

**S+S Separation and  
Sorting Technology GmbH**



# Production Security.

**Optimum  
Productivity  
in the  
Plastics Industry**

- Metal Detectors
- Metal Separators
- Magnetic Separators



# Metal Separation - Systematically.

## Process security in plastics processing

# secure.



For over 30 years S+S has been providing the plastics industry with cost-effective, tried and tested solutions. We cover every stage in the process – from manufacturing granulate through to finished products and on to recycling.

S+S metal detectors and separators identify and remove all metals, not only magnetic but stainless steel, aluminium, copper, brass and lead; irrespective of whether they are in pure form, bonded, coated, lacquered, insulated or even embedded in other materials.

Magnetic separators are an effective complement in the pre-removal of ferrous metal and magnetic steel particles.

S+S develops individual machines and systems in close co-operation with its customers; the result is effective and consistent operation, easy installation and commissioning with minimal maintenance requirements.

#### Effective and reliable detection and removal of

- magnetic metals
- non-magnetic metals (copper, brass, stainless steel etc)

#### Additional benefits

- reliable machine protection
- increased productivity
- reduced reject products
- increased product quality

#### Seamless integration

- into every stage of the process
- into every type of conveying system
- plug and play board replacement
- customised design

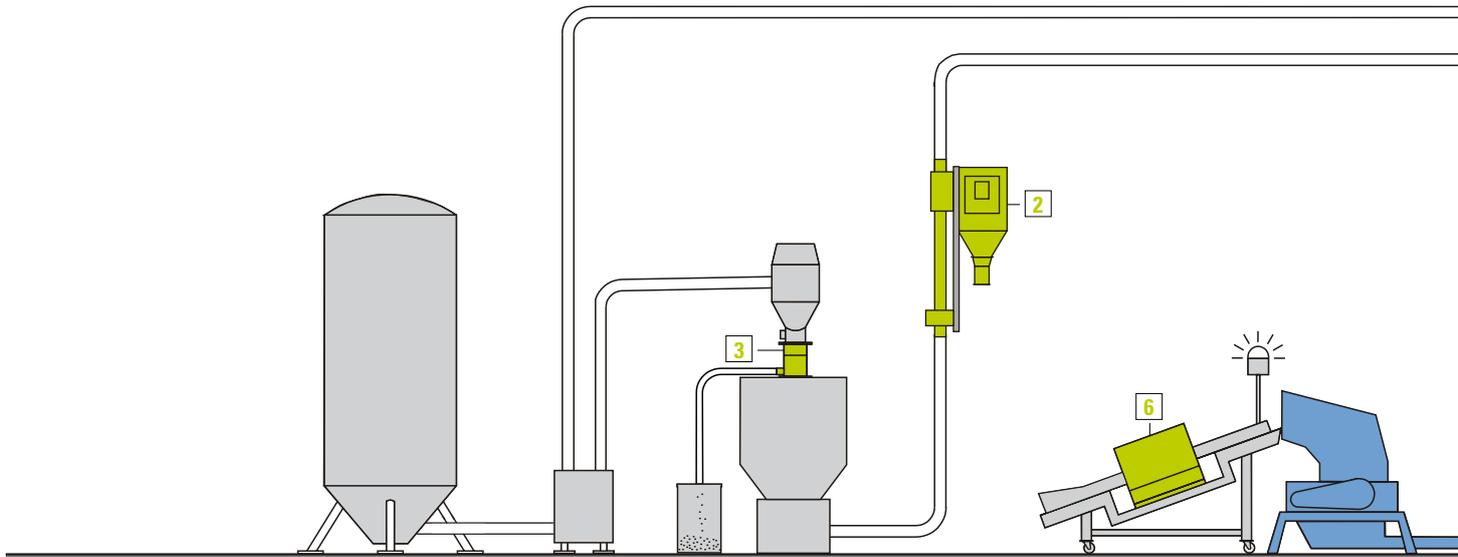
#### Highly developed technology

- product effect compensation
- digital signal processing
- automatic teach-in
- multi-product memory
- simple to operate

#### Total project support

- project consultation and analysis
- product trials and test machinery
- training and seminars
- worldwide after-sales service

## Separating magnetic and non-magnetic metals



### Metal-free material handling in pipelines

Metal separators are often used in freefall applications and pneumatic conveying pipelines. A specially-designed, fast-reacting reject flap ("Quick Flap System") removes metal contamination from bulk materials with minimal loss of good material.

