

WASTE RECYCLING SOLUTIONS

from **Martin Engineering**

Are you managing these challenges?

- Complex, variable feedstocks
- Tightening cost constraints
- Non-stop productivity demands
- Limited maintenance resources
- Health, safety and fire risks
- Increasing environmental regulation
- Rising costs of parts and equipment

Does your plant have these problems?

- Blocked hoppers and silos
- Spillages and build-ups
- Clogged transfer points
- Material sticking to belts
- Conveyor belt mistracking
- Fugitive dust emissions
- Littered, impassable walkways

Problem Solved™ ***GUARANTEED!***

Sustainable materials management can create complex handling challenges. Waste-derived feedstocks for recycling can have variable consistency, are often full of moisture, and can contain hot, sticky, abrasive and corrosive substances. They quickly clog up processing equipment such as conveyor belts, transfer chutes, bins and hoppers, and cause excessive wear and tear on machinery, leading to unplanned shutdowns and costly repairs.

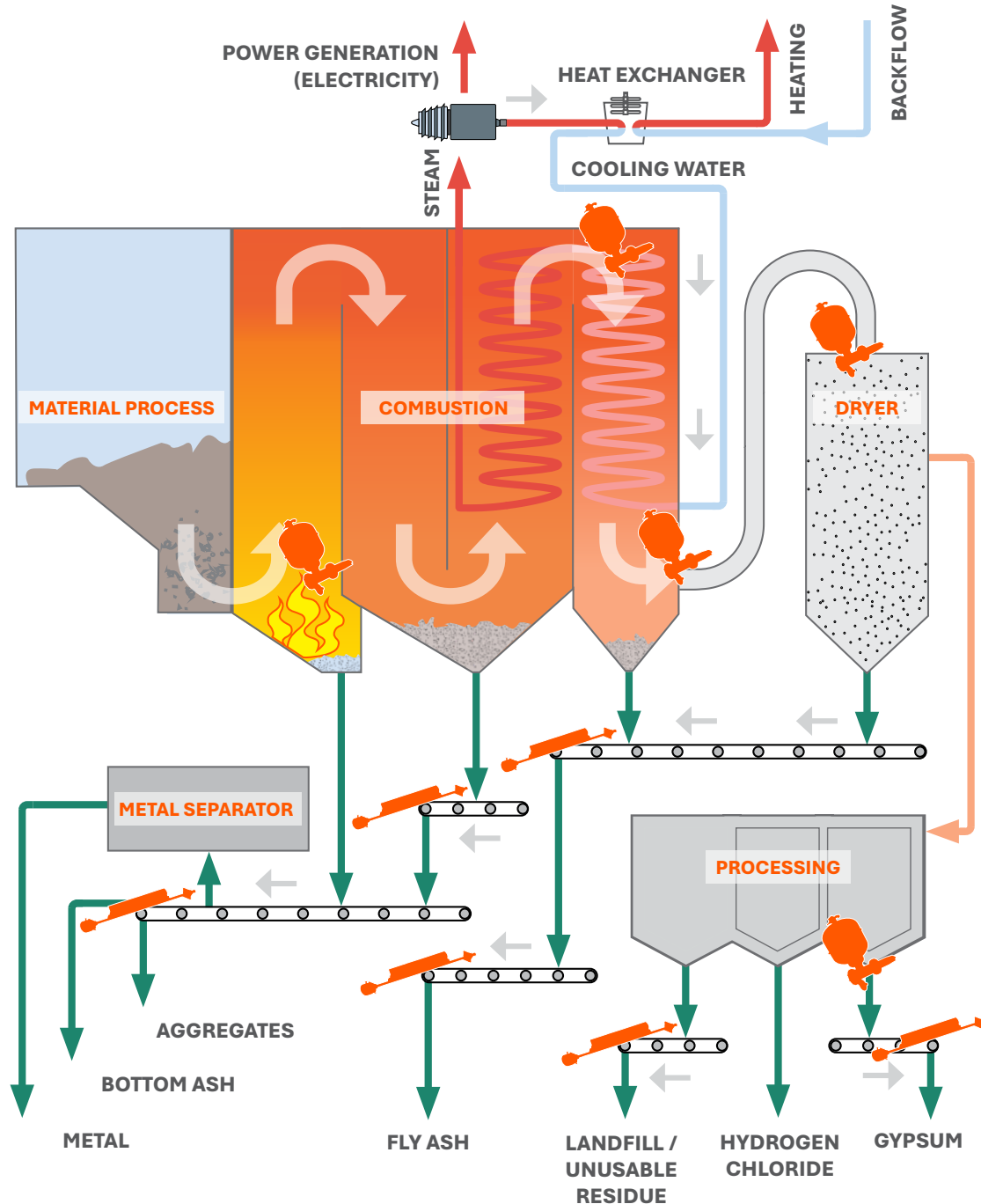
Martin Engineering helps overcome these challenges, optimising processes to ensure cleaner, safer and more productive recycling. Our service technicians are experts in identifying root causes of spillages, buildups and blockages, and they prescribing sustainable, durable solutions – including better conveyor belt cleaning, transfer point systems, and flow aids for silos, hoppers and chutes.



