ALROSA GROUP

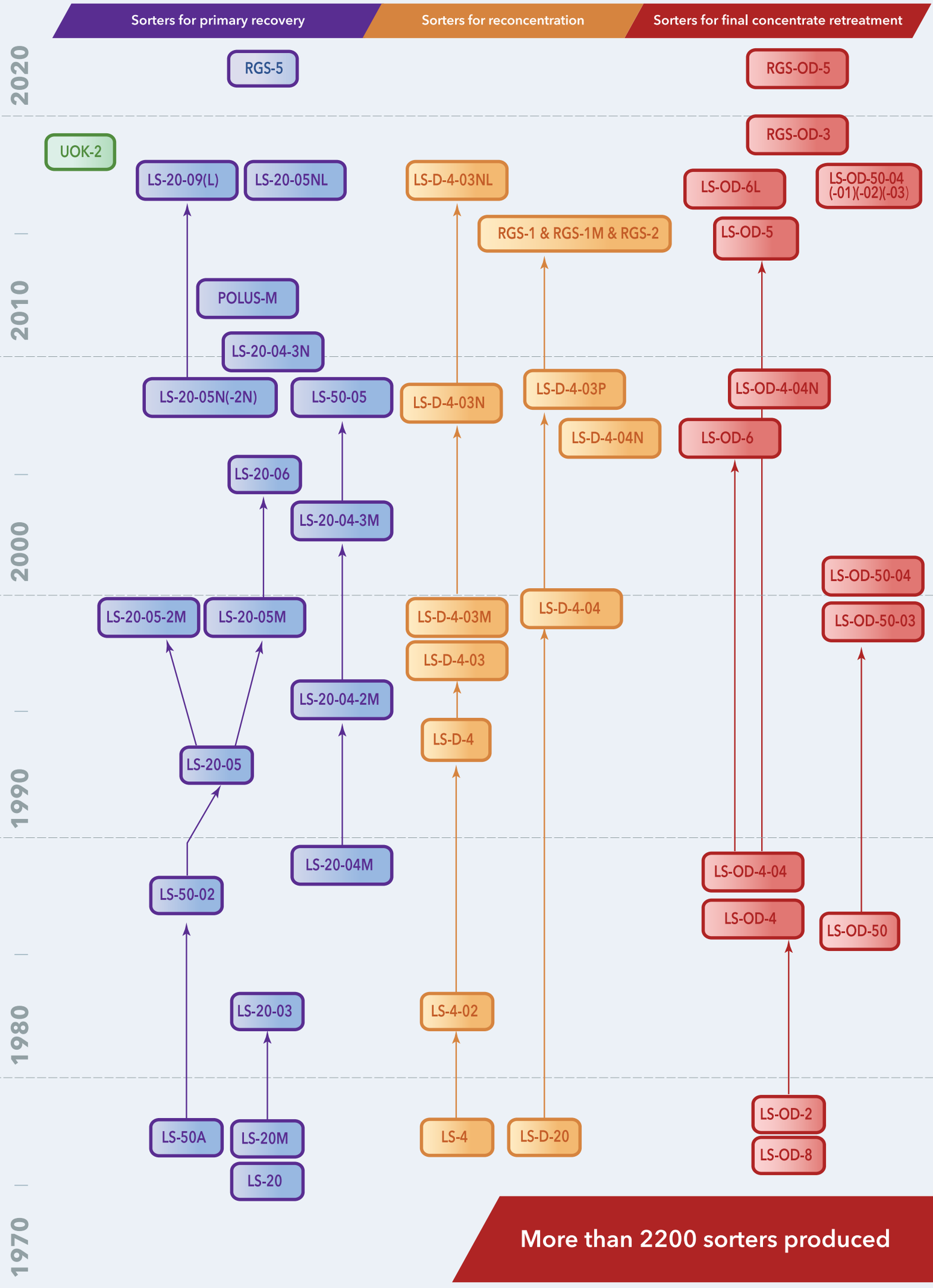
INNOVATION CENTER

BOUREVESTNIK

RESEARCH ✦ DESIGN ✦ PRODUCTION

Equipment for the Diamond Mining Industry

Evolution of Bourevestnik sorters



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CONTENTS

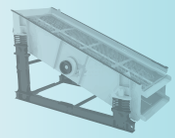
Process diagram of diamond recovery

ORE PREPARATION

Kimberlite deposit

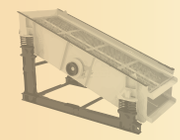
Milling → Deslurring → Size screening



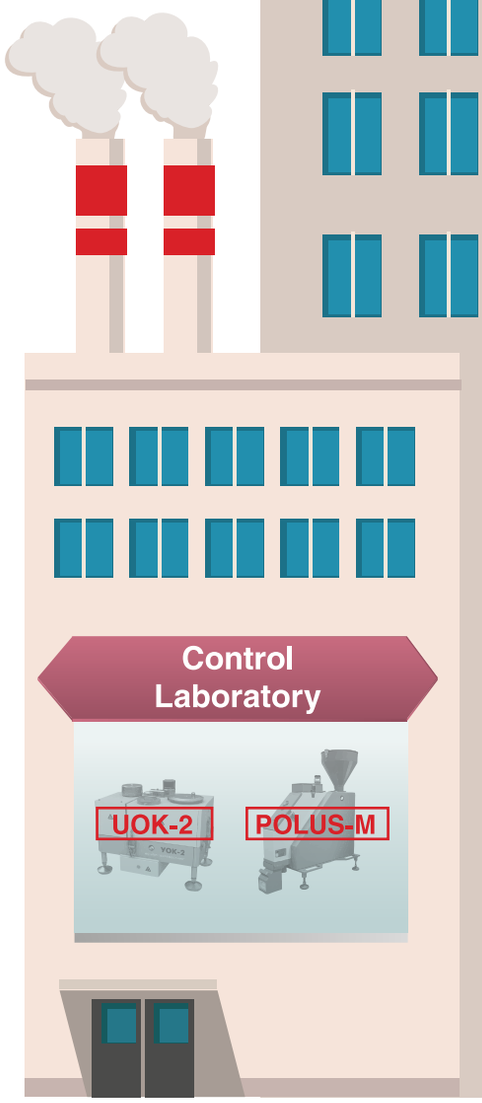


Alluvial deposit

Size screening → Washing




Recovery plant



Coarse material (-50+5mm)	Fine material (-6+1mm)
Primary treatment	
LS-20-09L LS-20-05N LS-20-05NL RGS-5	Dense media separation (DMS)
Concentrate retreatment	
LS-50-05	LS-D-4-03N LS-D-4-03NL LS-D-4-03P
	Concentrate drying
	LS-D-4-04N RGS-2
Final concentrate retreatment	
LS-OD-50-03N LS-OD-50-04-01 LS-OD-50-04-02 LS-OD-50-04-03 RGS-OD-5	LS-OD-6 LS-OD-6L RGS-OD-3
Manual sorting	
Glove box	

Control Laboratory

UOK-2, POLUS-M

- Equipment of “Bourevestnik”, JSC

Final concentrate

X-ray luminescence sorters for diamond recovery

Sorting equipment is widely applied in diamond production industry by making use of sensor-based sorting methods of diamond-bearing ore. X-ray Luminescence Sorters have mostly found use in a wide range of diamond recovery solutions.

Functional principle of X-ray Luminescence Sorters is based on diamonds physical property to luminesce under X-ray irradiation which is inherently different to the gangue minerals present.

Benefits of X-ray Luminescence Sorters at a glance:

- high recovery;
- effective concentration;
- low operational costs;
- low environmental impact.

“Bourevestnik”, JSC has a great experience and tradition in the area of design and manufacture of X-ray Luminescence Sorters, starting from supply of the world’s first X-ray sorter LS-20 for diamond production industry, back to 1969.

Since then, it has been supplied more than 2200 sorters, where 800 of them are in operation.

LS-20-05N

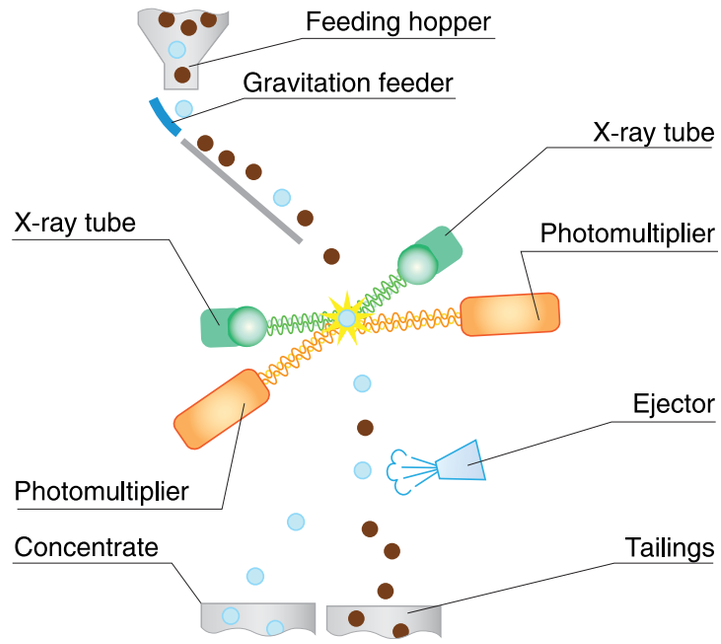
Primary treatment | **-20+5 mm** | **Legacy product**

X-ray luminescence sorter LS-20-05N is a diamond recovery machine designed for treatment of WET material with size range -20+5 mm.

