated into new builds or retrofitted to existing recycling operations
- Range of different sizes available depending on material requirements
- Increases floor space by being positioned at high level
- Long conveying distances achievable
- Simple, robust and reliable design



1 Material feed belt
2 High efficiency fan
3 Venturi material receiving hopper
4 Foreign objects drop out section (heavies)
5 Heavy duty ductwork
6 Material drop out separator
7 Storage silo/hopper

Ventilation Systems

Many recycling applications such as MSW, RDF & SRF waste contain a high percentage of organic material which starts to decompose within the recycling facility. Heat created by shredding and general processing add to the issue. In the extremes of cases the ambient internal temperature can increase by as much as 10˚C per hour of operation. This results in a gradual build up of moisture content within the air which condenses, particularly at high level. This moisture release can cause corrosion damage to the building and valuable equipment within the facility, as well as creating a very unpleaseant working environment.

Impact's ventilation systems remove the moist, warm air and replace it with a supply of fresh air to substantially reduce temperatures, moisture levels and unwanted odours from the processing facility.

The solutions offered can range from simple wall/roof mounted extraction fans and make up air grills to complex central ductwork and filter systems.

- Bespoke designs to suit your budget
- Visably improved working environment
- Removal of odours, fumes, condensation and unwanted heat
- Utilises our 30 years air systems design experience

Dust Control Systems


Wakefield, UK


Dartford, UK

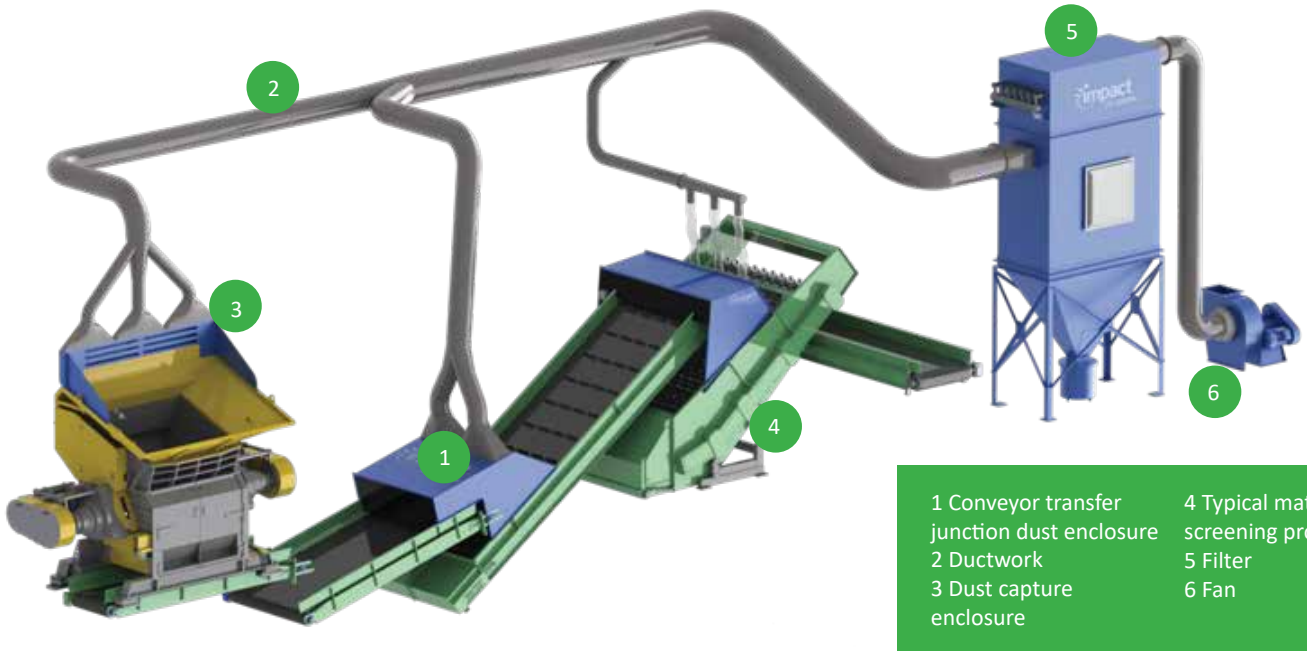
Processing domestic waste material in a MRF can generate nuisance dust which can create an unpleasant working environment for employees, housekeeping issues and significant fire risks as airborne dust particles come to rest on plant equipment.

