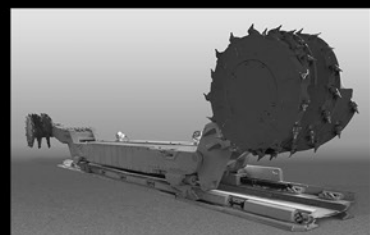
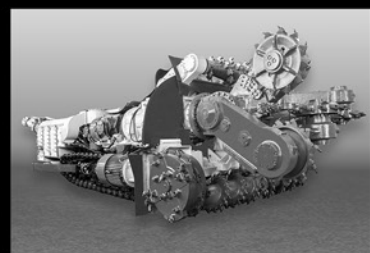
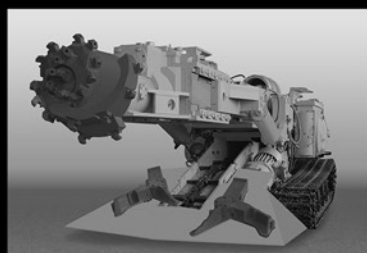


JSC "SOLIGORSK INSTITUTE OF  
RESOURCE SAVING PROBLEMS  
WITH PILOT PRODUCTION"



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- development of mining handling equipment;
- development of mining heading, purification and drilling equipment, powered support;
- development of technological mining and processing equipment;
- development of reliability and durability improvement methods of machine parts and units working in abrasive chemically active environments of mining and processing companies;
- development of equipment for overload and stocking of bulk materials;
- development of control systems of conveyor transport, mining machines, equipment for processing of mineral resources;
- improvement of escalator equipment characteristics, development of modern methods of designing and manufacturing of escalators and travelators;
- development of composite and heat and sound insulating materials;
- publication of scientific and technical journal “Mining Mechanical Engineering and Machine-building”, monographs, collection of articles, reports of scientific and technical conferences;
- participation in organization and carrying of scientific and technical conferences;
- improvement of production practice and safety improvement of mining on Starobin potash salt deposit.



- handling equipment:
  - belt conveyors;
  - chain-and-flight conveyors;
  - specialized chain-and-flight conveyors;
  - screw conveyors;
  - bucket elevators;
  - mine skips;
  - hoisting pulleys;
  - suspension gears;
  - counterweights;
  - cages;
  - scraper reclaimers;
  - winches for replacement of conductors;
  - winding machines;
  - cager mucking machines .

- cutter-loaders:
  - cutter loaders for medium thickness seams;
  - cutter loaders for low seams;
  - cutting units and tool;
  - cable layers (track chains).

- heading equipment:
  - tunneling machines with rotor;
  - tunneling selective heading machines;
  - heading-and -winning machines;
  - spare parts for tunneling machines;
  - equipment for track side of mining machines.

- drilling equipment:
  - drill rigs;
  - workover rigs;
  - bases for drilling units of the type “Uralmash 3D-67”.

- equipment for complexes of bulk material overload:
  - unload stations of bulk materials from

mineral wagons, hopper cars, grain wagons;

- warehouse complexes for bulk materials;
- offshore and river complexes of bulk materials overload (loading, unloading of wagons and loading into vessels).

- mineral-processing equipment:
  - mixers;
  - settler-thickeners;
  - crushers;
  - feeders;
  - roller pressers;
  - rotor-solvents;
  - rod and ball mills;
  - vacuum filters.

- equipment for underground:
  - escalators;
  - passenger conveyors (travelators)

- equipment of mining automatics:
  - pneumatic drives of actuators
  - automatic monitor and control systems based on microprocessor technology;
  - electrical devices for mining equipment.

- composite and heat and sound insulating materials for vehicles.



The walking excavating machine WEM is designed for digging soil both below and above the natural surface of the ground with the hardness from I to IV category inclusive in the overburden mining production of non-transport circuit with ore laying in worked-out area or on the board of mine face.

The machine can be used in open-cuts in the coal industry, ferrous and nonferrous metallurgy, building materials industry, as well as in the construction of irrigative systems canals and various hydraulic structures.