Main specification		
Size fraction, mm	-20+10	-10+5
Throughput, t/h	45	25
Yield per one ejection, kg	1.5	1
Recovery rate, %	98	
Type of material	wet	

Material feeding and detection system	
Material feed	Gravitation feeder
Flow	1
X-ray tube	2
Photomultiplier	6

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		5
Technical water consumption, not more than, l/min		30
Cooling water consumption, not less than, l/min		6
Consumption of compressed air	per 1 ejection, l	0.48
	nominal productivity, l/min	30



	Dimensions, mm	Weight, kg
Sorting machine	2300x750x2300	1400
Automatic control rack	881x603x1952	200

LS-20-05NL

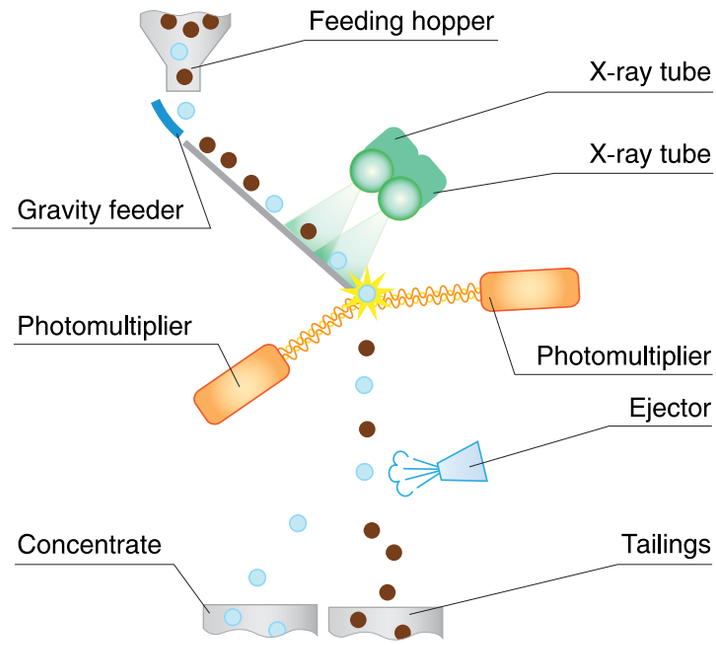
Primary treatment | **-25+5 mm** | **New product**

X-ray luminescence sorter LS-20-05NL is a diamond recovery machine designed for treatment of WET material with size range -25+5 mm.

Main specification		
Size fraction, mm	-25+10	-10+5
Throughput, t/h	50	25
Yield per one ejection, kg	1.5	1.0
Recovery rate, %	98.5	
Type of material	wet	

Material feeding and detection system	
Material feed	Gravitation feeder
Flow	1
X-ray tube	2
Photomultiplier	8

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		5
Technical water consumption, not more than, l/min		30
Cooling water consumption, not less than, l/min		6
Consumption of compressed air	per 1 ejection, l	0.48
	nominal productivity, l/min	30



	Dimensions, mm	Weight, kg
Sorting machine	2300x750x2300	1400
Automatic control rack	881x603x1952	200

LS-20-05-2N

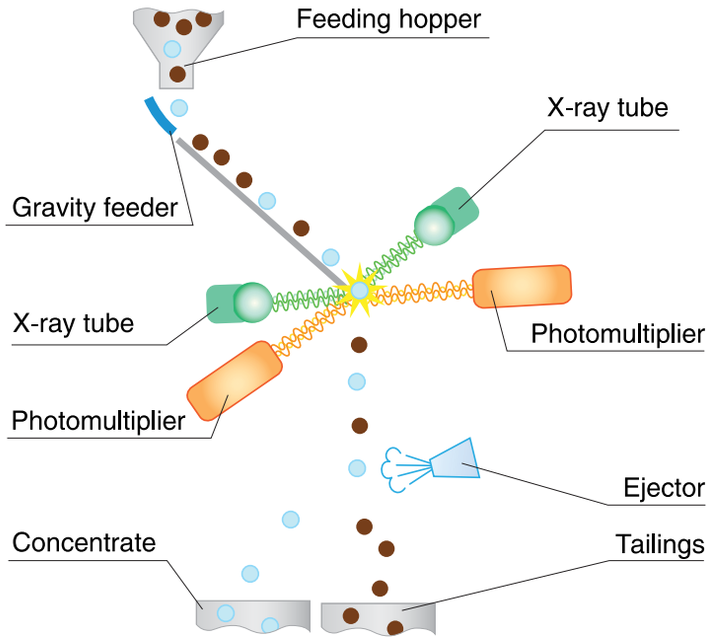
Primary treatment | **-50+10 mm** | **Legacy product**

X-ray luminescence sorter LS-20-05-2N is a diamond recovery machine designed for the treatment of WET material with the size range -50+10 mm.

Main specification		
Size fraction, mm	-50+20	-20+10
Throughput, t/h	100	60
Yield per one ejection, kg	2	1.5
Recovery rate, %	98	
Type of material	wet	

Material feeding and detection system	
Material feed	Gravitation feeder
Flow	1
X-ray tube	2
Photomultiplier	4

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		5
Technical water consumption, not more than, l/min		30
Cooling water consumption, not less than, l/min		6
Consumption of compressed air	per 1 ejection, l	1.15
	nominal productivity, l/min	30



	Dimensions, mm	Weight, kg
Sorting machine	2290x750x2300	1400
Automatic control rack	881x603x1952	200

LS-20-09L

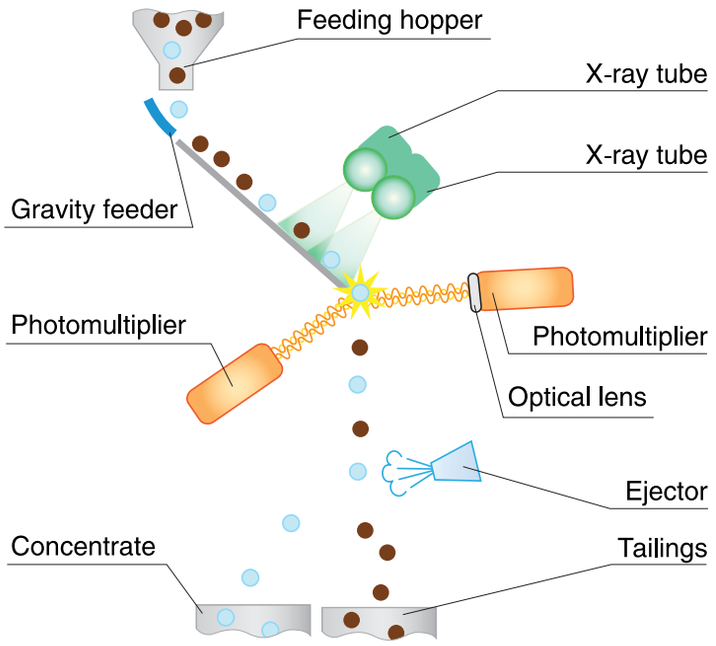
Primary treatment | **-50+5 mm** | **New product**

X-ray luminescence sorter LS-20-09L is a diamond recovery machine designed for treatment of WET material with size range -50+10 mm.

Main specification			
Size fraction, mm	-50+20	-20+10	-10+5
Throughput, t/h	100	60	30
Yield per one ejection, kg	1	0,65	0,4
Recovery rate, %	98,5	98,5	98
Type of material		wet	

Material feeding and detection system	
Material feed	Gravitation
Flow	1
X-ray tube	2
Photomultiplier	8

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		5
Technical water consumption, not more than, l/min		30
Cooling water consumption, not less than, l/min		6
Consumption of compressed air	per 1 ejection, l	1.15
	nominal productivity, l/min	30



	Dimensions, mm	Weight, kg
Sorting machine	2300x845x2290	1100
Automatic control rack	881x603x1952	200

LS-50-05

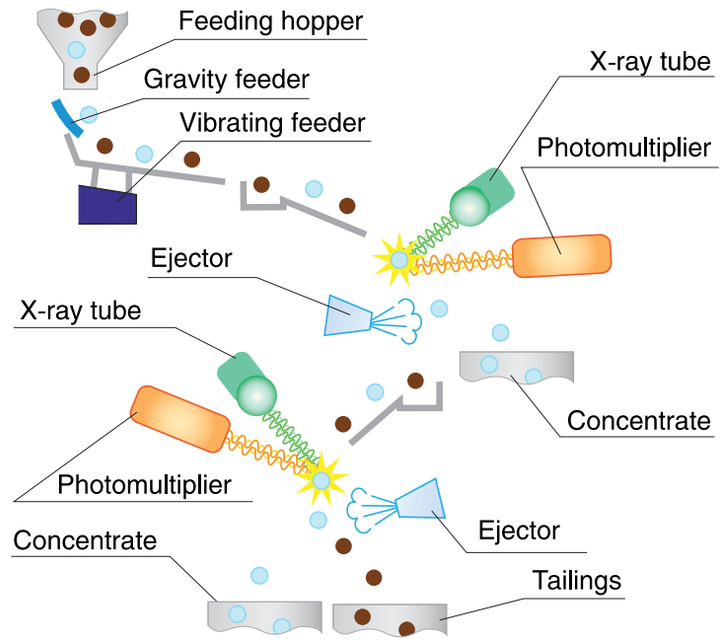
Concentrate retreatment | **-50+5 mm** | **Legacy product**

X-ray luminescence sorter LS-50-05 is a diamond recovery machine designed for treatment of WET material with size range -50+5 mm.

Main specification			
Size fraction, mm	-50+20	-20+10	-10+5
Throughput, t/h	30	20	9
Yield per one ejection, kg	0.7	0.3	0.1
Recovery rate, %		98	
Type of material		wet	

Material feeding and detection system	
Material feed	Gravitation/Vibrating feeder
Flow	1, 2, 4
X-ray tube	2
Photomultiplier	8

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		6
Technical water consumption, not more than, l/min		20
Cooling water consumption, not less than, l/min		6
Consumption of compressed air	per 1 ejection, l	0.92
	nominal productivity, l/min	50



	Dimensions, mm	Weight, kg
Sorting machine	2550x800x2585	1800
Automatic control rack	881x603x1952	200

LS-OD-50-04

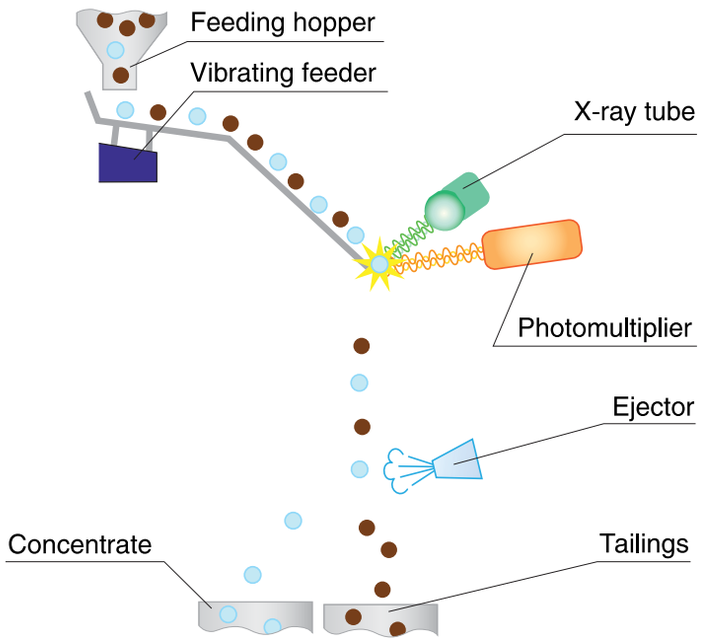
Final concentrate retreatment | **-50+5 mm** | **Legacy product**

X-ray luminescence sorter LS-OD-50-04 is a diamond recovery machine designed for treatment of WET material with size range -50+5 mm.