Impact Air Systems has vast experience in dust control solutions, enabling us to offer simple yet highly effective methods for capturing dust at source and at conveyor discharge or transfer points. These dust control solutions can be integrated into your MRF using standalone fully automatic filter systems or incorporated into other centralised pneumatic conveying systems.

The reverse jet filter system offers an effective air cleaning system to remove dust particles from the conveying air stream to well below current COSHH levels.

Dust recovered by the reverse jet filter system is collected in a bin via a hopper and can be disposed of via a plastic sack, secondary conveying system or a dust briquetter system which allows dust collected to be compacted into a small pellet or briquette.

- Incorporated into new builds or retrofitted to existing recycling operations
- Typically capture and remove dust from bag openers, screen, conveyor transfers, optical sorters, shredders and other dust producing operations
- Greatly improved working environment, reducing fire risk and potentially reducing plant maintenance



1 Conveyor transfer junction dust enclosure
2 Ductwork
3 Dust capture enclosure
4 Typical material screening process
5 Filter
6 Fan


Barnsley, UK


Northampton, UK

- Custom designed hoods to minimise the escape of dust from equipment or ventilation systems, positioned to maximise dust collection
- Dampers to allow variations in fan speed and extraction efficiency
- ATEX rated components for use in potentially explosive atmospheres
- Return air ductwork - warm clean air is returned to the building during the winter months and to atmosphere in the summer months
- Briquetting systems - Designed to substantially reduce the volume of nuisance dust collected via dust filtration
- Local Exhaust Ventilation (LEV) systems - used to control or capture airborne hazardous substances and convey them to a point where it is discharged into the atmosphere or safely removed from the system
- Air Quality Testing - To provide concise and accurate proof of the effective control of airborne contaminants in the workplace


Rugby, UK


Rugby, UK


Edinburgh, Scotland

Test Facility - Try before you buy!

Impact Air Systems' separation systems have been impressing MRF owners and waste processors all over the world, and we are pleased to offer our test facility to allow our customers to try them for themselves.

Our constantly evolving test facility, allows material samples to be tested on several of our most popular systems giving customers complete confidence that the solution offered will provide the desired results.

You can make an appointment to bring along a sizeable sample of material to be processed. Alternatively, arrangements can be made for you to send the sample to us. In return, you will receive a video of your material being processed through our test facility along with a sample of the separated material. This is a fantastic opportunity to try before you buy.

See a wide range of materials being separated through our test facility on our YouTube channel.

Order your FREE test kit at:
www.impactairsystems.com

- A simple process of try before you buy
- Bring a sample and watch it being processed
- Send a sample to be processed and receive a video of your material being separated
- Results measured and recorded

Before

After

Before

After

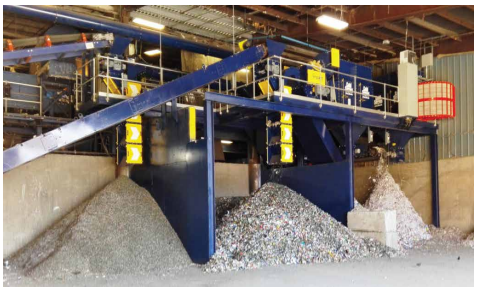
Before

After

Before

After

Valuable Material Recovery - Installations



Glass & Metal Recovery

Recycling Centre, Boston, USA
Glass Recovery: 12-50mm material
Throughput: 20 tph
Material from MRF Commingled
Recovered material: Glass to remelt, fibre is recycled and aggregates sold