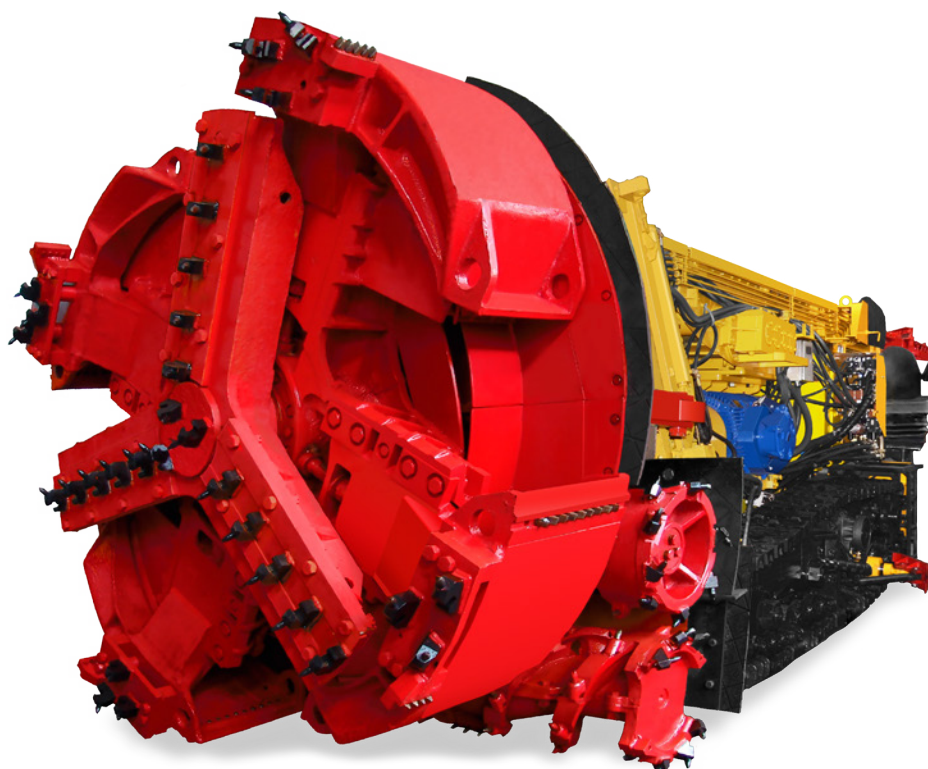
Low-level pressure ratings on the soil during operation and movement combined with high maneuverability allow the use of machine for the work on soft soils and in space-limited environment.

The distinctive feature of machine electric equipment in comparison with other commercial produced similar excavating machines is the use of asynchronous electric motors with squirrel-cage rotors, which speed control is carried out by means of modular frequency converter with DC common link.