Main specification			
Size fraction, mm	-50+20	-20+10	-10+5
Throughput, kg/h	2500	500	125
Yield per 10 ejections, grain	15	18	22
Recovery rate, %	98.5	98.5	98
Type of material		wet	

Material feeding and detection system	
Material feed	Vibrating feeder
Flow	2
X-ray tube	1
Photomultiplier	2

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		6
Technical water consumption, not more than, l/min		30
Cooling water consumption, not less than, l/min		6
Consumption of compressed air	per 1 ejection, l	0.46
	nominal productivity, l/min	50



	Dimensions, mm	Weight, kg
Sorting machine	2000x930x2135	1100
Automatic control rack	881x603x1952	200

LS-OD-50-04-01

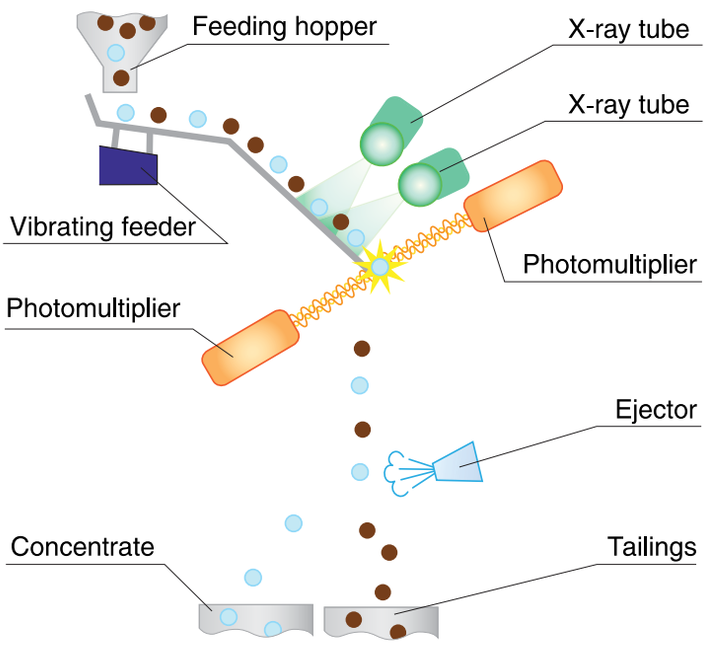
Final concentrate retreatment | **-50+5mm** | **New product**

X-ray luminescence sorter LS-OD-50-04-01 is a diamond recovery machine designed for treatment of WET material with size range -50+5 mm.

Main specification			
Size fraction, mm	-50+20	-20+10	-10+5
Throughput, kg/h	2500	500	125
Yield per 10 ejections, grain	15	18	22
Recovery rate, %	98.5	98.5	98
Type of material		wet	

Material feeding and detection system	
Material feed	Vibrating feeder
Flow	2
X-ray tube	2
Photomultiplier	4

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		6
Technical water consumption, not more than, l/min		30
Cooling water consumption, not less than, l/min		6
Consumption of compressed air	per 1 ejection, l	0.46
	nominal productivity, l/min	50



	Dimensions, mm	Weight, kg
Sorting machine	2000x930x2135	1100
Automatic control rack	881x603x1952	200

LS-OD-50-04-02

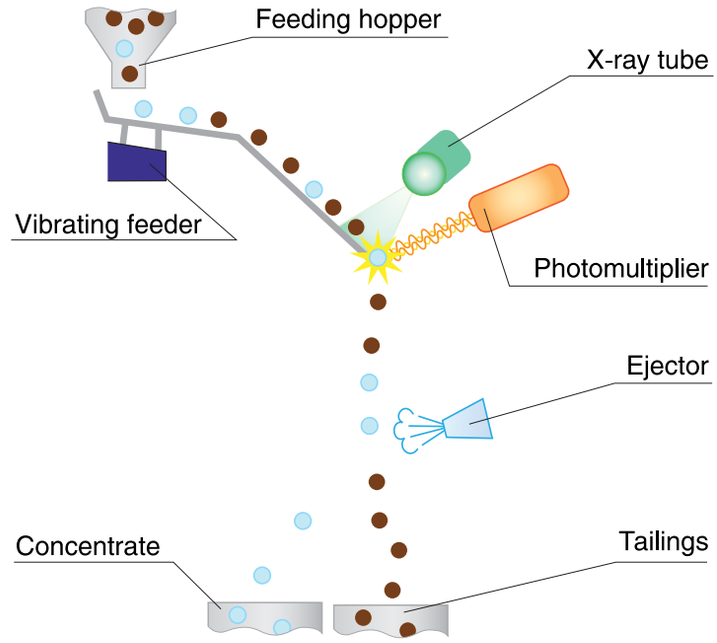
Final concentrate retreatment | **-20+5 mm** | **New product**

X-ray luminescence sorter LS-OD-50-04-02 is a diamond recovery machine designed for treatment of WET material with size range -20+5 mm.

Main specification		
Size fraction, mm	-20+10	-10+5
Throughput, kg/h	1000	250
Yield per 10 ejections, grain	18	22
Recovery rate, %	98.5	
Type of material	wet	

Material feeding and detection system	
Material feed	Vibrating feeder
Flow	4
X-ray tube	1
Photomultiplier	4

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		6
Technical water consumption, not more than, l/min		30
Cooling water consumption, not less than, l/min		6
Consumption of compressed air	per 1 ejection, l	0.92
	nominal productivity, l/min	80



	Dimensions, mm	Weight, kg
Sorting machine	2000x930x2135	1100
Automatic control rack	881x603x1952	200

LS-OD-50-04-03

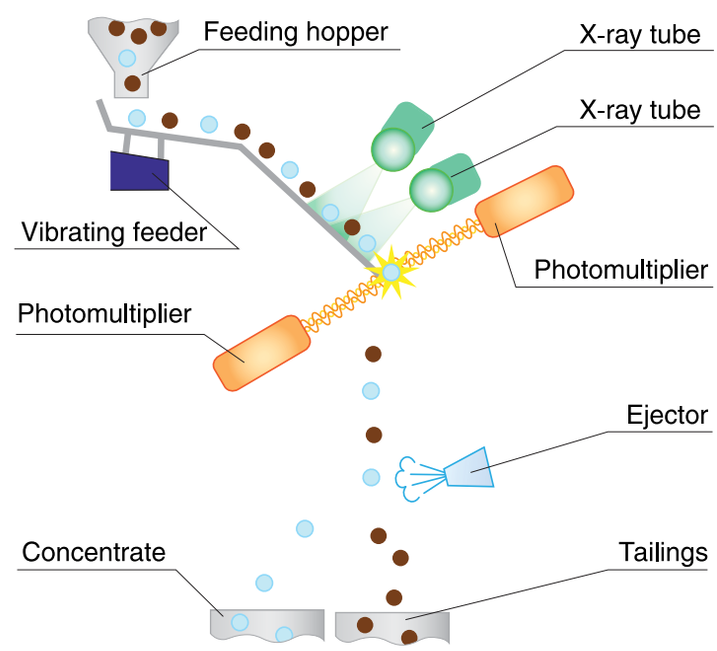
Final concentrate retreatment | **-20+5 mm** | **New product**

X-ray luminescence sorter LS-OD-50-04-03 is a diamond recovery machine designed for treatment of WET material with size range -20+5 mm.

Main specification		
Size fraction, mm	-20+10	-10+5
Throughput, kg/h	1000	250
Yield per 10 ejections, grain	18	22
Recovery rate, %	98.5	
Type of material	wet	

Material feeding and detection system	
Material feed	Vibrating feeder
Flow	4
X-ray tube	2
Photomultiplier	8

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		6
Technical water consumption, not more than, l/min		30
Cooling water consumption, not less than, l/min		12
Consumption of compressed air	per 1 ejection, l	0.92
	nominal productivity, l/min	80



	Dimensions, mm	Weight, kg
Sorting machine	2000x930x2135	1200
Automatic control rack	881x603x1952	200

LS-D-4-03N

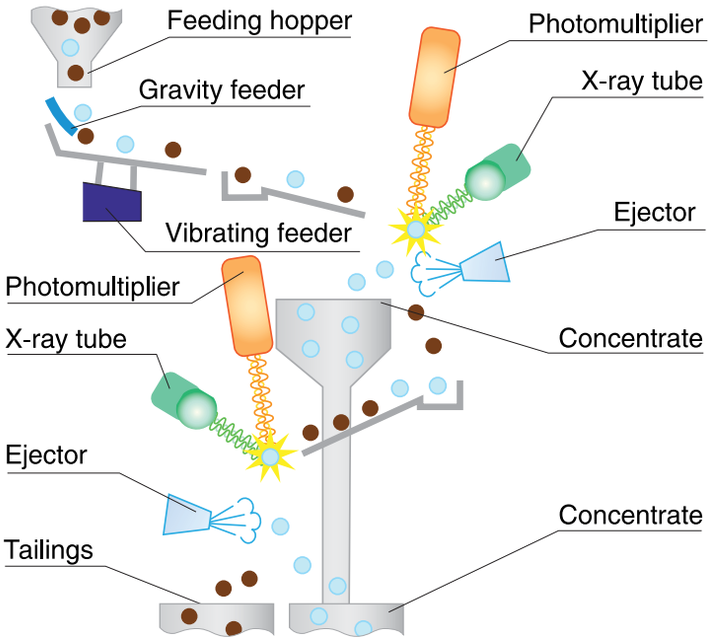
Concentrate retreatment | **-6+1 mm** | **Legacy product**

X-ray luminescence two-stage sorter LS-D-4-03N is a diamond recovery machine designed for treatment of WET material with size range -6+1 mm.

