



**Comex**  
*Innovative Industrial Technologies*

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# COAL

**SENSOR-BASED SORTING**

DRY ENRICHMENT

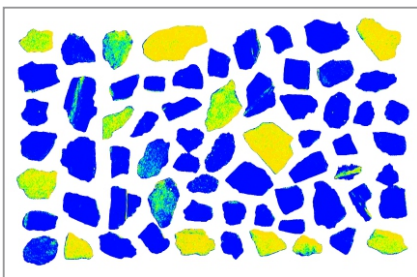
Comex sorting systems use state-of-the-art technologies for dry enrichment of minerals. X-ray analysis is one of the key ones that allow for identifying the materials of various densities, which are not possible to be recognized in the visible light.

These systems are widely used in mining and mineral industry to separate various materials and minerals, such as coal.

### Possibilities of X-ray analysis



coal photograph (washed sample)



X-ray image (coal in blue color)

### Comex systems guarantee:

- High efficiency, up to several hundred t/h.
- High separation efficiency, at 95–99%.
- The option to analyze materials with multiple sensors in the same sorting unit, resulting in a more effective separation.
- The option of advanced 2D/3D analysis and material geometry, providing more effective analysis and separation of the main components, as well as small inclusions.
- Exceptionally low total costs of separation at 0.1 EUR/t.
- Complete elimination of water from the separation process.

### Additionally, Comex Sorters provide:

- Low investment costs and quick return on investment compared to traditional enrichment methods.
- The option to use mobile sorting units installed in containers, allowing for quick installation and easy adjustment to the enrichment process.
- Low maintenance costs thanks to remote service and remote process supervision.



CXR-1000 Sorter with XRT sensor

# COAL

**Coal enrichment is necessary not only for economical and processing reasons but also for ecological reasons.**

**Comex sorting systems allow for:**

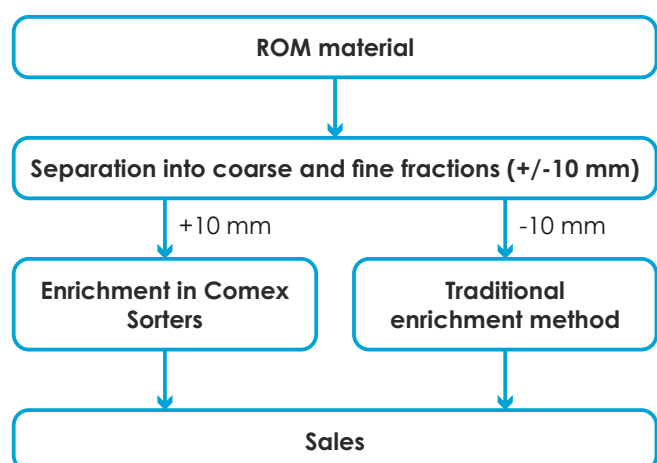
- Decreasing ash content and increasing calorific value in the product.
- Decreasing sulfur content in the product.
- Identifying and separating oil shales.
- Identifying and accurate separation of coal and stone agglomerates by applying artificial intelligence models in an advanced X-ray image analysis.
- Avoiding material washing and eliminating water from the enrichment process, which facilitates potential applications in various conditions.

**As a result, the clean coal product from the Sorter, allows for:**

- Improving the energy efficiency of the combustion process.
- Decreasing the amount of waste generated in the combustion process.
- Wider application options in other fields through an accurate control and adjusting coal quality parameters to further process requirements.
- Overall reduction of the total CO<sub>2</sub> emission from obtaining the raw material to its application and general reduction of the environmental impact.
- Reducing the procedures connected with transportation and processing of raw materials and processing wastes.