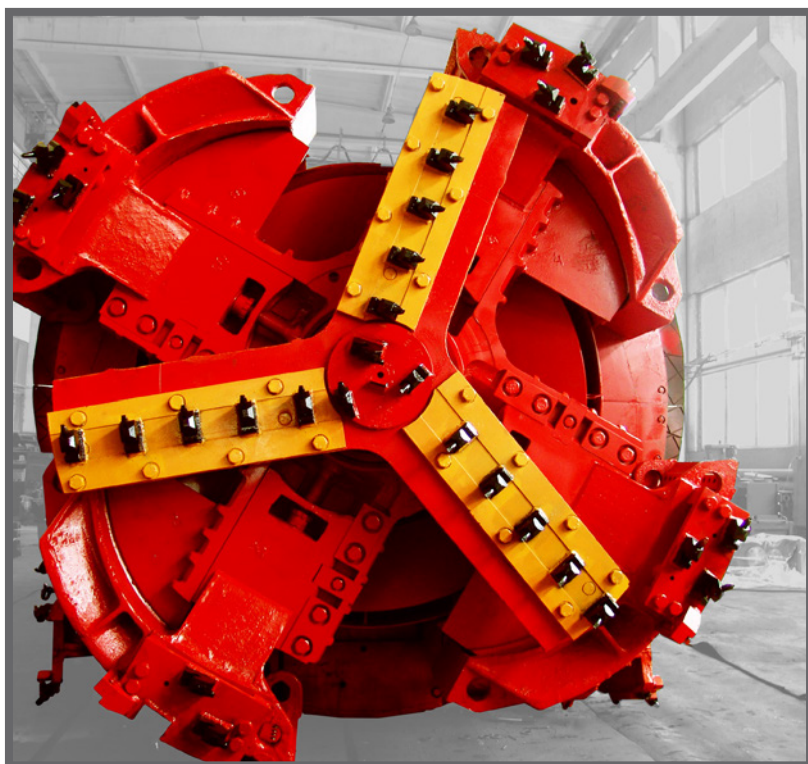


Specifications		
Machine type	WEM-6,5/45	WEM-11/70
Machine travel	walking	walking
Bucket capacity in the development and transportation of soil from I to IV hardness category inclusive, m <sup>3</sup>	6,5 ± 0,1	11
Boom length, m	45	70
Angle of boom to horizontal, deg.	25 ... 35	30
Allowable slope during operation, deg.	max 2°	max 2°
Travel speed during walking, m/s (km/s)	0,133 (0,48)	0,056 (0,2)
Maximum allowable suspended load, kN	167	304
Power equipment	electrical	electrical
Control of main drives	electrical	electrical
Input current: voltage, V; frequency, Hz	6000/50	6000/50
Value of equivalent current, consumed during operation, A	60	100
Value of average capacity, consumed during operation, kW	500	800

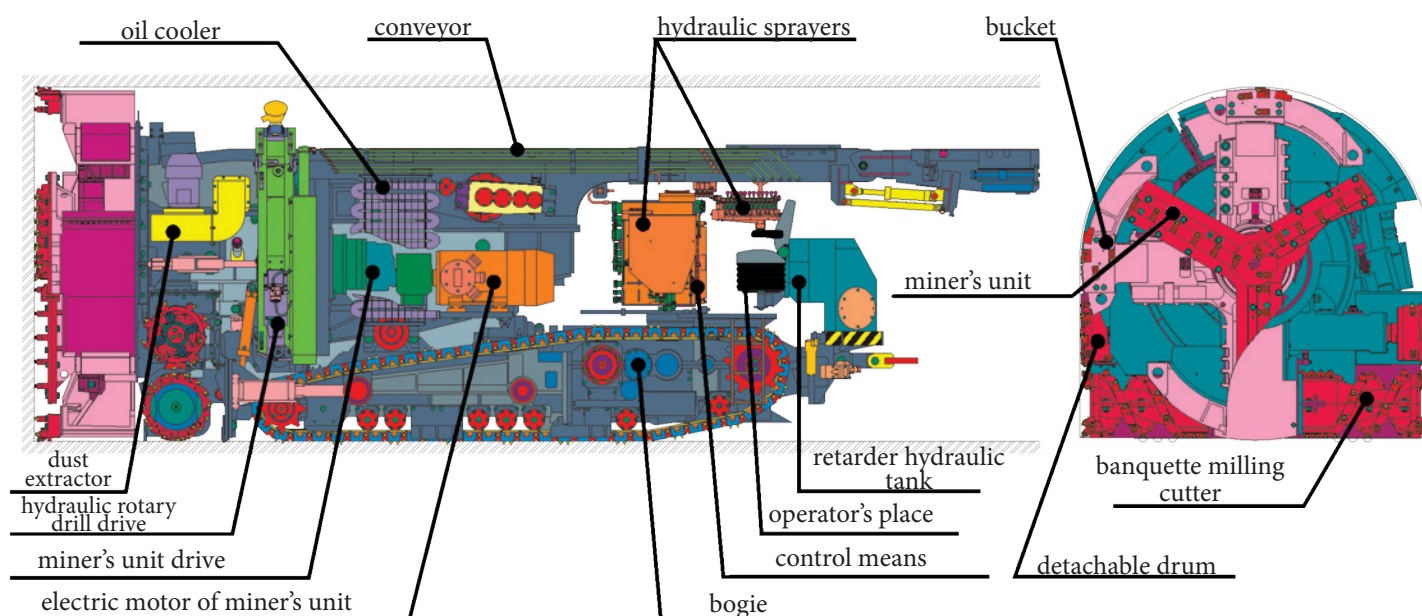
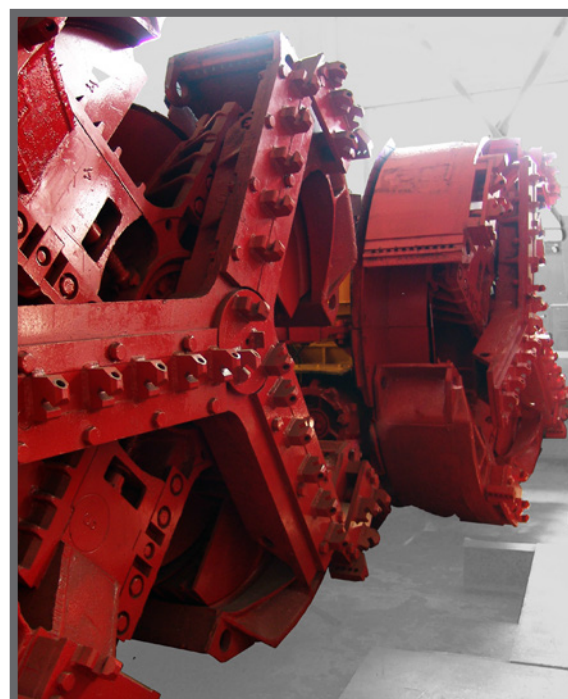