Main specification		
Size fraction, mm	-6+3	-3+1
Throughput, kg/h	5000	1300
Yield per one ejection, g	40	13
Recovery rate, %	98	95
Type of material	wet	

Material feeding and detection system	
Material feed	Gravitation /Vibrating feeder
Flow	4
X-ray tube	2
Photomultiplier	8

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		5
Technical water consumption, not more than, l/min		40
Cooling water consumption, not less than, l/min		6
Consumption of compressed air	per 1 ejection, l	0.7
	nominal productivity, l/min	50



	Dimensions, mm	Weight, kg
Sorting machine	2060x850x2735	1450
Automatic control rack	881x603x1952	200

LS-D-4-03NL

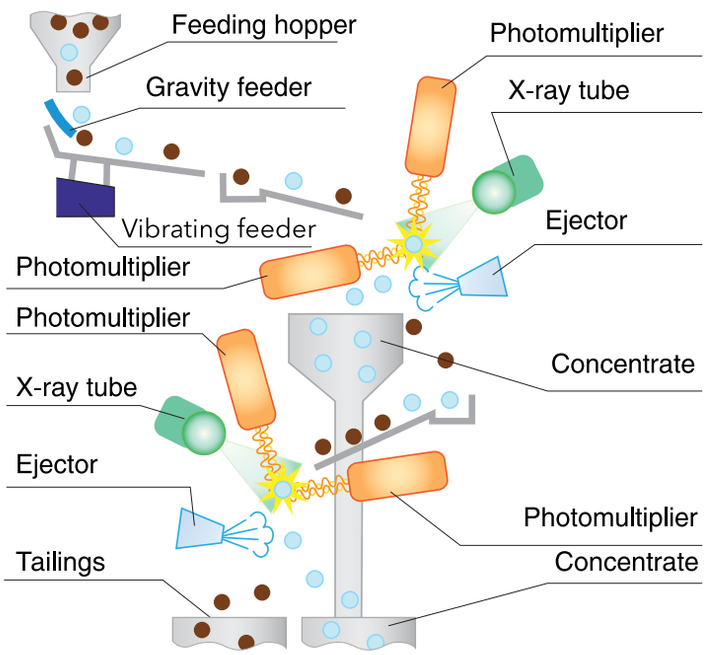
Concentrate retreatment | **-6+1 mm** | **New product**

X-ray luminescence two-stage sorter LS-D-4-03NL is a diamond recovery machine designed for treatment of WET material with size range -6+1 mm.

Main specification		
Size fraction, mm	-6+3	-3+1
Throughput, kg/h	5000	1300
Yield per one ejection, g	40	13
Recovery rate, %	98	95
Type of material	wet	

Material feeding and detection system	
Material feed	Gravitation feeder
Flow	4
X-ray tube	2
Photomultiplier	16

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		5
Technical water consumption, not more than, l/min		40
Cooling water consumption, not less than, l/min		6
Consumption of compressed air	per 1 ejection, l	0.7
	nominal productivity, l/min	50



	Dimensions, mm	Weight, kg
Sorting machine	2060x850x2735	1500
Automatic control rack	881x603x1952	200

LS-D-4-03P

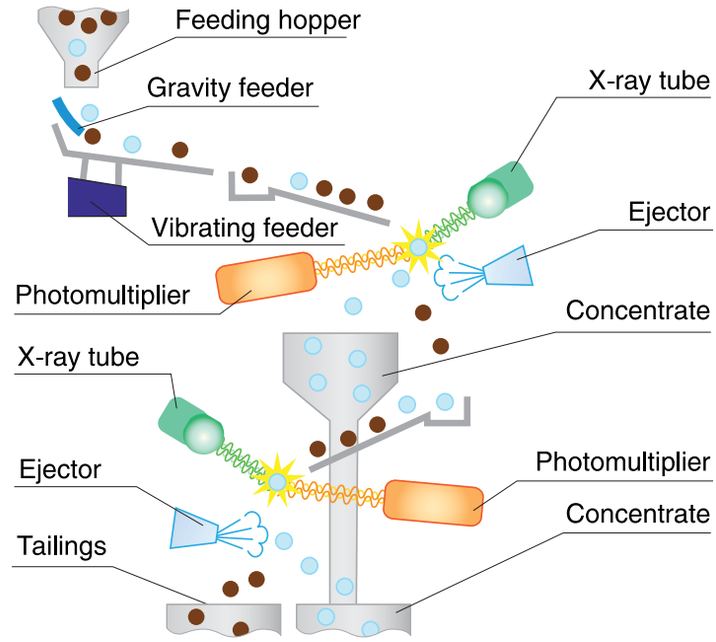
Concentrate retreatment | **-6+1 mm** | **Legacy product**

X-ray luminescence two-stage sorter LS-D-4-03P is a diamond recovery machine designed for treatment of WET material with size range -6+1 mm.

Main specification		
Size fraction, mm	-6+3	-3+1
Throughput, kg/h	400	170
Yield per one ejection, g	1	0.5
Recovery rate, %	99	95
Type of material	wet	

Material feeding and detection system	
Material feed	Gravitation /Vibrating feeder
Flow	4
X-ray tube	2
Photomultiplier	8

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		4
Technical water consumption, not more than, l/min		40
Cooling water consumption, not less than, l/min		6
Consumption of compressed air	per 1 ejection, l	0.16
	nominal productivity, l/min	15



	Dimensions, mm	Weight, kg
Sorting machine	1329x815x2492	700
Automatic control rack	881x603x1952	200

LS-D-4-04N

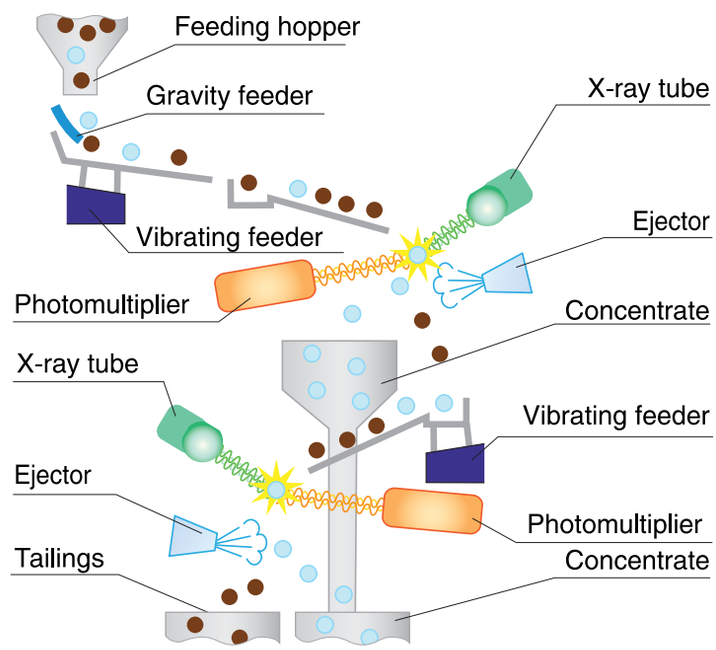
Concentrate retreatment | **-6+1 mm** | **Legacy product**

X-ray luminescence two-stage sorter LS-D-4-04N is a diamond recovery machine designed for treatment of DRY material with size range -6+1 mm.

Main specification		
Size fraction, mm	-6+3	-3+1
Throughput, kg/h	600	300
Yield per one ejection, g	2	1
Recovery rate, %	98	
Type of material	dry	

Material feeding and detection system	
Material feed	Gravitation /Vibrating feeder
Flow	4
X-ray tube	2
Photomultiplier	8

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		4
Technical water consumption, not more than, l/min		-
Cooling water consumption, not less than, l/min		6
Consumption of compressed air	per 1 ejection, l	0.16
	nominal productivity, l/min	15



	Dimensions, mm	Weight, kg
Sorting machine	1000x670x1970	600
Automatic control rack	881x603x1952	200

LS-OD-6

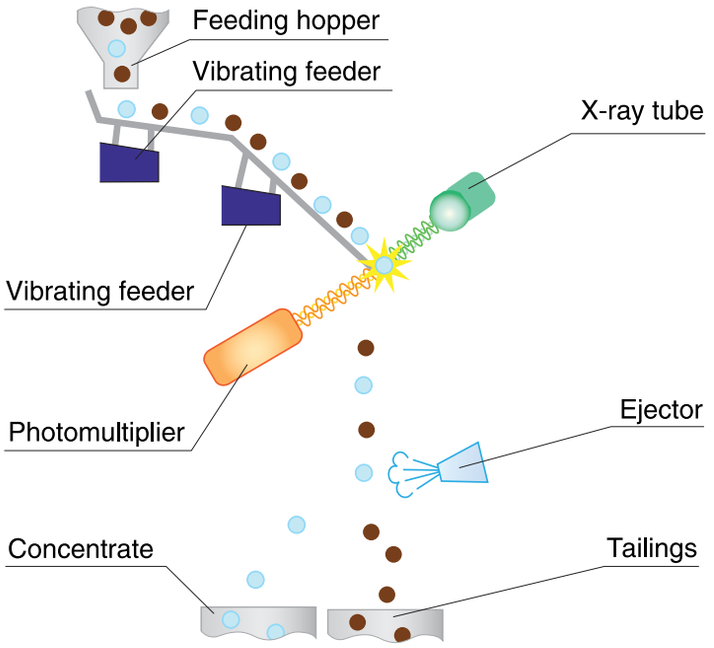
Final concentrate retreatment | **-6+0.5 mm** | **Legacy product**

X-ray luminescence sorter LS-OD-6 is a diamond recovery machine designed for treatment of DRY material with size range -6+0.5 mm.

Main specification			
Size fraction, mm	-6+3	-3+1	-1+0.5
Throughput, kg/h	50	12.5	2
Yield per 10 ejections, grain	30	45	45
Recovery rate, %	98	96	90
Type of material		dry	

Material feeding and detection system	
Material feed	2 vibrating feeders
Flow	4
X-ray tube	1
Photomultiplier	4

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		3.5
Technical water consumption, not more than, l/min		-
Cooling water consumption, not less than, l/min		6
Consumption of compressed air	per 1 ejection, l	0.12
	nominal productivity, l/min	15



	Dimensions, mm	Weight, kg
Sorting machine	1300x790x1900	700
Automatic control rack	881x603x1952	200

LS-OD-6L

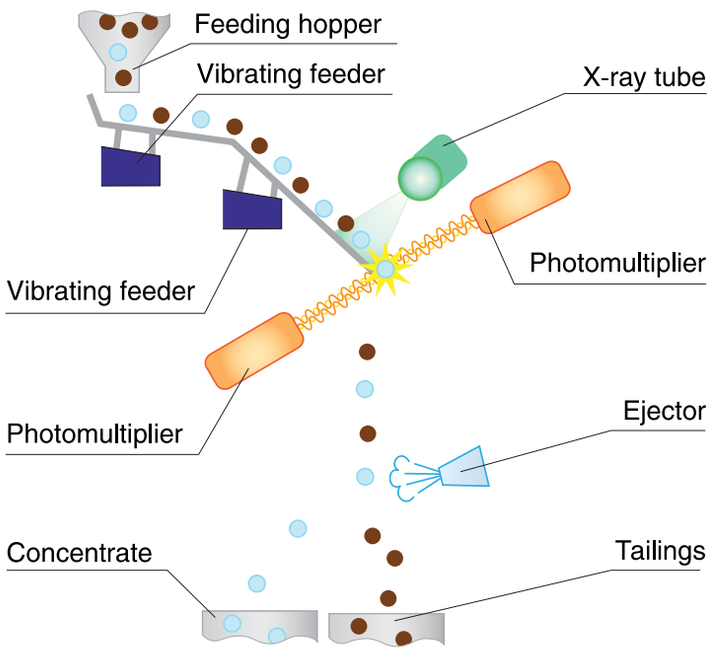
Final concentrate retreatment | **-6+0.5 mm** | **New product**

X-ray luminescence sorter LS-OD-6L is a diamond recovery machine designed for treatment of DRY material with size range -6+0.5 mm.