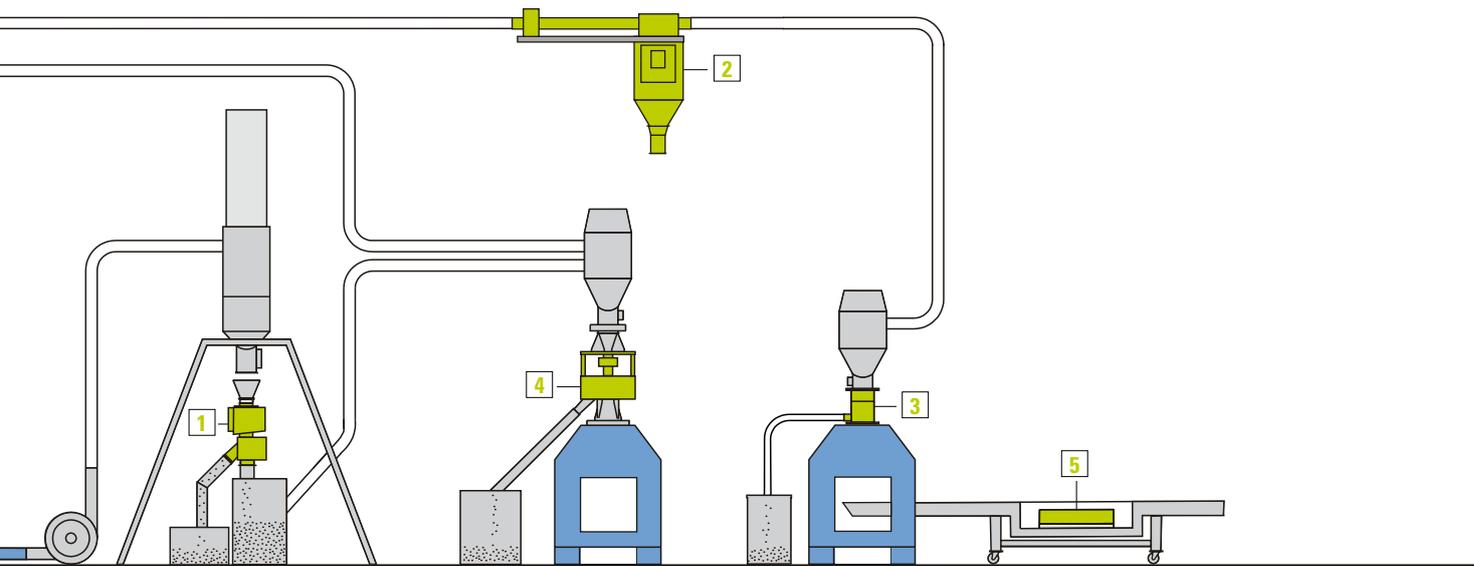
#### RAPID VARIO Series

This range of compact free-fall separation systems integrates into free-fall pipes or beneath a cyclone, vacuum conveyor, dosing or blending equipment. They can also be hopper fed. Drop height can easily be adapted to meet the customer's specification as the detection unit and the reject mechanism are designed to be completely self contained. The reject mechanism is infinitely adjustable to facilitate convenient positioning of the reject container.



#### GF Series

These metal separators are designed to be installed in horizontal, vertical or inclined vacuum and pressure pipes. Detection and removal of contaminants is effective even at high speeds and rejected material is removed into a container with no interruption to material flow.



### Metal-free extruding, injection and blow moulding

Both of the following models are installed directly at the material infeed of extruders, injection moulding and blow moulding machinery and remove metal particles from a slowly downward-moving column of material. However they will also consistently remove metals from free-falling granulate, not only at the initial fill but also at subsequent top-ups. They provide maximum machine protection ("Last Chance Controller") and prevent metering screw failures, nozzle blockages and damage to tooling. Due to their compact design, heavy conveying, mixing or dosing equipment can be attached to these units.

#### PROTECTOR

The S+S patented reject mechanism ensures effective and reliable removal of contaminants (combination of Venturi nozzle system and separating slide). There is no risk of jamming, even with high regranulate dust content.



#### MFE

This range of equipment is primarily for processing machinery with larger material infeeds and therefore higher throughputs.

The pneumatically-driven reject system guarantees effective and reliable separation even with larger grain sizes.



### Metal-free sprue and parts recycling

S+S metal detectors are widely used in the reprocessing of production waste (in-house recycling) or in specialist recycling facilities. They can be built into feeder conveyors to protect downstream milling machinery. Additionally they prevent larger pieces of metal from being shredded and thereby prevent tiny fragments of metal being spread throughout the granulate.



#### ELS

Single face ELS metal detectors are installed directly underneath the belt of a conveyor where the depth of conveyed material is shallow i.e. close to the belt. A typical application is the inspection of sprues to protect auger granulators. ELS can also be used to inspect the quality of plastic components to ensure the core is not broken.

### Removing magnetic metals

6



#### DLS

DLS tunnel metal detectors are separable and can be easily installed on either new or existing conveyors. They are particularly suitable for inspecting tall materials as detection accuracy remains consistent across the entire aperture. A typical application is the protection of cutting mills and shredders.