Glass & RDF Recovery

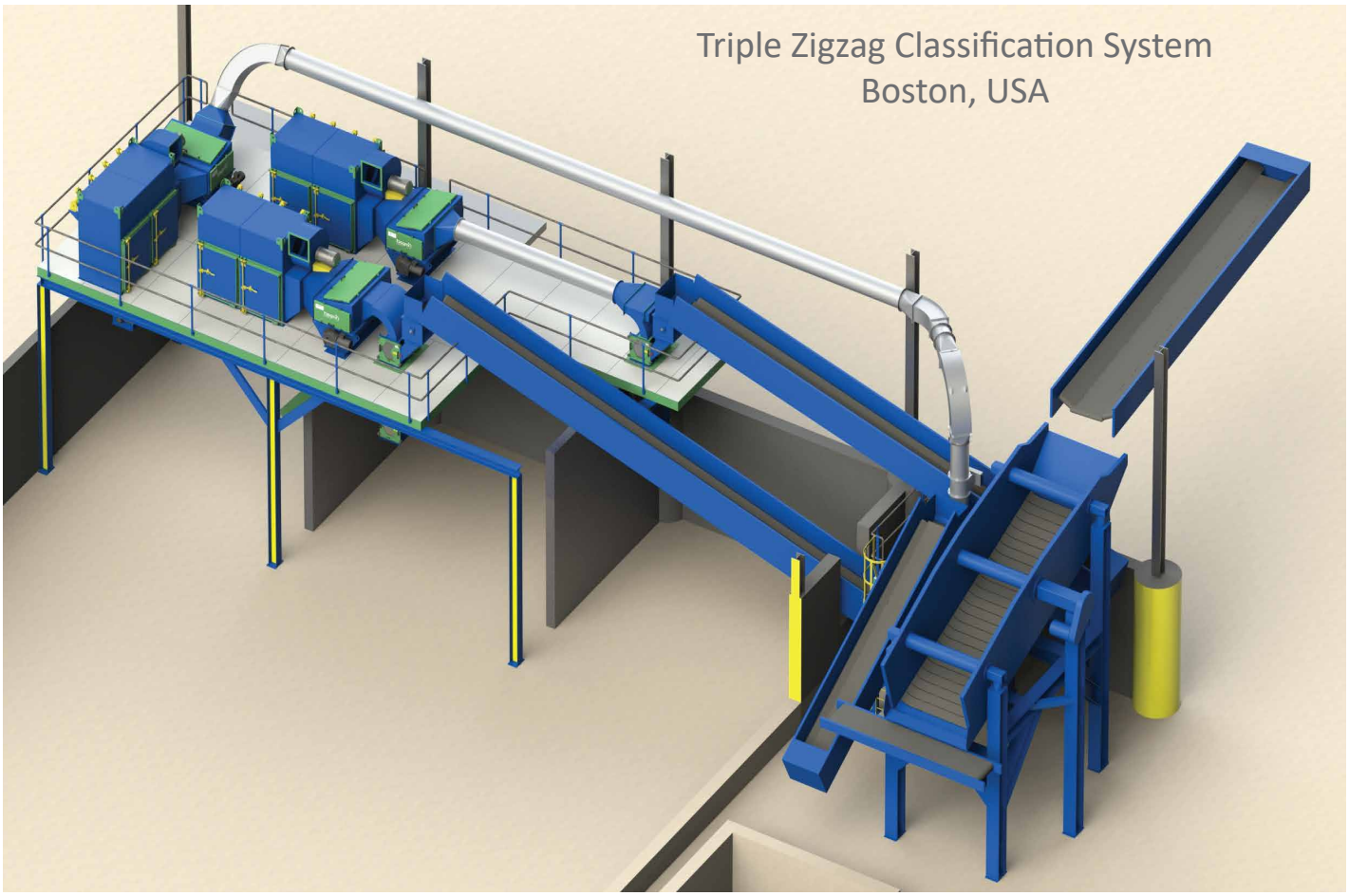
P&D Material Recovery, Chatham, UK
Material Recovery: Glass, fibre and plastic film
Throughput: 4/5 tph
Material from MRF residue
Recovered material: EfW (Energy from Waste)/Glass remelt