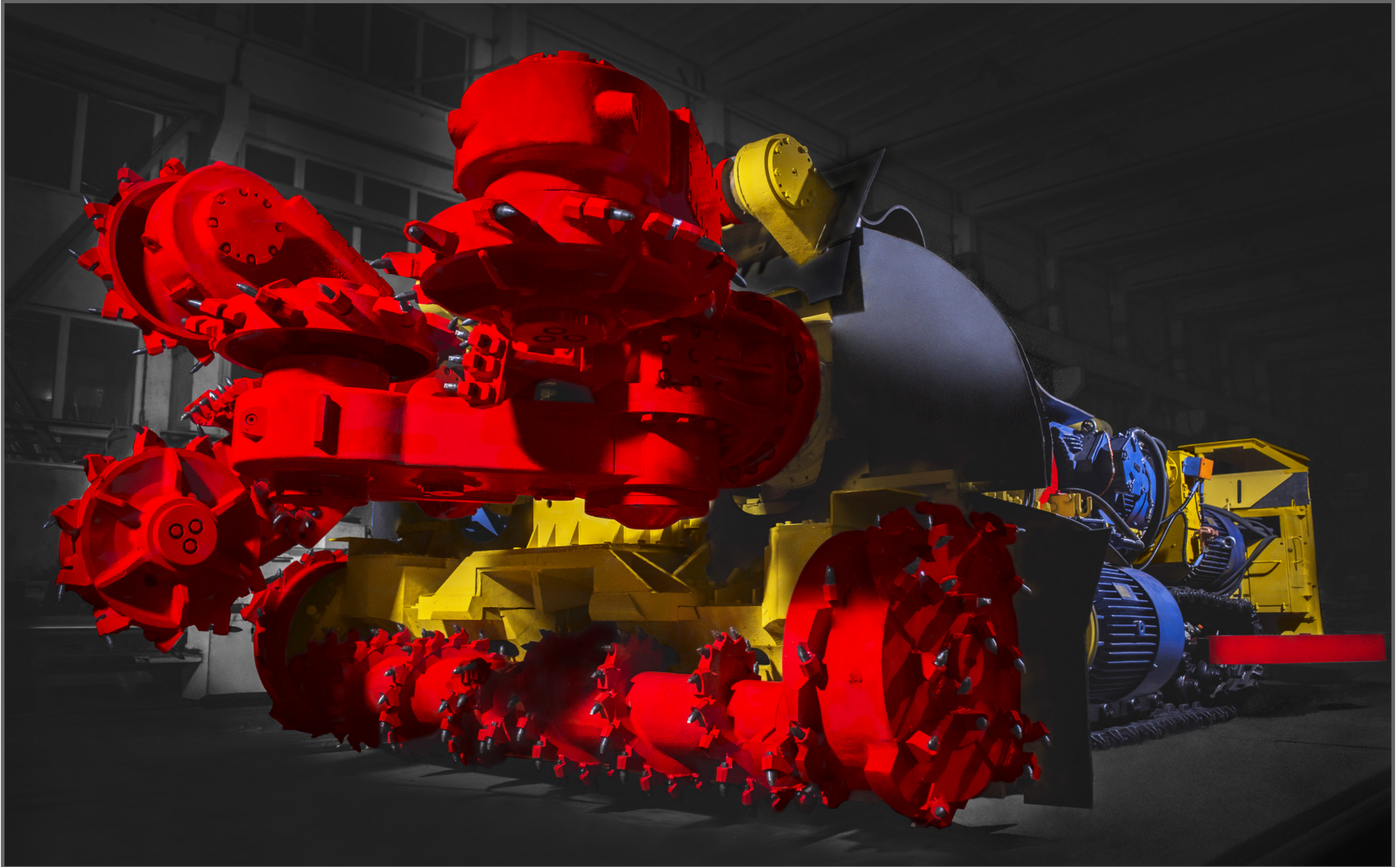
Road heading machine KRP-3-660/1140 is designed for driving of mine workings of the arched form with the cross-section of 8,9 m<sup>2</sup> and the inclination of  $\pm 15^\circ$  on saliferous rocks with cutting resistance up to 450 N/mm, as well as for extraction. These machines perform mined rock breaking, unloading it from the mine face and loading into vehicles installed behind the machine.