Main specification			
Size fraction, mm	-6+3	-3+1	-1+0.5
Throughput, kg/h	50	12.5	2
Yield per 10 ejections, grain	30	45	45
Recovery rate, %	98	96	90
Type of material		dry	

Material feeding and detection system	
Material feed	2 vibrating feeders
Flow	4
X-ray tube	1
Photomultiplier	8

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		3.5
Technical water consumption, not more than, l/min		-
Cooling water consumption, not less than, l/min		6
Consumption of compressed air	per 1 ejection, l	0.12
	nominal productivity, l/min	15

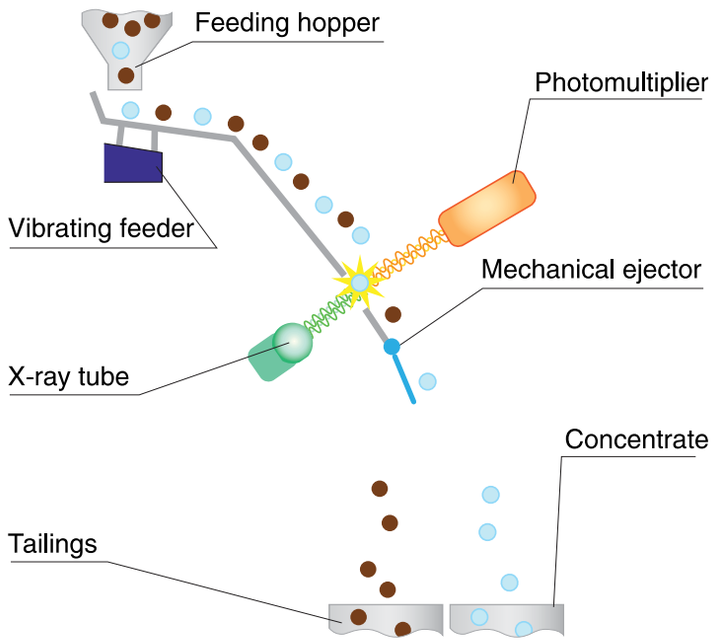


	Dimensions, mm	Weight, kg
Sorting machine	1300x790x1900	700
Automatic control rack	881x603x1952	200

POLUS-M

Portable sorter | **-8+0.5 mm** | **Legacy product**

POLUS-M is specially designed portable sorter for geological exploration of diamond deposits and also enrichment of dry diamond bearing concentrates in field conditions.



The sorter consists of the sorting machine and the control unit.

The registration unit and the X-ray source are placed on opposite sides of the material flow.

Access to the transport channel is through the removable doors. It allows operation in field conditions. Neither water nor compressed air are required.

Technical specifications

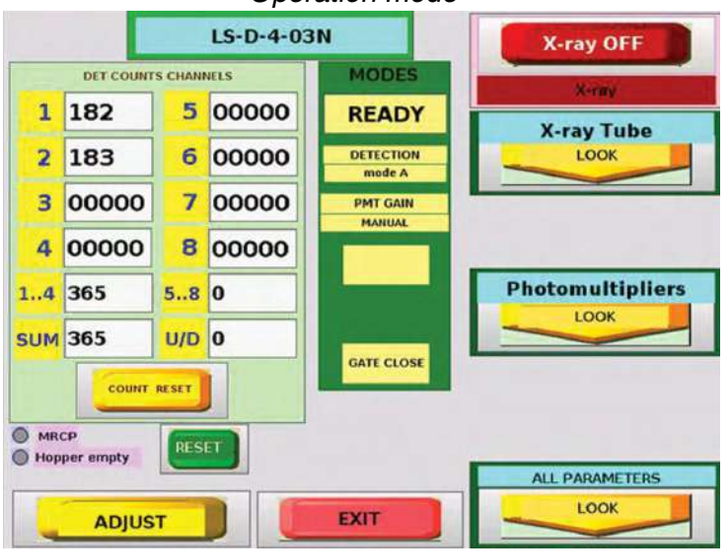
Size fraction, mm	– 8 + 5	– 5 + 2	– 2 + 1	-1+0,5
Throughput, kg/h	100	50	30	15
Yield per one ejection, not more than, g	2.2	1.7	1	0.5
Recovery rate, not less than %	98			

	Sorting machine	Control unit
Overall dimensions (LxWxH), mm	635x300x590	490x440x290
Net weight, kg (without packaging)	36.5	18
Power consumption, VA (single phase, 220 V/50 Hz)	300	
Operating temperature range, C°	+5..+45 with the relative humidity up to 80%	

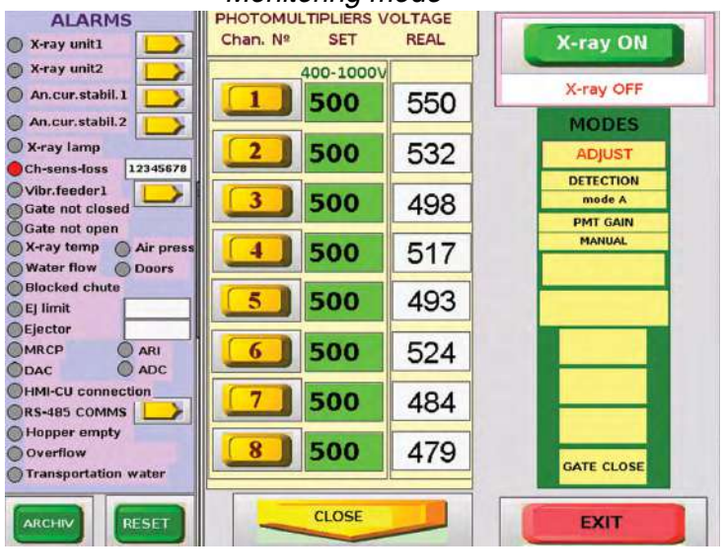
Specially designed construction of the sorter totally protects against the X-ray. Each unit is being tested for safety.