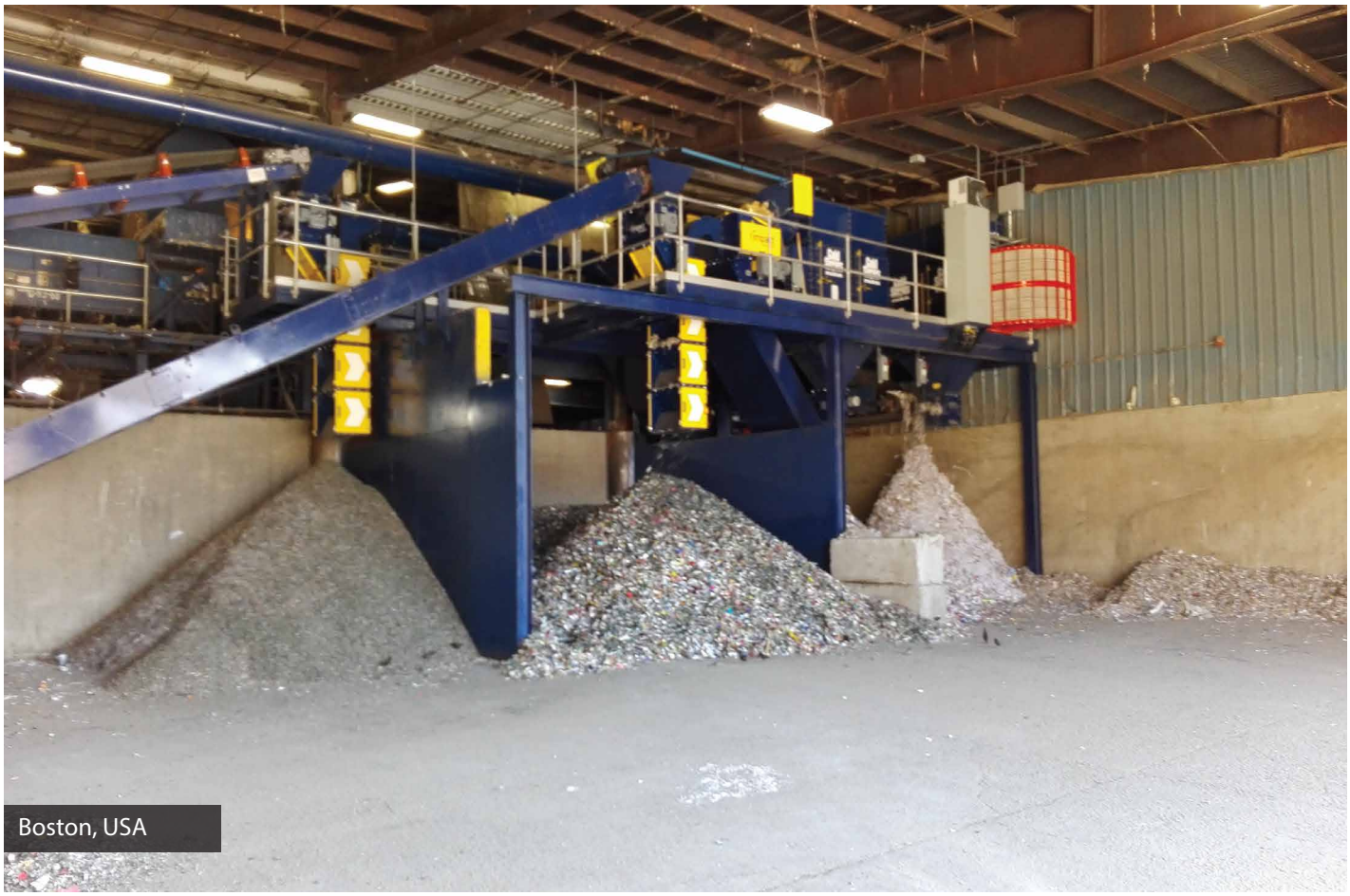
LOI reduced to <6%

Fibre & Aggregate Recovery

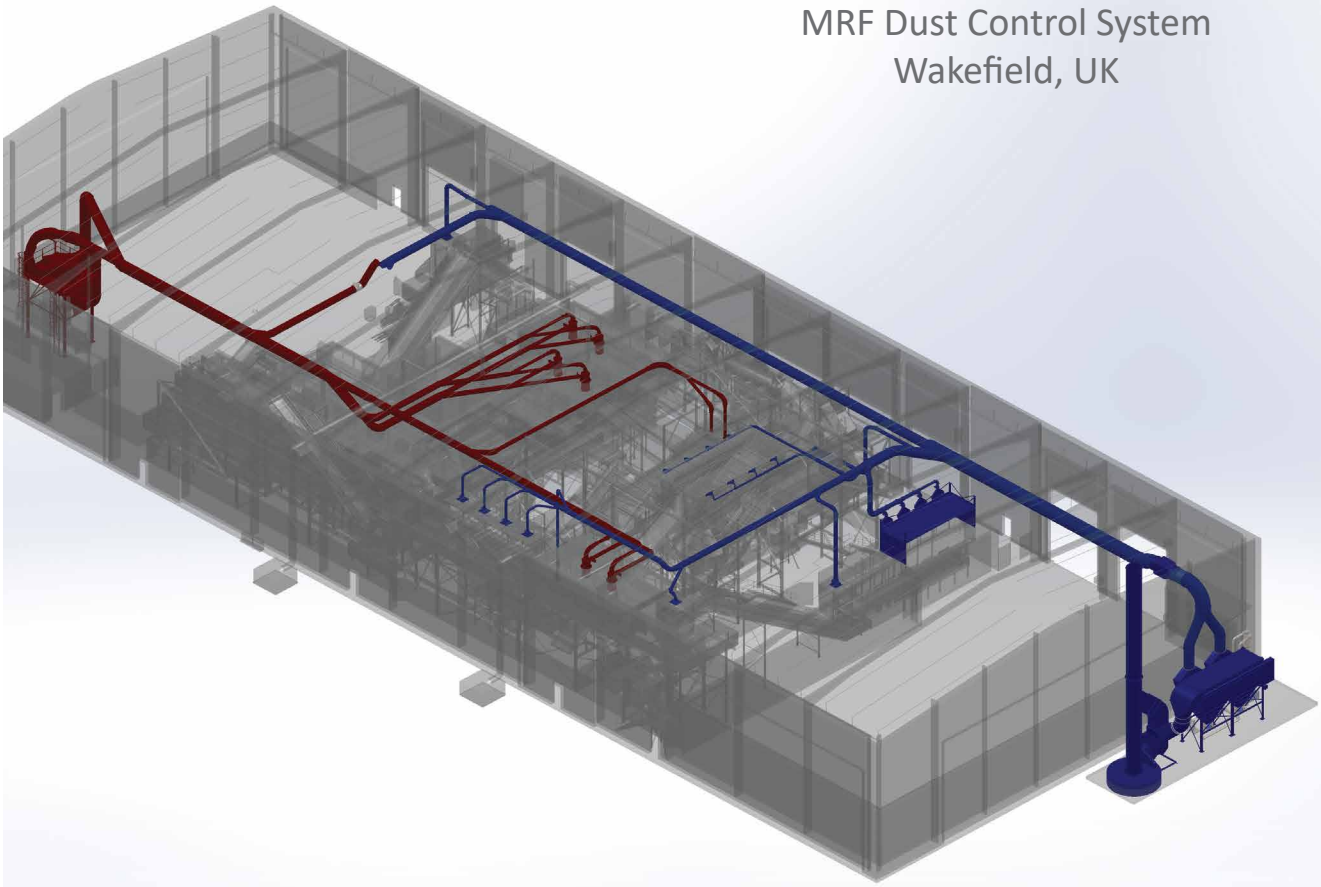
Hadleys Recycling & Waste Management, Berkshire, UK
Material Recovery: 10-40mm mixed aggregates
Throughput: 7-8 tph
Material from C&D waste stream
Recovered material: Aggregates for resale, Lights for RDF.
LOI reduced to less than 6%

Visit our website for more case studies


Triple Zigzag Classification System
Boston, USA


Boston, USA

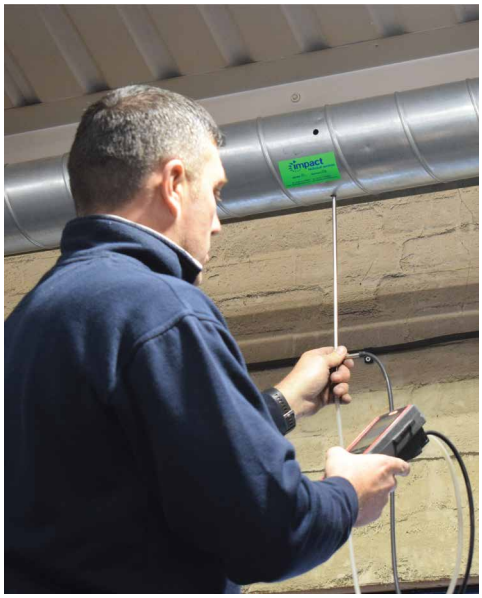
MRF Dust Control System
Wakefield, UK



Wakefield. UK

Service & maintenance

maintain - monitor - support



Maintenance

To help ensure a long, productive and trouble free operation, we provide a comprehensive package of customer care and support initiatives.

We offer various levels of preventative maintenance services as standard, but we will always ensure that we create a package that is right for you.

With our many years of experience in process industries, we realise that many plants have very little shutdown time or maintenance days. It is for this reason we offer 24/7 planned maintenance coverage throughout the UK.

Testing

We can help you to fulfil your legal obligations to ensure your local exhaust ventilation systems are thoroughly examined and tested regularly and working efficiently.

Our engineers use their years of experience to identify any physical defects, design flaws and maintenance issues that might affect performance.

You will also be automatically added to our comprehensive database so we will remind you when your re-test is due.

Parts

Every new Impact installation is followed up with a recommended spare parts list that is tailored to your system. The aim is to keep your system operational and efficient for as long as possible with minimum disruption.

We can offer you spare parts for every item on an Impact system and most of our competitors too.

Our strength in the market means that we can offer a vast range of products at very competitive rates.

Contact us for global material recovery solutions...

impact air systems

3 Kingsley Street, Leicester
LE2 6DY, United Kingdom
+44 (0)116 2448855
sales@impactairsystems.com
www.impactairsystems.com