Energy from Waste

Martin® Air Cannons & Transfer Point Solutions

Martin Engineering has developed a wealth of expertise solving end-to-end handling problems in the Energy from Waste (EfW) sector. From the stream of feedstocks into process – through incineration, cooling and drying – to the processing of different residues for sustainable reuse, we have solutions to maximise throughput, prevent blockages, eliminate spillage and control fugitive dust.



Martin Engineering offers material handling solutions throughout the EfW process:



Martin® Transfer Point Solutions (Belt Cleaners / Belt Support / Sealing Systems / Tail Pulley Protection)

Martin® Flow Aid Solutions (Air Cannons, SMART™ Series Nozzles & Accessories)

Incinerator Bottom Ash (IBA)

Martin® QC1+™ HD primary and SQC2™ secondary belt cleaners

Residues from household waste incineration is handled at multiple facilities operated by the UK's leading IBA processor which recovers metals and produces secondary aggregates.



The constant delivery of raw IBA from waste incineration plants, demands immediate processing, and operational safety and plant reliability is critical. Unplanned downtime and disruptions in processing have serious consequences. However, the ash – which is often warm and contains moisture – sticks to conveyor belts leading to carryback, buildups and spillage and increased wear on the conveyor systems so clean operation is paramount.



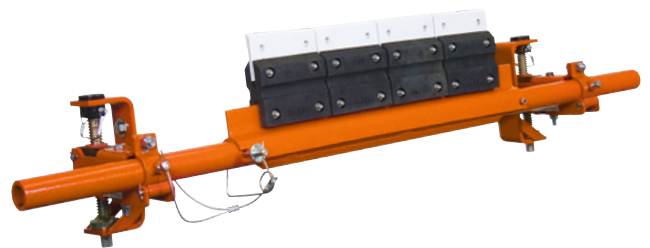
The QC1+™ HD primary cleaner features:

- *Martin's unique patented CARP technology*
- *Consistent life-long cleaning pressure*
- *High-performance custom-fit urethane blades*
- *Low maintenance requirements*

The installation of Martin's® QC1+™ primary cleaner led to a significant improvement throughout the plant. This success was further enhanced on particularly difficult belts with the additional deployment of Martin® SQC2™ secondary



cleaners. In order to reduce the destructive effects of corrosive ash on the scrapers, particularly affected components are made of stainless steel. In total more than 200 of the firm's belts have been fitted with Martin® cleaners.



The SQC2™ secondary cleaner features:

- *Quick and easy blade replacement*
- *Easy tension adjustment*
- *Low installation space requirements*
- *Stainless steel option*

Type	QC#1+ Primary Cleaner	SQC2™ Secondary Cleaner
Belt Width	500 – 2400 mm	450 – 3000 mm
Pulley Dia.	300 - 600 mm	N/A
Belt Speed	Max. 4,6 m/s	Max. 5,1 m/s

Metal Dust

Martin® CleanScape® primary and secondary belt cleaners

The safe and efficient operation of a major metal dust recycling plant was the concern of a global recycling company based in Germany. The abrasive metal dust hardens completely during processing, and cleaning the conveyor belts using conventional methods was not satisfactory. Due to insufficient cleaning, metal dust was escaping into the air and settling throughout the plant.

Besides reducing the amount of manual cleaning work required, it was critical to address the air quality issues at the plant.

Martin's unique CleanScape® primary belt cleaner was specified to meet the cleaning requirements posed by the high temperatures and abrasive material that was adhering to the belt.

CleanScape's® matrix of tungsten carbide tips are proven to remove hardened material with minimal pressure on the conveyor belt without damage. CleanScape® is installed diagonally across the discharge pulley forming a three dimensional curve. Despite low contact pressure between belt and cleaner, up to 95% of stuck material is removed. The design also significantly increases the service life of the cleaner (typically up to 4 times) compared



to conventional polyurethane systems. Thanks to CleanScape's® outstanding belt cleaning performance, the company achieved a higher level of productivity and reduced costs associated with equipment replacement



CleanScape® primary cleaner features:

- Minimal space for installation
- Low belt and cleaner wear
- Corrosion resistant blade
- Suitable for use with mechanical splices
- Low maintenance



