

## Separation of Heavy Minerals

# hamos KMS



### The Issue

Heavy minerals containing sands, for example ilmenite, rutile and zircon, are sorted in order to remove undesirable impurities or to increase concentration. Conventional sorting processes like magnets, spiral concentrators, flotation, etc. achieve higher concentrations. However, separation into clean “fractions” with these techniques is almost impossible.

### The Solution

The **hamos KMS** electrostatic corona drum separator separates heavy mineral sands into clean fractions with excellent separation results and in an economic way. The dry separation process uses the differences in the conductivity of minerals to separate.

Depending on the natural mineral deposit, material mixtures with different compositions can be separated with the electrostatic separator, operation in multilevel. The material is dosed onto two separation drums, working in parallel, ensuring an optimum, steady material distribution, even at maximum throughputs. After the first sorting stage the conductive or non-conductive product can be further separated in a second and third stage. Ensuring maximum separation and system flexibility.

### **hamos KMS** mineral separators achieve

- Clean mineral fractions
- Problem-free subsequent material processing
- Low processing costs
- High flexibility for different mineral deposits
- High throughputs
- High recovery rates

### **Your advantages**

- Dry separation process
- Easy operation
- Low energy consumption
- Quick return on investment
- Well proven system
- Low labour
- Fully automatic process
- No chemical treatment necessary

## The Function

Prior to the electrostatic separation, the dry mineral mixture needs to be "conditioned". Neither chemicals nor liquids are required. A dosing unit feeds the mixture onto two separation drums working in parallel, here the material is charged electrostatically. Conductive minerals lose their charge very quickly once they come into contact with the earthed drum. The material is dropped off the drum by the rotation force. Non-conductive minerals lose their charge more slowly and "stick" to the drum surface and are removed by a brush.

To achieve highest possible purities, either the conductive fraction or the non-conductive fraction (or both) can be further separated in a second or a third stage. The versatile machine concept allows various separation "strategies".

## Product range

The **hamos KMS** electrostatic separators are used for various separation processes, available in single stage or multiple stage execution. All machines are equipped as standard with an integrated material in and out-feed system, enabling us to supply you with a turnkey solution for full automatic operation 24/7.

## Technical Data

- Operating temperature -40° C to +50° C
- Maximum product temperature +140° C
- Throughput capacity up to 4,500 kg/hr per unit (with mineral mixture ilmenite, rutile, zircon)
- Drum lengths 6 x 1,500 mm
- Useable for mineral mixtures with difference in conductivity
- Particle sizes 100 µm to 1,000 µm
- Fine dust to be removed prior to processing
- Construction such that it can be transported in sea freight containers

## Standard Specifications

The **hamos KMS** is supplied with the following standard and optional features:

- Complete **hamos KMS** separator, ready to operation
- Fully automatic material dosing system by integrated special dosage units
- Fully automatic electrode cleaning system
- Secure operation with all-around-monitoring
- Protection of all exposed parts against wear
- Electronic high voltage supply
- Maximum throughput achievable with the option of running machines in parallel
- Fully automatic function for 24/7 operation, microprocessor controlled
- Touch screen control
- Individual adjustment of all parameters and frequency controlled motors
- Separator unit available with optional gantry and operation platform
- Easy all-round accessibility via full sized doors

## hamos Solution

Please contact us with your separation requirements. In our laboratory, we can run trials with your materials and demonstrate the quality and improvements achievable by using the hamos sorting equipment.

## The Company:

### hamos GmbH

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## Your local agent / representative:

## Separation of Mineral Mixtures

# hamos EMS



### The Issue

Mineral mixtures, such as quartz and feldspar, need sorting to remove undesirable feldspar and to concentrate the quartz. Conventional separation processes, such as wet flotation, are normally subject to environmental requirements and permissions.

### The Solution

The **hamos EMS** tribo-electric separator, separates fine grain like minerals economically and into high purity clean fractions. The dry separation process uses the differences in the tribo-electric behaviour of minerals to separate.

By using a special charging device, one mineral fraction is charged positively, the other negatively. The separation takes place in a high voltage field.

### The **hamos EMS** mineral separators achieve

- Clean mineral fractions
- Problem-free subsequent material processing
- High recovery rates
- Low processing costs
- High flexibility for different mineral deposits
- Large throughput by using machines in parallel

### Your advantages

- Dry separation process
- High purity
- No chemical treatment necessary
- Easy operation
- Low energy consumption
- Quick return on investment
- Well proven system
- Fully automatic process

## The Function

Prior to the electrostatic separation, the dry mineral mixture is conditioned without the use of chemicals or liquids and fine particulates are removed. The mineral mixture is then ready for processing with the **hamos EMS**. The charging takes place by means of a special designed charging unit, using the effect of tribo-electrics. This enables different products to take a specific charge, achieving different polarities.

In the separator the positively and negatively charged components are separated electrostatically in the electrostatic high voltage field. The product streams are diverted by the vertical electrode system. The product purity is optimized with the use of adjustable splitters.

## Product range

The **hamos EMS** electrostatic separators are used for various separation processes. All machines are equipped as standard with an integrated material in and out-feed system, enabling us to supply you with a turnkey solution for full automatic operation 24/7.

## Technical Data

- Operating temperature -40° C to +50° C
- Maximum product temperature +150° C
- Throughput capacity up to 4,500 kg/hr per unit
- Electrodes up to maximum 2 x 2,500 mm width
- Quick changing of electrodes
- Useable for mineral mixtures with difference in charging characteristics
- Particle sizes 100 µm to 1,000 µm
- Fine dust to be removed prior to processing
- Construction such that it can be transported in sea freight containers

## Standard Specifications

The **hamos EMS** is supplied with the following standard and optional features:

- Complete **hamos EMS** separator, ready for operation
- Full automatic material dosing system with integrated special dosage units
- Individual charging unit
- Secure operation with all-around monitoring
- Electronic high voltage supply
- Maximum throughput achieved with the option of running machines in parallel
- Fully automatic function for 24/7 operation, microprocessor controlled
- Touch screen control
- Individual adjustment of all parameters
- Separator unit available with optional gantry and operation platform
- Easy all-round accessibility via full sized doors
- Protection of all exposed parts against wear

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