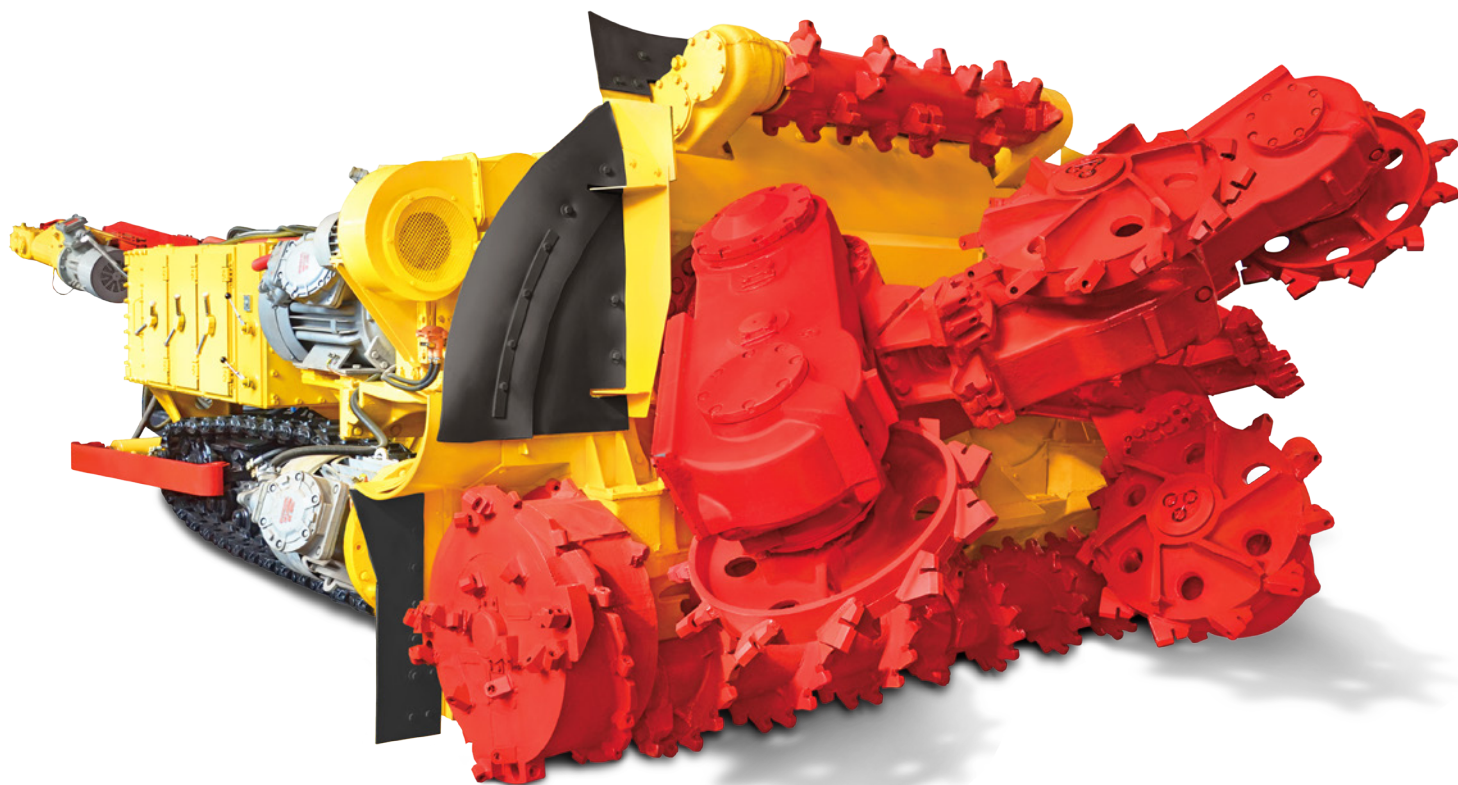
Road heading machine KRP-3-660/1140 is a continuation of the PKS-8 combine series.