Type	CSP S	CSP M	CSP L	CSP H
Belt Width	400 - 1000 mm	500 – 1800 mm	800 – 2400 mm	1000 – 3000 mm
Pulley Dia.	300 - 550 mm	550 – 900 mm	800 – 1250 mm	800 – 2000 mm
Belt Speed (vulcanised/ mech. splices)	6,0 / 4,0 m/s	8,0 / 4,0 m/s	8,0 / 4,0 m/s	8,0 / 6,0 m/s

Household Waste

Martin® QC1+™ PV primary and SQC2™ secondary belt cleaners

Martin has extensive experience helping companies recover valuable raw materials from mixed domestic and commercial waste streams. The process of automated sorting and separation processes – during which the waste might be shredded, sorted, cleaned and further shredded – can create numerous handling challenges.



In particular, waste sticking to the conveyor belts poses a major challenge, reducing the effectiveness of segregation systems and leading to increased contamination. Further, this adhesion causes wastes to build-up and fall from conveyors, blocking and contaminating pedestrian routes (both safety and health risks), and fouling rollers, motors and



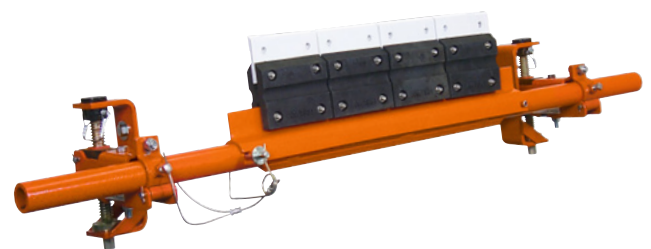
other moving parts. Manual cleaning unpleasant and always expensive.

The industry-proven QC1+™ Pit Viper (PV) primary cleaner has become the go-to solution to keeping conveyor belts clean and operational when handling complex mixed wastes. Featuring patented CARP technology (Constant Angle Radial Pressure), the QC1+™ PV was specifically developed for harsh conditions. The service-optimised design ensures easy replacement of worn blades within minutes, which guarantees rapid resumption of operation after blade servicing or replacement.



The QC1+™ PV primary cleaner features:

- Martin's unique patented CARP technology
- Consistent life-long cleaning pressure
- High-performance custom-fit urethane blades
- Low maintenance requirements



The SQC2™ secondary cleaner features:

- Quick and easy blade replacement
- Easy tension adjustment
- Low installation space requirements
- Stainless steel option

Type	QC1+™ PV Primary Cleaner	SQC2™ Secondary Cleaner
Belt Width	500 – 1.800 mm	450 – 3000 mm
Pulley Dia.	300 - 400 mm	N/A
Belt Speed	Max. 2,5 m/s	Max. 5,1 m/s

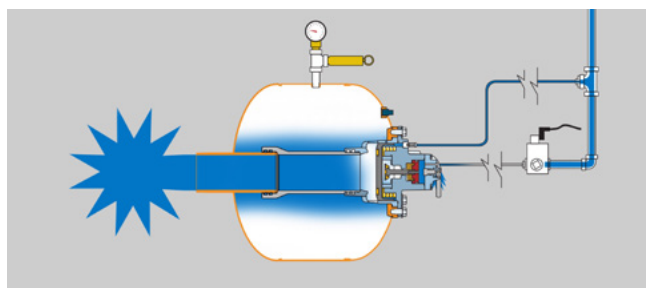
Electrical Appliances

Martin® Hurricane Air Cannons

The recycling of electrical appliances poses particular challenges due to the complex composition of the materials involved. A common



problem when processing electrical and electronic equipment is combustion exhaust gases, contaminated with suspended solids, which clog the exhaust duct after heat treatment. The clogged ducts must be cleaned regularly, but the toxic deposits can pose a health risk, making the job of manual cleaning unpleasant, hazardous and expensive.

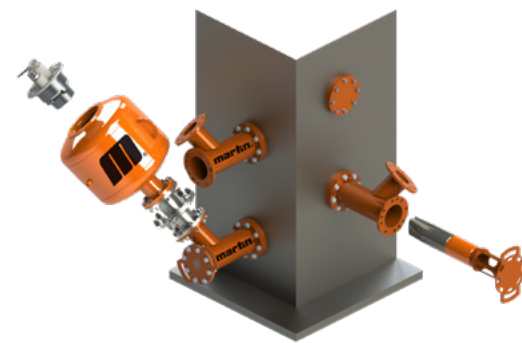


‘Positive pressure firing’ means that the air cannon is triggered by an active compressed air signal, eliminating misfires due to pressure drops. The technology allows for pneumatic control lines up to 60 m long.

