ALLGAIER
Allgaier-Group

MSort

Sorting of bulk material on the highest level

ALLGAIER PROCESS TECHNOLOGY
MOGENSEN
GOSAG
MOZER
ALMO

Using MSort to provide added value

Sorting is a core process in certain separation applications. Separating materials can be used to remove impurities or isolate a higher value product.

Due to the rapid technological development in image processing and the supporting hardware, materials which until recently were impossible to sort, can now be sorted in a precise, economical process.

Since 1996, various forms of MSort have been proven on the world market in numerous applications, including:

- glass recycling
- minerals and ores
- salt
- plastics granulates
- many different applications

MSort covers visible sorting as well as the ability to detect materials using infrared spectrum and X-rays technology. Each of these technologies can be used to sort material according to pre-determined physical and chemical material properties.

Special radiation sources and sensors are required for these specialized detection systems. Machines are controlled via sensor data that is evaluated by MSort's advanced control software.

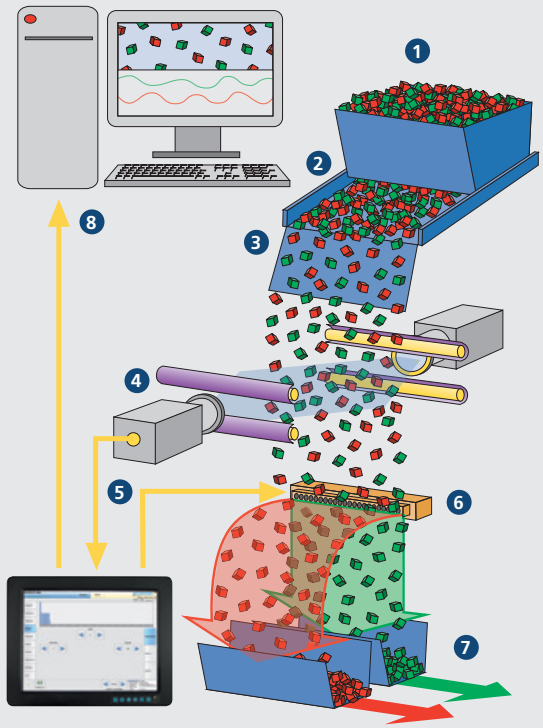
Technology and process advantages

- sorting accuracy of up to 99.9% in one sorting step
- detection of up to 25,000 particles per second
- highest throughput per working width available in the industry

- low operating costs due to the lowest compressed air consumption in the industry
- sorting particles ranging from 0.5 mm up to 250 mm in size
- wet and dry material handling
- advanced algorithms for fine particle differentiation
- solid, long-lasting construction, suited for use in harsh environments

Functionality

1. Feed material
2. Distribution and transport
3. Acceleration and separation
4. Scanning of the material curtain using various detection systems
5. Image analysis via state-of-the-art parallel process technology
6. Separation through highly accurate compressed air pulses
7. Discharge of the separated product flows
8. Remote system monitoring



Material detection

The latest hardware and software allows previously impossible processes to be performed. The MSort sorting system provides the following possibilities:

True colors and brightness (MSort OPT)

Detection of the material color and transparency using different exposures in the visible light range. Double-sided camera detection also available.

Grain size and shape (MSort OPT)

Detection of grain size and shape (length/width ratio). This detection can also be used parallel to actual sorting tasks for statistical or quality assurance purposes.

Material composition (MSort NIR)

Infrared technology to detect and differentiate materials with the same visual appearance, but with different chemical composition (NahInfra-Rot, abbreviated NIR) e.g. feldspar/quartz, plastic/glass, etc.

Atomic density (MSort X-Ray)

X-ray scanning to detect and differentiate materials with the same visual appearance, but with elements of different atomic densities.

Metal detection

Highly sensitive inductive detection and discharge (in combination with other sensors) of NE and FE metals.

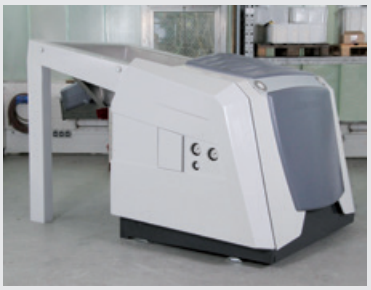
Multi sensor system

For certain tasks, the above-mentioned sensors or radiation sources can be combined with each other, e.g. visual and NIR detection (MSort-OPT-NIR), or visually with metal detection.