Specifications	
Output during driving, m/min	0,28
Output during extraction, t/min	4,7
Working dimensions:	
- section area, m <sup>2</sup>	8±0,1
- height, m	3±0,1
- width, m	3±0,1
- working form of section	arched
- min radius of corner of drive working, m	25
Angle of hade of the working, deg., up to	±15
Turning speed of miner's unit:	
- centre cross, min <sup>-1</sup>	7,05
- drilling tool, min <sup>-1</sup>	13,3
- banquette milling cutters, min <sup>-1</sup>	21
- detachable drums, min <sup>-1</sup>	42,2
Maximum working pressure in the hydraulic system, MPa	10
Dimensional specifications, mm	9200×2850×3000
Conveyor type	belt conveyor
Feeder type	crawler-tracked
Belt width, mm	1000
Belt speed, m/s	1,28
Voltage of electrical equipment, V	660/1140
Electric motor power:	
- total power, kW	368,5
- miner's unit power, kW	2x110
- power of oil pumps and banquette milling cutters, kW	110
- conveyor, kW	15
- fan, kW	2×11
- fill unit, kW	1,5
Output of pumps, l/min	444
Dust suppression:	
- number of fans, pcs.	2
- capacity of fans, m <sup>3</sup> /s	1,16 ... 2,33
Weight, t	58,8