## Typical application

### State-of-the-art enrichment methods (Comex)

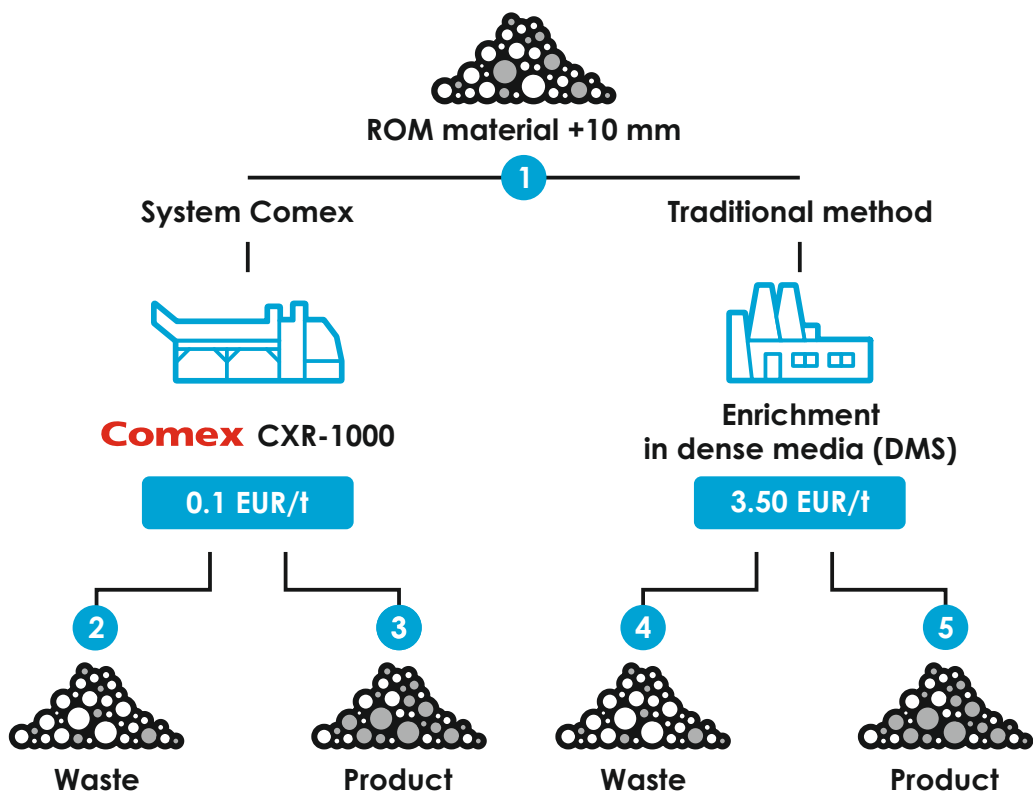


#### Process features:

- high quality coal,
- the possibility to adjust to various efficiencies according to the process requirements,
- quick adjustment to new quality requirements,
- wide coal applicability,
- high sales price,
- low investment expenditures,
- significantly lower energy consumption of the enrichment process,
- decreased environmental pollution in the combustion process,
- overall decrease of CO<sub>2</sub> emission.



comparison with traditional enrichment methods



1

100 t/h  
 Q = 20.5 MJ/kg  
 A = 37.7%  
 S = 4.82%

2

44 t/h  
 Q = 10.4 MJ/kg  
 A = 61.3%  
 S = 6.64%

3

56 t/h  
 Q = 28.4 MJ/kg  
 A = 19.2%  
 S = 3.4%

4

45.5 t/h  
 Q = 12.1 MJ/kg  
 A = 58.1%  
 S = 5.4%

5

54.5 t/h  
 Q = 27.5 MJ/kg  
 A = 20.7%  
 S = 4.3%

Q – calorific value    A – ash    S – sulfur



**Comex** specializes in providing technological solutions for sensor-based separation of different materials. We create advanced, unique and highly innovative solutions for mining industry and other areas.

All this to help:



**MINIMIZE COSTS**



**INCREASE PRODUCTION EFFICIENCY**



**IMPROVE THE FINAL PRODUCT QUALITY**



**REDUCE ENVIRONMENTAL IMPACT OF INDUSTRIAL PROCESSES**





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