EXTRACTOR  
in-line magnet

S+S offers a complete range of magnet separators for production and recycling. Their primary use is the pre-removal of ferrous metals from bulk materials and packaged product and, with models designed for all types of materials, production stages and conveying systems (free-fall sections, pipelines, belt conveyors etc), they are an effective complement to inductive metal detectors and separators.

Many different types of magnet are available, from bar magnets, grid magnets, drum, roller and overband magnets through to complex magnet systems with fully automated cleaning. To meet strict requirements regarding explosive safety ATEX certification is also available.

The S+S standard product range includes a series of magnet systems designed specifically for the plastics industry, for example: the EXTRACTOR in-line magnet is used primarily at the infeed of processing machinery. The design of the machine is such that it prevents deposits of plastic granulate. This is very important when changing colour or material.

A distinct advantage is the ease with which magnets can be integrated into existing production facilities and their easy-clean design. Outstanding features include powerful magnets (Neodymium/SmCo) which are stable at extremes of temperature (up to 350° C) and resistant to corrosion.



TM Drum Magnet

### Professional solutions for plastics recycling



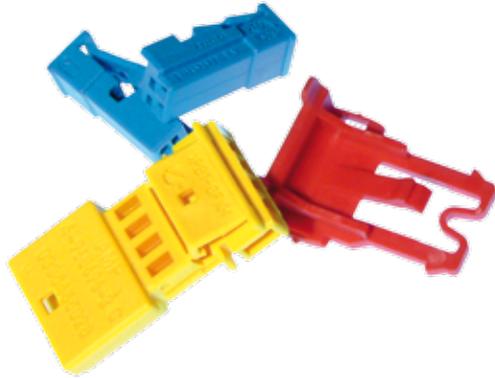
Over more than two decades S+S has become the leading manufacturers of contaminant separation and sorting systems. For the recycling industry S+S has developed a range of individual machines and complete solutions to remove contaminants from plastic and PET or to sort mixed material flows into pure fractions. They play a pivotal role in ensuring that highly pure recycled material can be profitably reprocessed back into the production cycle. In the PET industry S+S systems achieve recycling rates approaching 100%.

S+S offers a full range of equipment for contaminant separation – from basic sorting through to precision separation applications. As well as removing magnetic and non-magnetic metals S+S systems sort plastics according to type, colour or chemical composition. Near infra-red sensors, high-resolution CCD camera and X-ray technologies are utilized for effective and reliable detection.

S+S systems are built to a well-proven modular design concept to ensure that exactly the right combination of components is chosen to meet the customer's specific application.



SPEKTRUM Colour Separator for flakes and granulate



## Machinery Protection.

### Increased production security and optimum machine utilisation

In plastics processing S+S metal detectors and separators are primarily employed to protect processing machinery. They help prevent breakdowns and therefore increase productivity and continuity, providing a very fast return on investment.

S+S metal separation systems protect extruders; injection and blow moulding machinery from the effects of metal contaminants in both virgin and particularly recycled granulate. Plasticizer screws and cylinders are securely protected from damage. Extruder and blow moulding machinery breakdowns and downtimes caused by blockages to melt filters and nozzle systems are considerably reduced. Injection moulding machinery is protected from damage to tooling, hot channels and reverse flow barriers.

S+S metal detectors prevent damage to milling machinery and colander rollers. For bulk material or packaged product inspection S+S units are integrated into conveyor systems.



## Quality Assurance.

### Minimum rejected product and maximum added value

S+S metal detection and separation systems guarantee the purity of plastics products and play a vital role in the quality assurance process.

Metal contaminants can block hot channels and cause rejects through under-injection. Metal separation systems prevent this and guarantee first class products. Melt stress (encrustation) is also considerably reduced by the use of metal separators.

Less rejected product means less cost and more customer satisfaction.



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## S+S system world



### Detecting and separating contaminants

- Removing contaminants:
- metals
  - plastics
  - glass
  - ceramics, porcelain, stones
  - and many others
- Removing from (good material):
- bulk materials
  - liquids and pastes
  - individually packaged product
  - packed and loose items
- Product types
- end-products (food, textiles, plastics etc)
  - industrial raw materials
  - recycled materials
- can be integrated into all types of conveyor systems



### Detecting and separating sub-standard products

- Qualitative defects:
- incorrect colour
  - agglomerations
  - breakages
  - air inclusions in packs
  - incorrect positioning / distribution
- Quantitative defects:
- incorrect weight
  - count errors (incorrect number of items in package)
- Product types
- end-products (food, textiles, plastics etc)
  - industrial raw materials
  - recycling materials
- can be integrated into all types of conveyor systems



### Sorting mixed materials into single fractions

- Types of material:
- glass
  - plastics
  - metals
  - and many others
- Delivery flows:
- bulk materials
  - individually packaged product
- can be integrated into:
- conveying systems
  - bulk material flows

For further information or to discuss your particular application contact one of our specialists.

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