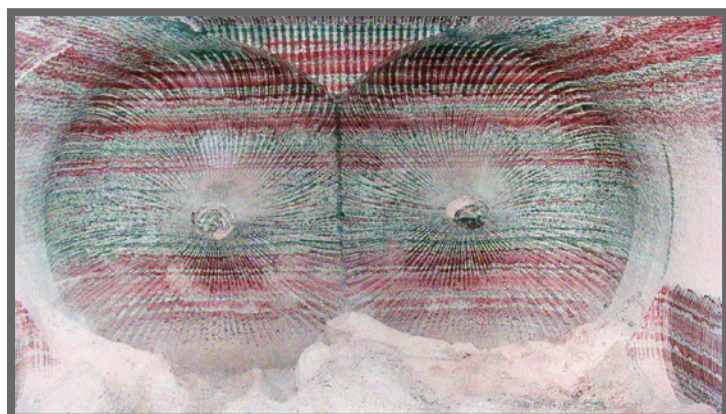


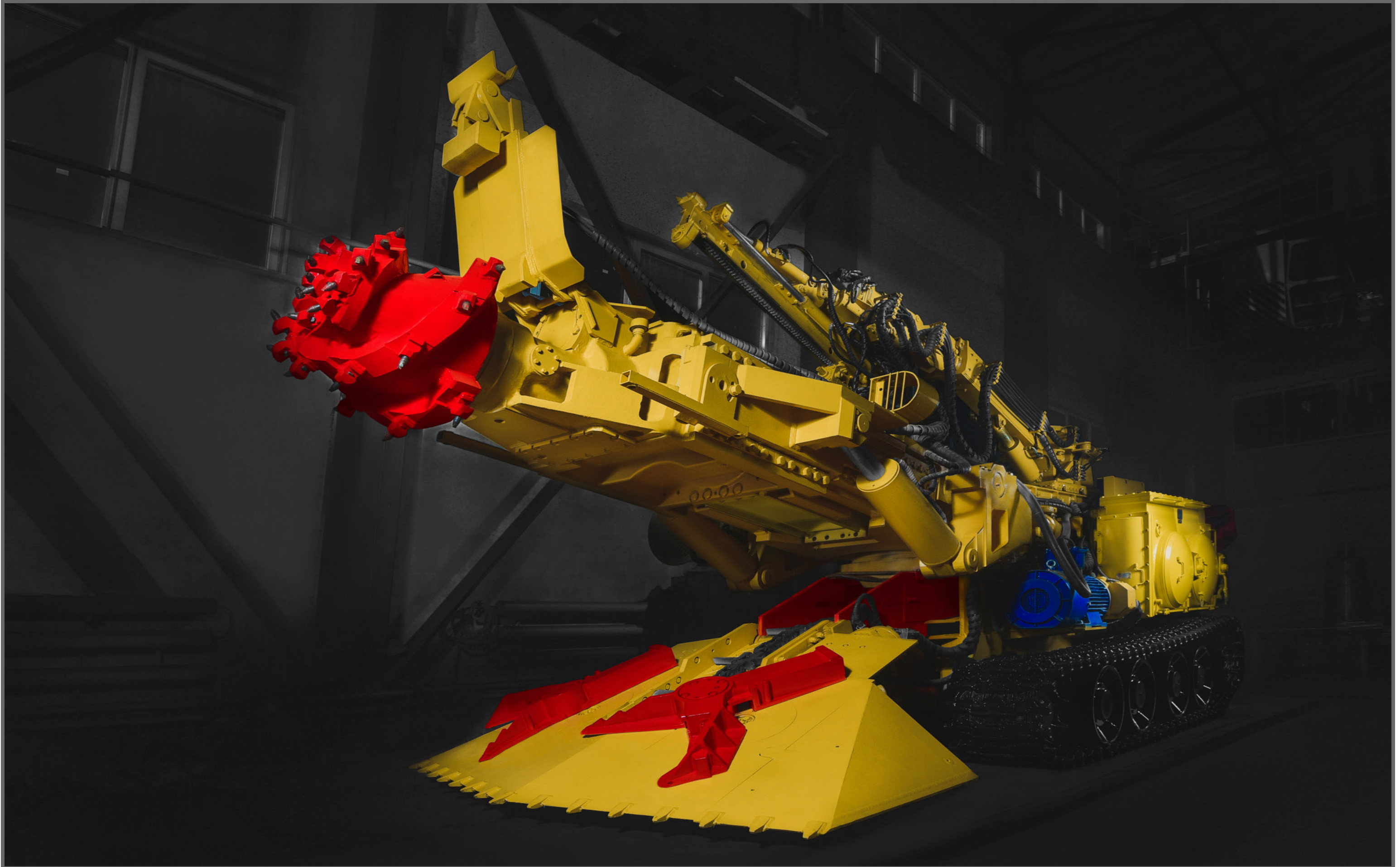
The heading-and-winning machines KPO-8,5 and KPO-10,5 are designed for development mining: tunneling, and as well as ore extraction by method of chamber mining.