Software interface of X-ray luminescence sorters

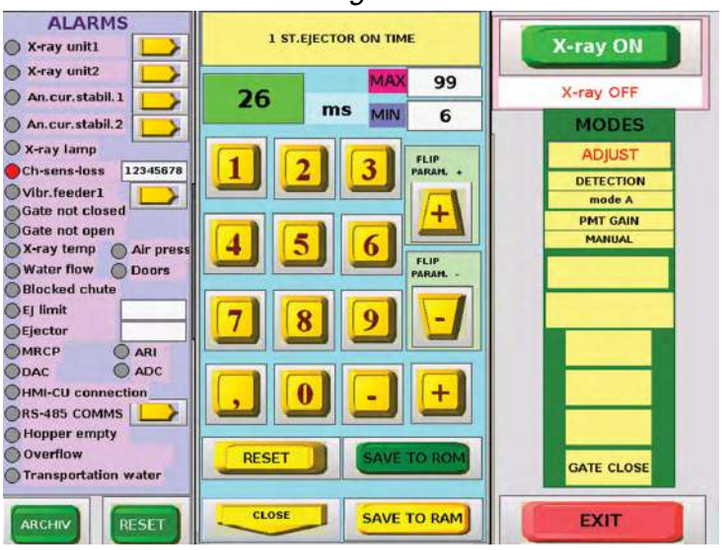
Operation mode



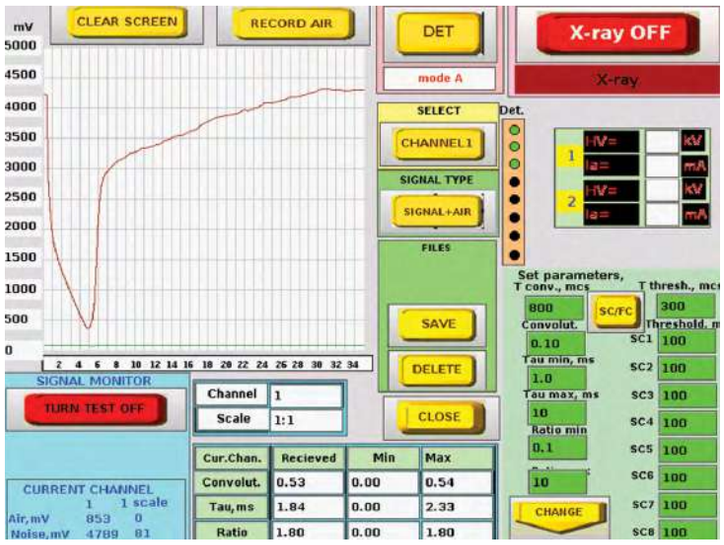
Monitoring mode



Setting mode

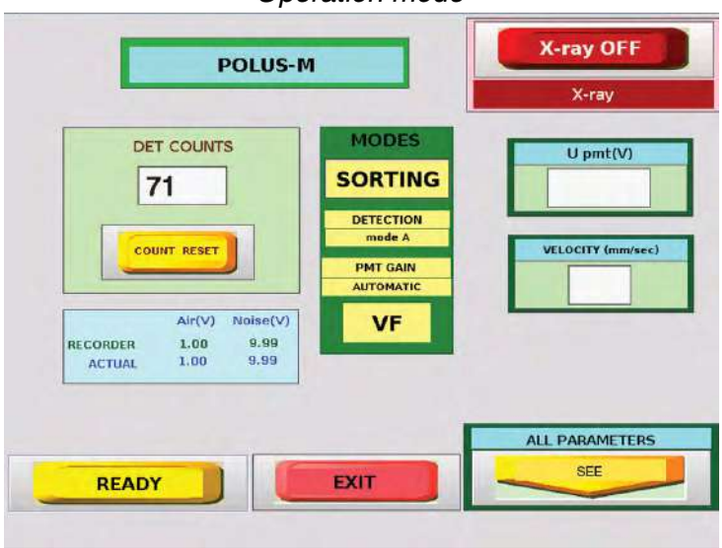


Test mode

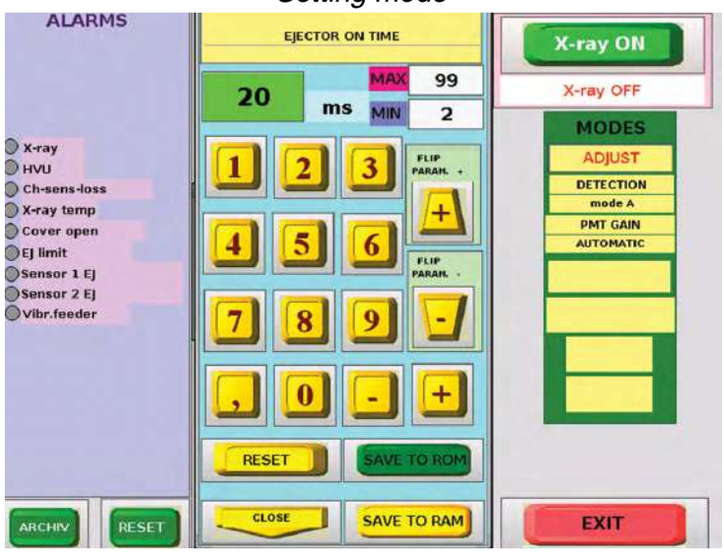


Software interface of POLUS-M

Operation mode



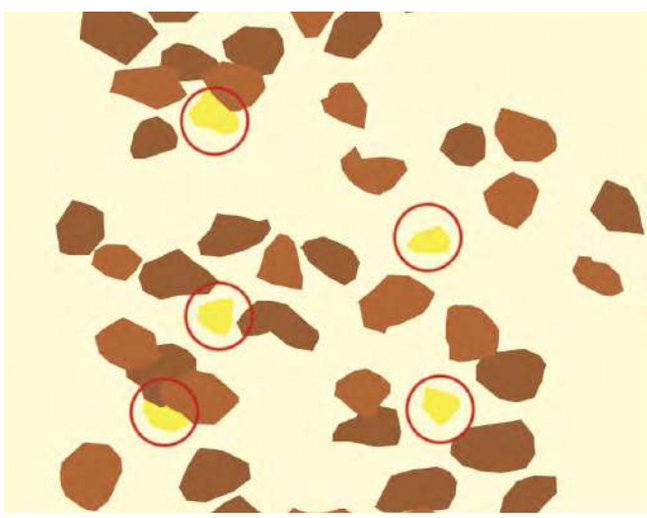
Setting mode



X-ray transmission sorters for diamond recovery

X-ray transmission (XRT) sorters, as well as luminescence sorters, are radiometric sorters used for treatment of diamond-bearing ore.

Principle of operation of X-ray transmission sorters is based on the property of the materials to absorb X-ray radiation. A diamond consisting of carbon, which is light element with atomic number 6, absorbs less X-ray radiation comparing to the ancillary minerals, which contain heavier elements such as silicon, calcium, magnesium, oxygen, iron, etc.



Example of transmission image with rock particles and diamonds (marked with the circle)

In case of X-ray transmission sorters X-ray radiation is being measured by special sensors after it passes through the particle of mineral. Depending on the intensity of the radiation passed through the particle of mineral we can make the conclusion about atomic number of elements contained in the analyzed mineral. Since a diamond consists of light element carbon, the intensity of radiation passed through it will be higher, comparing to the radiation intensity passed through the particle of ancillary mineral (in case of the same thickness of the particles).

In order to avoid the influence of different thicknesses of the particles to the measurements' result, we perform consistent measurements for two different values of X-ray radiation energies.

Currently "Bourevestnik", JSC offers two models of X-ray transmission sorters for the enrichment of dry diamond-bearing material with size fractions -6 +1 mm:

- primary treatment sorter RGS-5;
- concentrate retreatment sorter RGS-2M;
- final concentrate retreatment RGS-OD-3 and RGS-OD-5.

RGS-2M

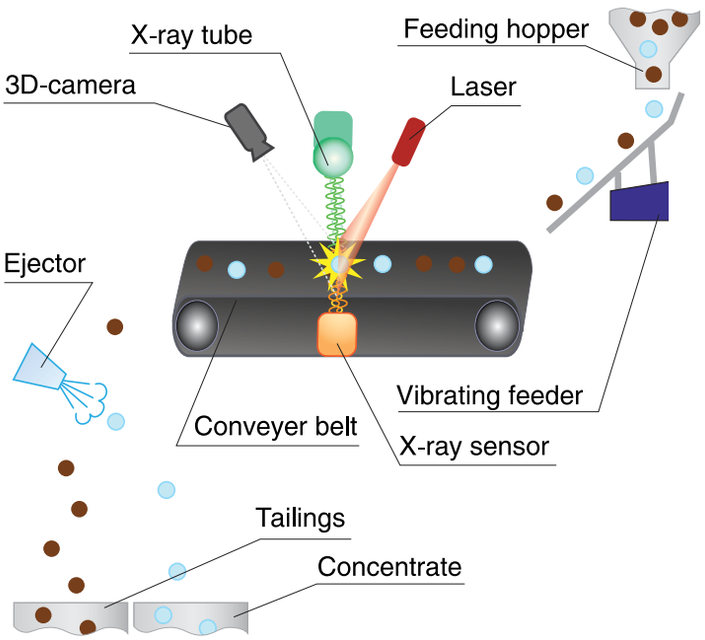
Concentrate retreatment | **-6+1 mm** | **New product**

X-ray transmission sorter RGS-2M is a diamond recovery machine designed for concentrate retreatment of DRY material with size range -6+1 mm.

Main specification		
Size fraction, mm	-6+3	-3+1
Throughput, kg/h	1500	800
Yield per one ejection, mg	300	100
Recovery rate, %	98	96
Type of material	dry	

Material feeding and detection system	
Material feed	Vibrating feeder
Flow	1
X-ray tube	1
Sensor	1
Laser and 3D-camera	1

Sorter's supply	
Power consumption, kVA (single phase, 220V/50Hz)	4
Technical water consumption, not more than, l/min	-
Cooling water consumption, not less than, l/min	12
Consumption of compressed air per 1 ejection, l	0.1



	Dimensions, mm	Weight, kg
Sorting machine	2900x970x2094	1185
Automatic control rack	1955x613x882	240

RGS-OD-3

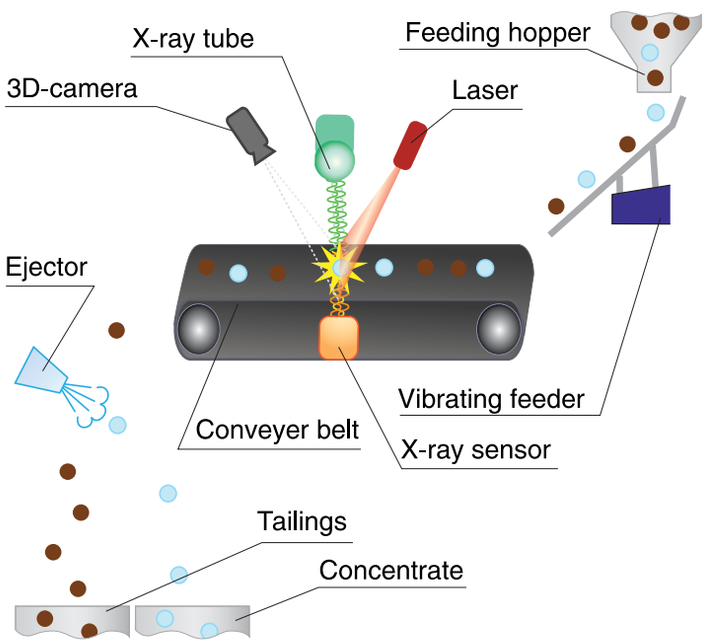
Final concentrate retreatment | **-6+1 mm** | **New product**

X-ray transmission sorter RGS-OD-3 is a diamond recovery machine designed for final concentrate retreatment of DRY material with size range -6+1 mm.

Main specification		
Size fraction, mm	-6+3	-3+1
Throughput, kg/h	190	50
Yield per one ejection, mg	150-200	20-30
Recovery rate, %	99	98.5
Type of material	dry	

Material feeding and detection system	
Material feed	Vibrating feeder
Flow	1
X-ray tube	1
X-ray sensor	1
Laser and 3D-camera	1

Sorter's supply	
Power consumption, kVA (single phase, 220V/50Hz)	3.5
Technical water consumption, not more than, l/min	-
Cooling water consumption, not less than, l/min	6
Consumption of compressed air per 1 ejection, l	0.01



	Dimensions, mm	Weight, kg
Sorting machine	2005x836x1753	729
Automatic control rack	1110x345x1700	340

RGS-5

Primary sorting | **-50+10 mm** | **New product***

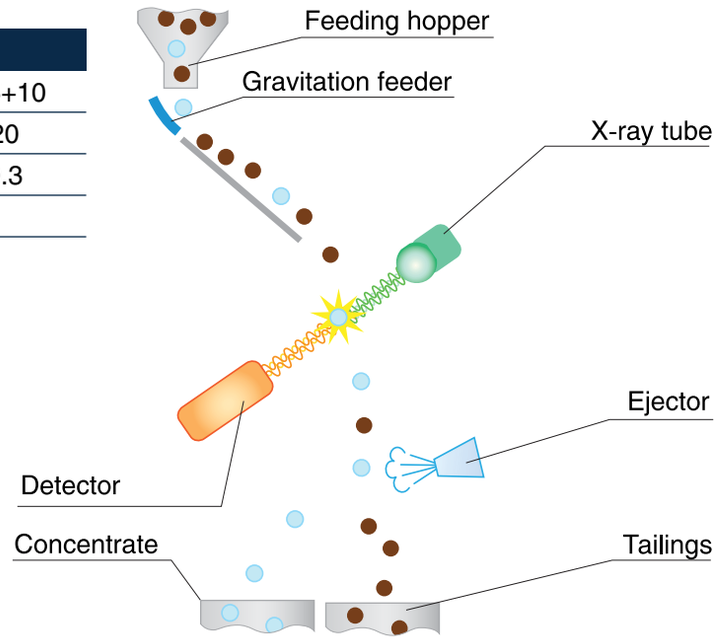
X-ray transmission (XRT) sorter RGS-5 is a diamond recovery machine designed for treatment of DRY or WET material with size range -50+10 mm.

