# X - Ray radiometric separators

## Executive Summary

Radiometric ore separation is a new highly effective, ecologically clean and cost effective technology for the enrichment of various types of ore, raw material and slag.

The technology has been perfected for commercial operations over the last decade in Russia by RADOS & TEHNOROS, and there are currently 44 Russian mines successfully operating the TEHNOROS equipment.



The TEHNOROS radiometric ore separation solution utilizes state of the art X-ray equipment to sort high volumes of ore to 98% accuracy. The equipment can successfully and commercially sort on a rock by rock basis, minerals with an atomic greater than 20 on the periodic table.
This includes the following minerals:

Gold, Uranium, Manganese, Copper, Nickel, Iron ore, Quartzites, etc.

The solution is modular, and therefore flexible, and is able to grow to math the output lifecycle of a mine. Three module types have been developed that are able to sort the following crushed are size ranges: 10mm to 300mm.

## X-ray radiometric separators for piece sorting of ores of natural resources and technogene raw materials (SRF)

| Technical characteristics | Separator type | | |
|---|---|---|---|
| | SXF-4-50 | SXF-4-150 | SXF-2-300 |
| 1. Size classes of sorted ores, mm | 25…60 | 30…150 | 60…300 |
| 2. Size classes ranges, mm | 25-40<br>25-50<br>25-60 | 30-80<br>30-100<br>40-120<br>40-150 | 60-200<br>80-250<br>100-250<br>150-300 |
| 3. Productivity, t/h *<br>(according to the range) | 3-8 | 10-25 | 20-50 |
| 4. Initial X-ray emission source | Special portable X-ray apparatuses PXAS-50 | | |
| 5. X-ray emission detectors | Detecting blocks on the base of proportional gas meters | | |
| 6. Executive mechanisms type (occurrence frequency , Hz) | Quick-acting electromagnetic devices for ore moving direction changing | | |
| | ME 400 (6-8) | ME 400 (6-8) | ME 2 (3-4) |
| 7. Sorting channels number. | 4 | 4 | 2 |
| 8. Electro-power voltage at alternative current frequency 50±1Hz, V | 220/380 | 220/380 | 220/380 |
| 9. Consumption power, kW, not more | 5,0 | 5,0 | 5,0 |
| 10. Gabarit sizes, mm<br>1) sorting machine<br>(length x width x height) | 5870x1500x3150 | 5040x1500x3150 | 5830x1500x3150 |
| 11. Mass, kg, not more<br>1) sorting machine | 3700 | 3900 | 4100 |

* Note.
Maximum productivity depends on:
- size class and specific density of sorted ore (material);
- quality of initial ore(material) going to XRS;
- technological requirements to the product and separation "rest".

Optimal productivity value is determined by technological XRS tests results taking into account sorted material size class.

Sorted ore (material) size class range is allowed to change according to technological tasks. Productivity norm is correcting accordingly.