Machine types

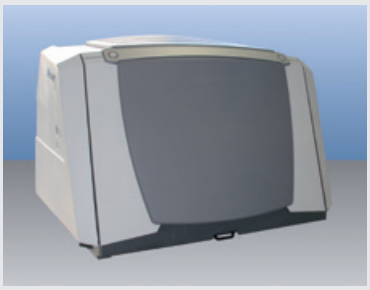
MSort OPT

AK/AF type



- highly accurate fine sorting from 1 mm
- sorting of dry bulk materials in the 1-30 mm grain range
- color sorting of glass, PET, minerals, sea salt and stone salt
- optional with all-metal detection

AL type



- sorting of dry bulk materials in the 8-60 mm grain range, output up to 50 t/h
- color and CSP* sorting of flat and hollow glass, capacities up to 30 t/h

AX type

- sorting of contaminated and moist recycled glass ranging from 6 to 60 mm
- CSP* and color sorting
- all-metal detection optional

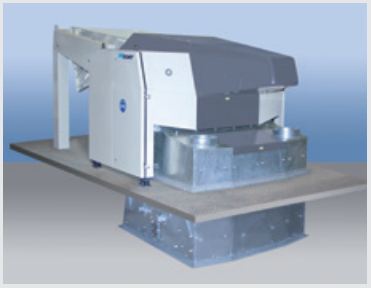
AP type

- sorting of bulk materials in the 10-50 mm grain range
- color sorting of minerals up to 40 t/h

AS/AT type

- sorting of bulk materials in the 15-80 mm grain range
- color sorting of minerals, output up to 90 t/h
- designed for harsh conditions in recycling and mining applications
- bilateral detection and higher efficiency (AT)

AG/AH type



- sorting of bulk materials in the 80-250 mm grain range
- color sorting of minerals, output up to 250 t/h
- designed for harsh conditions in recycling and mining
- bilateral detection and higher efficiency (AT)

*) CSP: Ceramics, stone, porcelain

MSort NIR

AS NIR type

- sorting of bulk materials in the 15-80 mm grain range
- sorting by chemical composition of minerals, output up to 90 t/h
- designed for harsh conditions in mining applications

AP NIR type

- sorting of bulk materials in the 10-50 mm grain range
- separation of plastics in glass recycling up to 40 t/h

MSort X-Ray

AQ type

- sorting of bulk materials in the 6-60 mm grain range
- sorting by atomic density of lead glass, ores and minerals, output up to 25 t/h
- designed for harsh conditions in recycling and mining

Sensor technology	Machine type	Typical grain range (mm)	Typical sorting performance (t/h)	Typical application depending on machine equipment
optical	AK	1 to 10	6	fine glass, ceramics, marble, quartz, salt, plastic flakes, plastic granules, minerals of all types
optical	AF	4 to 30	15	glass, ceramics, marble, quartz, salt, plastic flakes, plastic granules, minerals of all types
optical	AL	8 to 60	50	glass, ceramics, marble, quartz, salt, plastic flakes, plastic granules, minerals of all types
optical	AX	6 to 60	25	moist glass
optical and/or NIR	AP	10 to 50	40	plastic in glass, marble, quartz dolomite, barite, limestone, minerals of all types
optical and/or NIR	AS/AT	15 to 130	100	marble, quartz, dolomite, barite, limestone, minerals of all types
optical	AG/AH	80 to 250	250	marble, quartz, dolomite, barite, limestone
X-ray	AQ	6 to 60	25	lead glass, glass ceramics, ores of all types, minerals of all types

Technical centers

Our technical center is available when it is not clear which technology a particular sorting application requires.

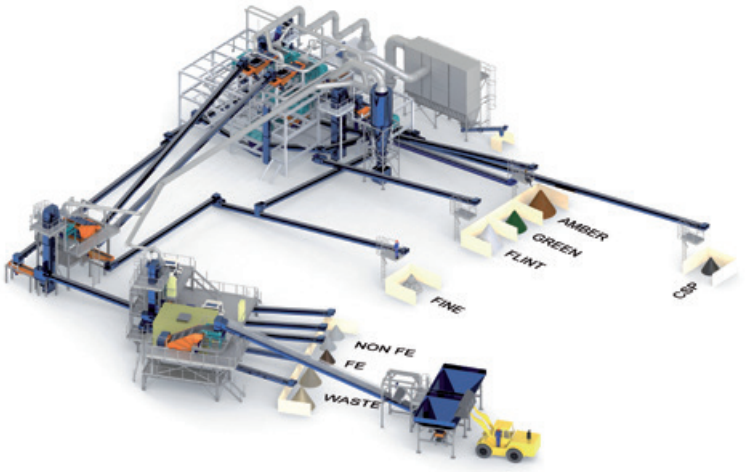
A specialized team of Mogensen engineers is conducting extensive trials of original material on production machines to determine the correct machine type and parameters for the sorting application as well as to prove the performance of the machines.

All machines in the product line are available for testing purposes.

Plant planning and plant construction

Based on the long-term experience in the development and implementation of complete solutions, Mogensen offers solutions from the initial project conception to commissioning the turnkey plant. Partial services are also possible in cooperation with external partners and customers.

- plant design
- process development
- basic engineering (layout planning)
- detail engineering
- delivery
- installation
- commissioning
- after-sales service
- from modifications up to turnkey solutions
- proven as a preferred partner



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