To solve this problem, Martin® Hurricane Air Cannons with ‘positive pressure firing’ technology have been used in a number of locations across



Europe. Rapid and carefully timed blasts of compressed air effectively remove particles that have settled on the inner walls of ducts, directing exhaust particles to the filter system. This prevents ducts from becoming clogged with material, minimises the need for manual cleaning and reduces the health risk for employees.



Martin® Hurricane Air Cannon features

- Positive pressure firing
- Higher blowout force
- Wide temperature range (-30°C to +150°C)
- Straightforward maintenance

Type	Hurricane 35 L	Hurricane 70 L	Hurricane 150 L
Volume	35 L	75 L	150 L
Vessel Diameter	400 mm	500 mm	600 mm
Weight	43 kg	49 kg	78 kg

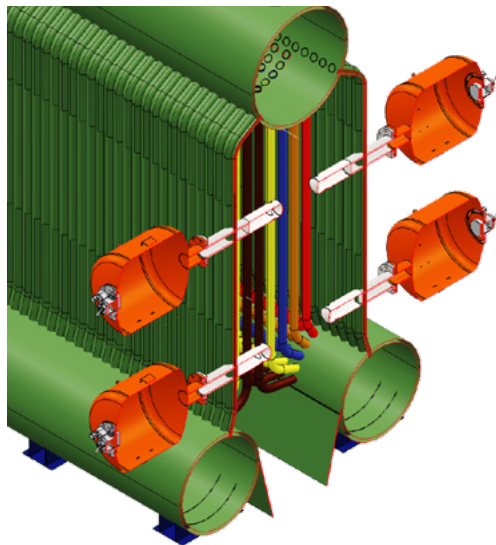
Hospital Waste Incineration

Martin® Typhoon Air Cannon

During incineration of medical waste, the organic components of the waste are destroyed by burning at high temperatures. This is designed to ensure that pollutants such as pathogens cannot survive and organic compounds are broken down, and also reduces the volume of waste that needs to be disposed of as residue.

However, suspended particles produced during combustion invariably contaminate heat exchangers, potentially giving rise to several problems:

- Downtime for manual cleaning
- Health hazards during manual cleaning
- Reduced air flow rate and efficiency
- Damage to heat exchangers
- Premature replacement of the system



This is where Martin® Typhoon Air Cannons come into play. The air cannons blast the accumulated material off the heat exchangers with controlled bursts of compressed air. The air flow is guided by Martin's specially designed high temperature stainless steel nozzles. Part of the Martin® Smart Series, these nozzles ensure that the air flow acts at the critical points with maximum effect. The nozzles fire in specific directions according to requirements. Equipped with the appropriate components, these nozzles can also be serviced during operation, avoiding unnecessary downtime.



Martin® Typhoon Air Cannon features:

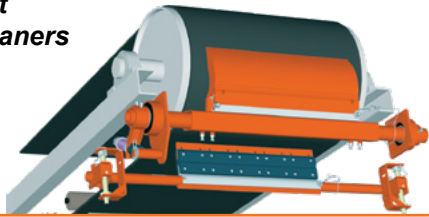
- *Reliable material flow improvement*
- *Custom nozzles according to specifications*
- *Heavy-duty industrial durability*
- *Low maintenance operation*

Type	Typhoon 35 L	Typhoon 70 L	Typhoon 150 L
Volume	35 L	75 L	150 L
Vessel Diameter	400 mm	500 mm	600 mm
Weight	43 kg	49 kg	78 kg

WASTE RECYCLING SOLUTIONS

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**Belt
Cleaners**



Tail Pulley Protection



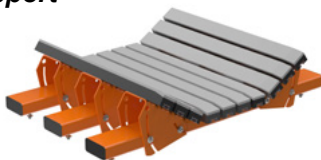
Torsion VPlow Plus

**Sealing
Systems**



Apron Seal

Belt Support



Impact Cradles

Air Cannons



Hurricane

Typhoon

WALK THE BELT

The **Martin® Walk the Belt™** programme offers regular inspections of conveyor systems to help plant managers identify issues and prevent major problems. Our highly trained technicians thoroughly review all aspects of conveyor systems - belts, cleaners, tracking, chutes, dust control - and identify issues like carryback, mistracking, and dust. Each inspection is customized to the specific system and followed by a detailed report, maintenance needs and preventive recommendations. This proactive approach extends equipment life, reduces unscheduled downtime and improves safety.



FOUNDATIONS™ TRAINING

Get the best performance from your most important asset, your people, through impactful conveyor system training. The **Martin® Foundations™** training programme prepares employees for success by building skills and understanding of every aspect of conveyor systems. Drawing on decades of global experience Foundations™ training covers conveyor safety, belt alignment, cleaning, maintenance, splicing, transfer point engineering, dust management and much more, with training levels tailored to experience and responsibility.



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