BT systems

Technologies for a brand new world

REDWAVE ROX

MINERAL SORTING

Plant Solutions &
Sensor-Based Sorting Systems

RECYCLING

Sensor based Sorting Technology

SORTING TECHNOLOGY
REDWAVE ROX

REDWAVE ROX sorting systems process a wide range of mineral materials, including limestone, quartz, dolomite, magnesite, as well as metallic ores such as copper, nickel, and manganese.

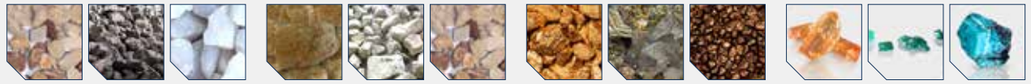
The sensor-based sorting technology of REDWAVE ROX sets new benchmarks in the efficient processing of mineral raw materials. By combining advanced colour line scan cameras, near-infrared (NIR) technology, and X-ray fluorescence spectroscopy, materials are precisely separated based on optical and chemical properties. This enables the early removal of contaminants directly within the process, as well as the targeted upgrading of raw material streams.

Depending on specific requirements, combined sensor solutions are deployed to differentiate by colour, material type, and chemical composition.

REDWAVE ROX systems are specifically engineered for coarse bulk materials and stand out through their robust design and reliable continuous operation under demanding industrial conditions.

They are ideally suited for a wide range of applications in both primary and secondary raw material processing.

APPLICATIONS



Industrial minerals
- Calcite / Dolomite
- Feldspar
- Limestone
- Magnesite
- Quartz
- Rock salt
- Silicium
- Talc
- Phosphate

Base metal
- Bauxite
- Copper
- Iron ore
- Lead
- Manganese
- Nickel
- Zinc
- Aluminium

Precious metal
- Gold
- Silver
- Platinum
- Palladium

Gemstone
- Diamonds
- Tanzanite
- Emeralds
- Topaz
- Aquamarine
- Rubies
- Alexandrite

The sensor-based sorting technology of REDWAVE ROX redefines efficiency in mineral processing.

Through the use of modern colour line scan cameras, NIR infrared technology, and X-ray fluorescence spectroscopy, materials can be accurately separated according to their optical and chemical characteristics.

In plant engineering, this enables the early removal of waste rock and the targeted upgrading of raw material streams.

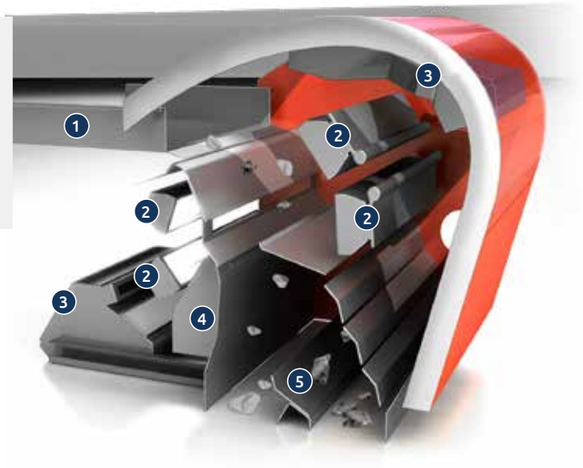
Customer benefit
- Single or double side scanning
- Up to 2.000 mm working width
- Identification and sorting of different materials according to colour, brightness and transparency
- Identification and sorting according to elemental composition
- High capacity
- High recovery rates and availability
- Fast payback period
- Proven economical sorting solution
- Dry and wet sorting technology

SORTING TECHNOLOGY
REDWAVE ROX

Functional principle of REDWAVE ROX

The material is fed over the entire sorting width by a vibration feeder. The material is then scanned and identified by the sensor system single or double sided while in free fall. If the identified minerals meet the set ejection parameters, a signal is sent to the ejection units. Single high speed air jets operated by compressed air, eject the identified mineral. The number of activated single solenoids depends on the size of the identified part.

1. Vibration feeder
2. Light source
3. Camera unit
4. Ejection unit
5. Divider plate



REDWAVE ROX

For colour and material recognition:

For industrial minerals, base and precious metal ores or gemstones

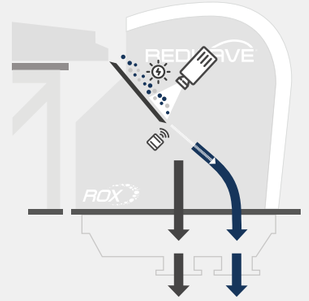
- **REDWAVE ROX-C** (single-side detection) for colour recognition working with a high-resolution RGB camera
- **REDWAVE ROX-CC** (double-side detection) for colour recognition working with high-resolution RGB cameras
- **REDWAVE ROX-NIR** for material recognition working with Near Infrared (NIR) spectroscopy
- **REDWAVE ROX-NIR/C** for material and colour recognition working with Near Infrared (NIR) spectroscopy and a high-resolution RGB camera
- **REDWAVE ROX-XRF** for recognition of the chemical composition working with EDXRF energy dispersive X-ray fluorescence spectrometer
  - Separation of ores with unwanted inclusions / impurities
  - Sorting of minerals according to the desired degree of purity
  - Sorting of manganese ore in different quality classes on the basis of the manganese content and other existing elements (e.g.: Fe)
  - Sorting according to ratio between different elements (e.g.: Mn/Fe)
  - Etc.