Main specification				
Size fraction, mm	-50+30	-30+20	-20+15	-15+10
Throughput, t/h	60	45	30	20
Yield per one ejection, kg	0.8	0.6	0.4	0.3
Type of material	dry or wet			

Material feeding and detection system	
Material feed	Gravitation feeder
Flow	1
X-ray tube	1
Detector	1

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		5
Cooling water consumption, not less than, l/min		6
Consumption of compressed air	per 1 ejection, l	1.15
	nominal productivity, l/min	30

* Preliminary information



	Dimensions, mm	Weight, kg
Sorting machine	2300x845x2300	1400
Automatic control rack	760x555x1750	230

RGS-OD-5

Final concentrate retreatment | **-50+10 mm** | **New product***

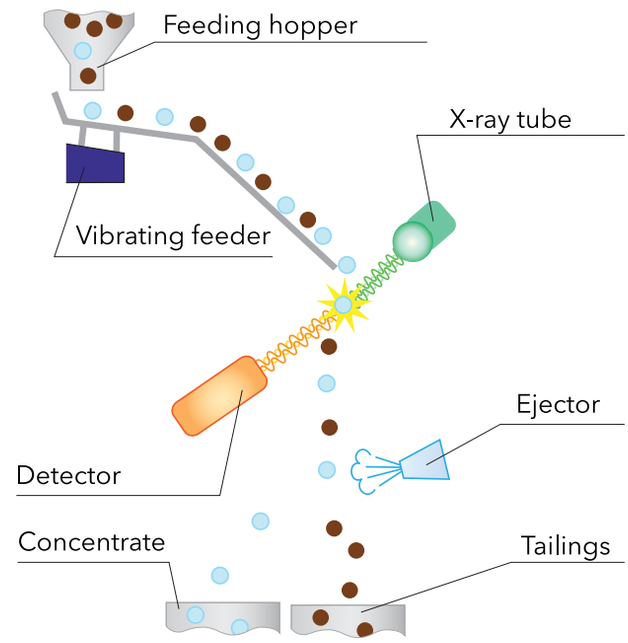
X-ray transmission (XRT) sorter RGS-OD-5 is a diamond recovery machine designed for treatment of DRY or WET material with size range -50+10 mm.

Main specification				
Size fraction, mm	-50+30	-30+20	-20+15	-15+10
Throughput, kg/h	2500	2000	500	300
Yield per 10 ejections, grain	15	16	18	20
Type of material	dry or wet			

Material feeding and detection system	
Material feed	Gravitation feeder
Flow	2
X-ray tube	1
Detector	1

Sorter's supply		
Power consumption, kVA (single phase, 220V/50Hz)		6
Technical water consumption, not more than, l/min		30
Cooling water consumption, not less than, l/min		6
Consumption of compressed air	per 1 ejection, l	5
	nominal productivity, l/min	50

* Preliminary information



	Dimensions, mm	Weight, kg
Sorting machine	2000x930x2135	1100
Automatic control rack	881x603x1952	200

Additional equipment for the diamond mining industry

Apart from the sorters for diamonds recovery, “Bourevestnik”, JSC designs and produces other types of equipment for diamond mining industry.

One of the Bourevestnik products is analyzer of minerals luminescence kinetics UOK-2, which is designed for analysis of kinetic parameters of luminescence of diamonds and associated minerals. UOK-2 allows to measure and store the data which can be used for:

- Analysis of concentratibility of diamond-bearing materials in different mines and during the recovery process on the particular mine;
- Proper selection and adjustment of the settings used in the Bourevestnik sorters;
- Controlling of operation of Bourevestnik luminescence sorters.

The range of Bourevestnik glove boxes is designed for manual sorting of diamond bearing material at final treatment stages of diamond mining plants and drags.

Glove box

-50+1 mm

Legacy product

The range of Bourevestnik glove boxes is designed for manual sorting of diamond bearing material at final treatment stages of diamond mining plants and drags.

Glove boxes are used:

- to perform manual sorting of dry and watered concentrates;
- to prevent unauthorized access to diamond-bearing raw materials;
- to guarantee safety of the final product by preventing contact with an operator.

We produce 4 versions of glove boxes which differ in dimensions, material handling gear, number of operators’ positions, and fineness of raw materials.

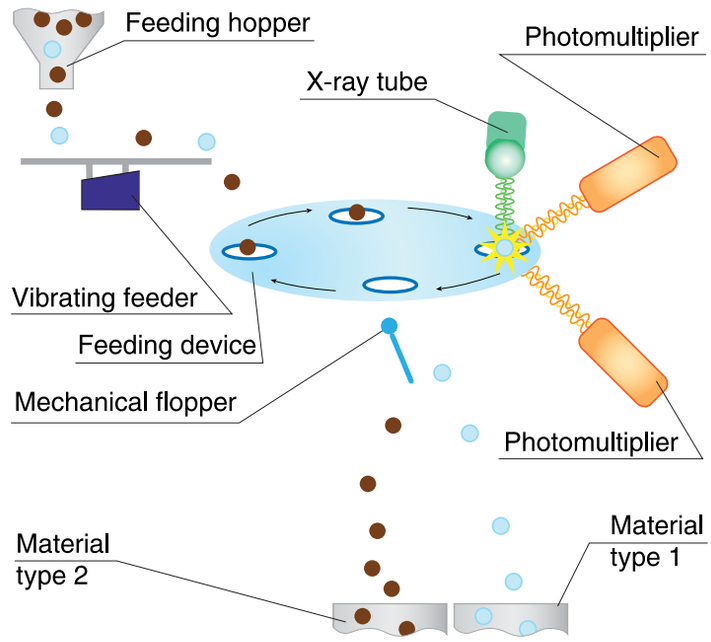
	Modification			
	SM-209	SM-212	SM-219	SM-220
Number of operators’ positions	2	1	2	1
Overall dimensions, not more than, mm	1105x1265x1270	1185x865x1535	1750x1101x1525	1400x855x1535
Net weight, not more than, kg	135	110	320	175
Operation surface, mm	900x660	800x530	900x660	800x600
Material handling gear	Adjustable slide damper	Adjustable slide damper	Vibrating feeder	Damper controlled by stepper motor
Fineness of raw material, mm	-25 +1	-25 +1	-25 +3	-50 +2
Possibility of integration into SCADA	No	Yes	Yes	Yes

UOK-2

-20+1 mm | **Legacy product**

UOK-2 is specially designed for measuring numerical kinetic parameters of luminescence of diamonds and associated minerals. Obtained data are used for calibration of the Bourevestnik sorters.

UOK-2 is based on property of diamonds to luminesce under the X-ray. Analyzer distinguishes diamonds from other associated luminescent minerals and also can measure characteristics with registration of luminescence of an object from both sides: irradiation and opposite.



Main specification

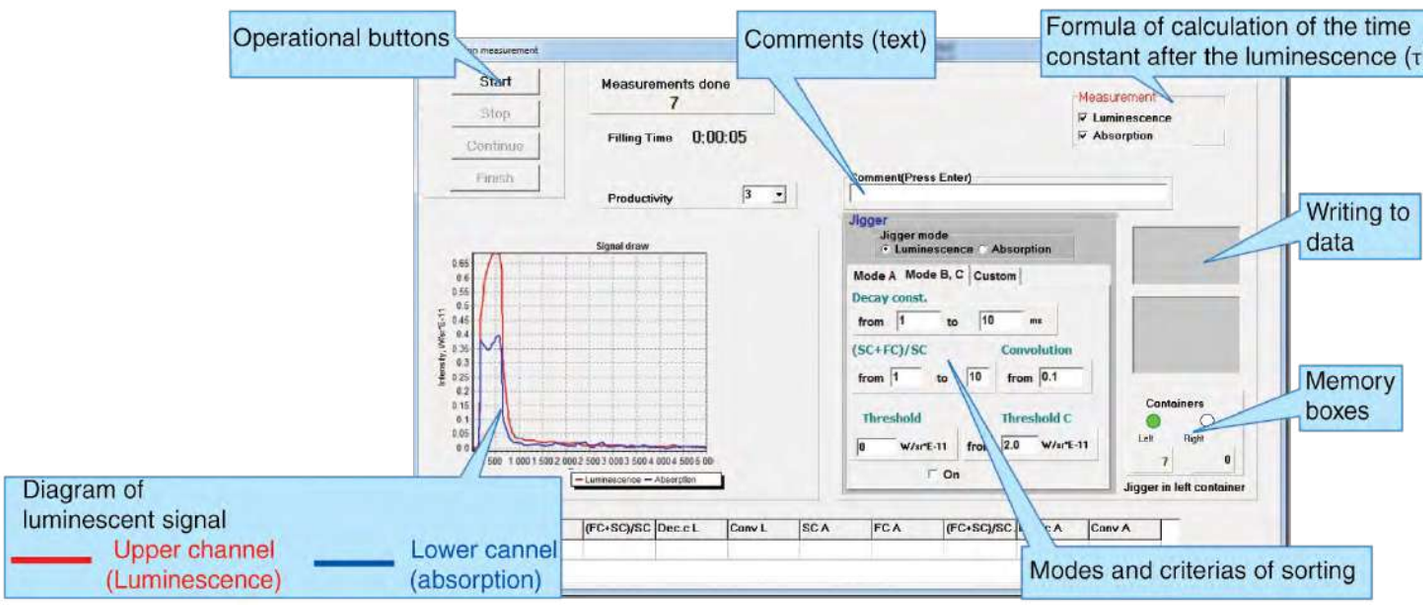
	In automatic feed mode		In manual feed mode
Size fraction, mm	-6+3	– 3 + 1	– 20
Throughput	up to 1200 samples per hour		
Sampling	by particles, measuring by 12 parameters		
Type of material	dry		

Supply

Power consumption, VA (single phase, 220 V / 50 Hz)	300
Operating temperature range	+10..+35°C with the relative humidity up to 80%

	Dimensions, mm	Weight, kg
Sorting machine	510 x 410 x 570	75
Control unit	480 x 500 x 220	30

Software interface



Tracers for the diamond mining

Bourevestnik JSC offers a wide range of tracers to conduct regular check-ups of X-ray sorter's recovery system as well as setting up the delays of the pneumatic ejection system and PMT's sensibility.