ADVANTAGES of XRF:

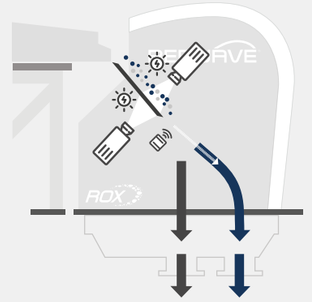
- Even if the material is heavily contaminated, high quality separation is guaranteed
- Elemental analysis (qualitative and semi-quantitative analysis) of input material
- Accurate detection of elements in ore, therefore a targeted enrichment is possible

> ***REDWAVE ROX has been developed for sorting a wide variety of minerals, ores, and gemstones, including calcite/ dolomite, quartz, talc, gold, nickel, and magnesite.***

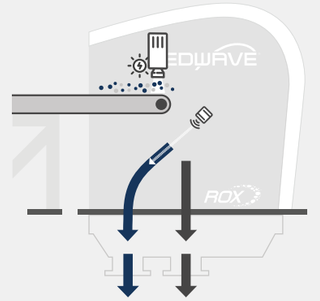
REDWAVE ROX
Chute/belt systems



Chute system single-side detection



Chute system double-side detection



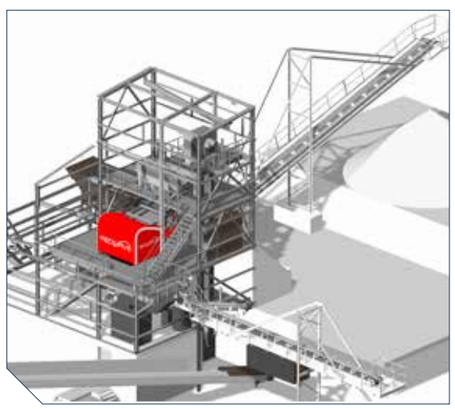
Belt system

Working width: up to 2.000 mm
Size range: from 2 mm to 300 mm
Sensor technologies:
- Line Scan Camera
- Near Infrared
- Multi-Sensor
- X-Ray Fluorescence
- Inductive Metal Detector

Tailor-Made Solutions

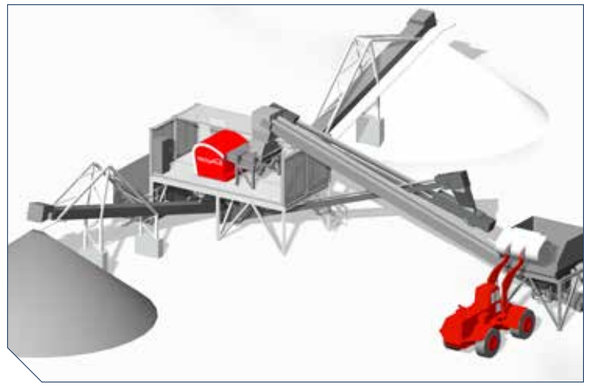
PLANT SOLUTIONS
REDWAVE ROX

REDWAVE ROX plant solutions are specifically designed to meet the requirements of modern mineral processing. They enable the efficient sorting of ores, industrial minerals, and gemstones directly within the continuous process stream. The focus is not only on separating different materials, but in particular on achieving high-purity classification according to quality grades within a single raw material. At the same time, the systems reduce the proportion of waste rock and optimise the entire mining value chain. This allows high-grade product fractions to be selectively enriched while improving overall resource efficiency.



COMPETENCIES & TECHNOLOGIES

- Feeding systems
- Crushing
- Screening
- Conveying
- REDWAVE ROX sensor-based sorting technology
- Complete plant solutions



Tailor-made plant solutions | Engineering & design | Project management | Manufacturing
After Sales Service | Spare parts | Commissioning | Installation | Delivery

BT systems

Technologies for a brand new world

BT-Systems is an international mechanical engineering and automation company and offers system integrations for innovative, cost-efficient industrial solutions. From planning and commissioning through to service, we operate worldwide in the following areas:

AUTOMATION

CONVEYOR

INTRALOGISTICS

QUALITY

RECYCLING

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