Part number 2 mm	Color	Shape	Luminescence intensity (W/Sr)/(R/s)	Light transparency
Tracer 2-FL-530-NR-0,05	Rose	Sphere	$2,5 \times 10^{-11}$	No
Tracer 2-FL-530-NZ-0,02	Green	Sphere	$1,0 \times 10^{-11}$	No
Tracer 2-FL-530-NK-0,01	Red	Sphere	$5,0 \times 10^{-12}$	No
Part number 3 mm	Color	Shape	Luminescence intensity (W/Sr)/(R/s)	Light transparency
Tracer 3-FL-530-NG-0,003	Yellow	Sphere	$1,5 \times 10^{-12}$	No
Tracer 3-FL-530-NS-0,1	Dark-blue	Sphere	$5,0 \times 10^{-11}$	No
Tracer 3-FL-530-HP-0,05	Rose	Sphere	$2,5 \times 10^{-11}$	No
Tracer 3-FL-530-NZ-0,02	Green	Sphere	$1,0 \times 10^{-11}$	No
Tracer 3-FL-530-NK-0,01	Red	Sphere	$5,0 \times 10^{-12}$	No
Tracer 3-FL-530-NG-0,2	Yellow	Sphere	$1,0 \times 10^{-10}$	No
Tracer 3-FL-530-NJ-0,06	Blue	Sphere	$3,0 \times 10^{-11}$	No
Part number 4 mm	Color	Shape	Luminescence intensity (W/Sr)/(R/s)	Light transparency
Tracer 4-FL-530-NG-0,2	Yellow	Sphere	$1,0 \times 10^{-10}$	No
Part number 5 mm	Color	Shape	Luminescence intensity (W/Sr)/(R/s)	Light transparency
Tracer 5-FL-530-NJ-0,03	Blue	Sphere	$1,5 \times 10^{-11}$	No
Tracer 5-FL-530-NB-0,3	White	Sphere	$1,5 \times 10^{-10}$	No
Tracer 5-FL-530-NG-0,04	Yellow	Sphere	$2,0 \times 10^{-11}$	No
Tracer 5-FL-530-NR-0,008	Rose	Sphere	$4,0 \times 10^{-12}$	No
Tracer 5-FL-530-NR-0,01	Rose	Sphere	$5,0 \times 10^{-12}$	No
Tracer 5-FL-530-NS-0,02	Dark-blue	Sphere	$1,0 \times 10^{-11}$	No
Tracer 5-FL-530-NJ-0,3	Blue	Sphere	$1,5 \times 10^{-10}$	No
Tracer 5-FL-530-NB-0,8	White	Sphere	$4,0 \times 10^{-10}$	No
Tracer 5-FL-530-NG-0,2	Yellow	Sphere	$1,0 \times 10^{-10}$	No
Tracer 5-FL-530-NS-0,1	Dark-blue	Sphere	$5,0 \times 10^{-11}$	No
Tracer 5-FL-530-NR-0,05	Rose	Sphere	$2,5 \times 10^{-11}$	No
Tracer 5-FL-530-NZ-0,02	Green	Sphere	$1,0 \times 10^{-11}$	No
Tracer 5-FL-530-NK-0,01	Red	Sphere	$5,0 \times 10^{-12}$	No
Tracer 5-FL-530-NJ-0,004	Blue	Sphere	$2,0 \times 10^{-12}$	No
Part number 6 mm	Color	Shape	Luminescence intensity (W/Sr)/(R/s)	Light transparency
Tracer 6-FL-530-NB-0,2	White	Sphere	$1,0 \times 10^{-10}$	No
Tracer 6-FL-530-NG-0,2	Yellow	Sphere	$1,0 \times 10^{-10}$	No
Tracer 6-FL-530-NG-0,06	Yellow	Sphere	$3,0 \times 10^{-11}$	No

Part number 8 mm	Color	Shape	Luminescence intensity (W/Sr)/(R/s)	Light transparency
Tracer 8-FL-530-NO-0,4	Orange	Sphere	$2,0 \times 10^{-10}$	No
Tracer 8-FL-530-NG-0,2	Yellow	Sphere	$1,0 \times 10^{-10}$	No
Tracer 8-FL-530-NS-0,1	Dark-blue	Sphere	$5,0 \times 10^{-11}$	No
Part number 10 mm	**Color**	**Shape**	**Luminescence intensity (W/Sr)/(R/s)**	**Light transparency**
Tracer 10-FL-530-NB-0,3	White	Sphere	$1,5 \times 10^{-10}$	No
Tracer 10-FL-530-NO-0,4	Orange	Sphere	$2,0 \times 10^{-10}$	No
Tracer 10-FL-530-NS-0,1	Dark-blue	Sphere	$5,0 \times 10^{-11}$	No
Tracer 10-FL-530-NR-0,05	Rose	Sphere	$2,5 \times 10^{-11}$	No
Tracer 10-FL-530-NZ-0,02	Green	Sphere	$1,0 \times 10^{-11}$	No
Tracer 10-FL-530-NK-0,01	Red	Sphere	$5,0 \times 10^{-12}$	No
Tracer 10-FL-530-MJ-0,8	Blue	Sphere	$4,0 \times 10^{-10}$	No
Tracer 10-FL-530-NB-0,4	White	Sphere	$2,0 \times 10^{-10}$	No
Tracer	Dark-blue	Cube	16×10^{-11}	Yes
Tracer	Green	Cube	31×10^{-11}	Yes
Tracer	Dark-blue	Cube	87×10^{-11}	Yes
Part number 16 mm	**Color**	**Shape**	**Luminescence intensity (W/Sr)/(R/s)**	**Light transparency**
Tracer 16-FL-530-NB-0,8	White	Sphere	$4,0 \times 10^{-10}$	No
Tracer 16-FL-530-NO-0,4	Orange	Sphere	$2,0 \times 10^{-10}$	No
Tracer 16-FL-530-NS-0,1	Dark-blue	Sphere	$5,0 \times 10^{-11}$	No
Tracer 16-FL-530-NR-0,05	Rose	Sphere	$2,5 \times 10^{-11}$	No
Tracer 16-FL-530-NS-0,2	Dark-blue	Sphere	$1,0 \times 10^{-10}$	No
Tracer 16-FL-530-NZ-0,06	Green	Sphere	$3,0 \times 10^{-11}$	No
Part number 20 mm	**Color**	**Shape**	**Luminescence intensity (W/Sr)/(R/s)**	**Light transparency**
Tracer 20-FL-530-NB-0,3	White	Sphere	$1,5 \times 10^{-10}$	No
Tracer 20-FL-530-NB-0,8	White	Sphere	$4,0 \times 10^{-10}$	No
Tracer 20-FL-530-NO-0,4	Orange	Sphere	$2,0 \times 10^{-10}$	No
Tracer 20-FL-530-NS-0,1	Dark-blue	Sphere	$5,0 \times 10^{-11}$	No
Tracer	Dark-blue	Cube	17×10^{-11}	Yes
Tracer	Green	Cube	24×10^{-11}	Yes
Tracer	Dark-blue	Cube	64×10^{-11}	Yes
Part number 30 mm	**Color**	**Shape**	**Luminescence intensity (W/Sr)/(R/s)**	**Light transparency**
Tracer 30-FL-530-NO 0,4	Orange	Sphere	$2,0 \times 10^{-10}$	No
Tracer 30-FL-530-NG-0,4	Yellow	Sphere	$2,0 \times 10^{-10}$	No
Tracer 30-FL-530-NB-0,8	White	Sphere	$4,0 \times 10^{-10}$	No
Tracer 30-FL-530-NG-0,2	Yellow	Sphere	$1,0 \times 10^{-10}$	No
Tracer 30-FL 530-MG-0,4	Yellow	Sphere	$2,0 \times 10^{-10}$	No

Analytical instruments

Multifunctional X-ray Diffractometers

X-ray diffraction is the dactyloscopy in material science, a reliable non-destructive technique of identification of crystalline matter.

DRON-7 and DRON-8 multifunctional X-ray diffractometers are powerful tools for qualitative and quantitative phase analysis, crystal structure characterization and determination of crystal orientation.

Features:

- High reliability and easy use
- Automation of adjustment and data collection
- Support of different X-ray optical schemes and measurement techniques
- Flexible configuration and wide range of options.

Specially designed DRON-7M model is released from radiation inspection. There are no specific requirements to installation area and personnel.

Multi-purpose X-ray Fluorescence Analyzer BRA-135F

The analyzer is intended for determination of the chemical elements in the range of ^{9}F to ^{92}U in solid, powdery and liquid samples.

The operation of analyzer is based on exciting the fluorescence radiation of the sample atoms by the X-ray tube radiation. Determination of elements concentration is based on the quantity of registered by high performance SDD detector photons with various energies.

The vacuumized measurement chamber provides high analytical characteristics in the range of light elements from ^{9}F to ^{17}Cl. Low limit-of-detection (from 10 ppm) is achieved by high aperture and optimally selected filters of X-ray optical system.

The Analyzer BRA-135F has an excellent combination of low cost-of-ownership with high analytical capabilities for detecting a wide range of elements.

X-ray Fluorescence Sulfur Analyzers ASE-3 and ASW-3

The Energy-Dispersive (EDX) Analyzer ASE-3 and Wavelength-Dispersive (WDX) analyzer ASW-3 are specially designed for rapid analysis of sulfur concentration in oil products. The high speed of analysis combined with low range of detection (5 ppm) and built-in printer, makes Analyzers ASE-3 and ASW-3 an optimal solution for quality assessment in express laboratories.

Analyzers ASE-3 and ASW-3 complies with the most popular international standards for sulfur measurements.

On-stream X-ray Analyzer AR-35

The Analyzer AR-35 is intended for on-stream XRF analysis of suspension and pulp-products of technological processes of ore processing. AR-35 can simultaneously determine 8 chemical elements in technological product that saves time and reduces the cost of element determination.

The AR-35 is designed to replace labor-intensive and time-consuming laboratory analysis of samples for control of technological process. The high accuracy and possibility of monitoring chemistry up to 15 fluid flows in realtime makes the analyzer AR-35 a central element in the automated control system of technological process on mining processing plants, metallurgy plants and chemical productions.

Special-purpose Wavelength-dispersive Analyzer ARF-7

The Analyzer ARF-7 is intended for high-accuracy measurement of quantities of U, Th, Au, W, Tl, As, Pb, and other elements in ores, rocks and at industrial mining.

To get the best spectral resolution, the analyzer is based on the Cauchois method.

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