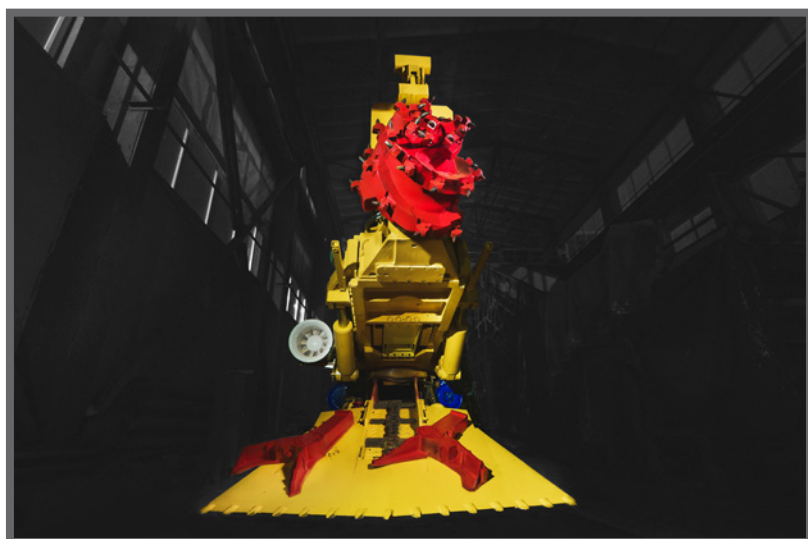
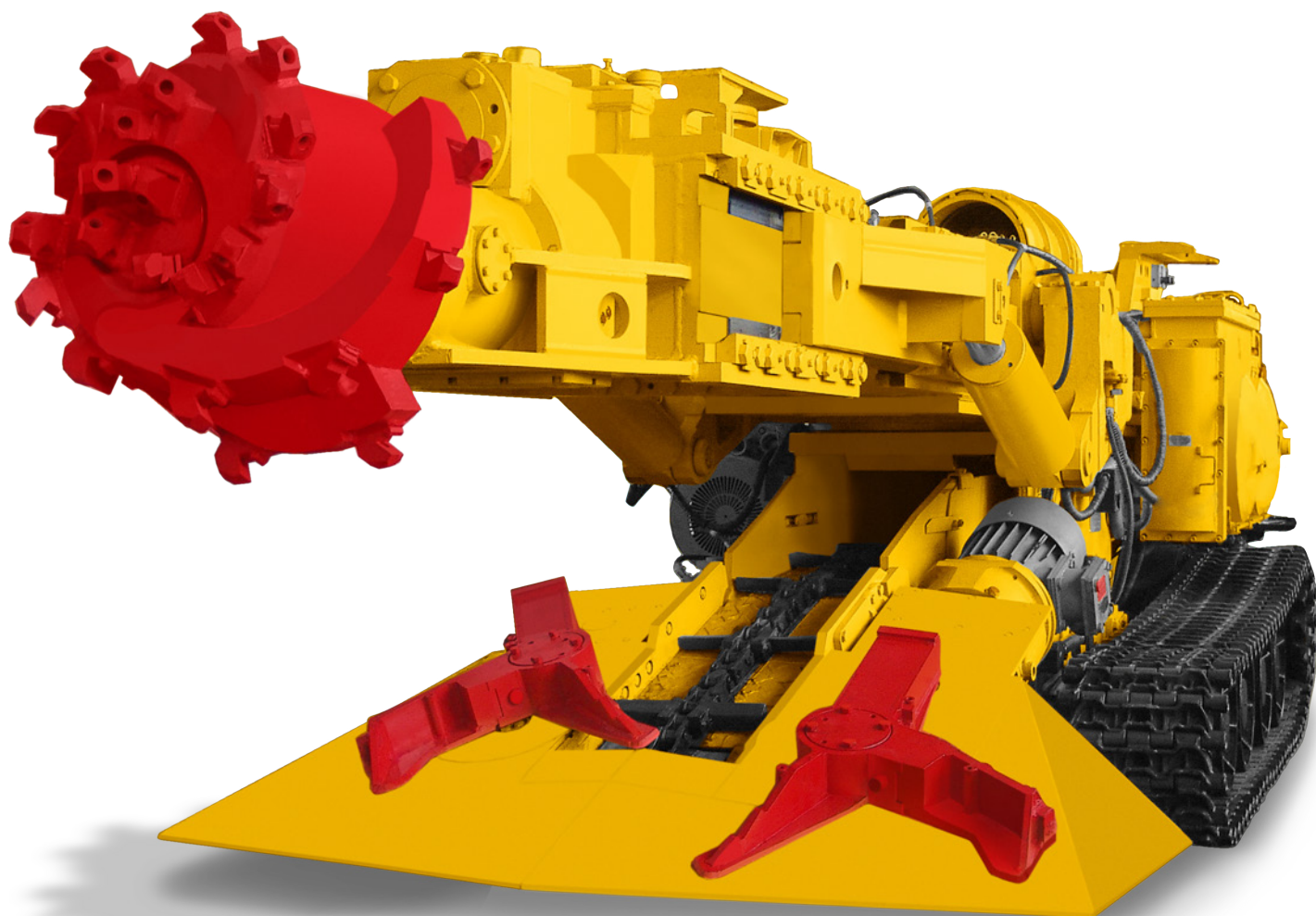
In operation the machines produce: mine face destruction, mucking, loading of the broken muck into the reloading bunker or into the shuttle car. Moreover, these machines perform drilling of blast holes.



Specifications		
Machine version	KPO-8,5	KPO-10,5
Technical capacity during cutting resistance $A_p=450$ N/mm (450 kgf/cm <sup>2</sup> ), t/min	4	5
Working form of section	oval and arched form	
Working dimensions: - section area, m <sup>2</sup> - height, m	7,7; 8,2; 8,7 2,1; 2,2; 2,3	9,4; 10,5 2,4; 2,6
Actuating element, type - number of cutter wheels - plate diameter on picks - turning speed of cutter wheels, r/min - pick type - turning speed of actuating element, r/min	planetary, disc 4 1040 41,6 PKS-1 4,83	
Banquette unit, type - pick type - central screw diameter, mm - turning speed of central screw, r/min - side cutters diameter on picks, mm - turning speed of side cutters, r/min	auger-type D6.22 600 40,2 1000 23,2	
Stripping machine, type - drum diameter on picks, mm - turning speed, r/min - pick type	drum-type 500 35,5 D6.22	
Boring machine - drive type - drill diameter, mm - spindle travel, mm, max	hydraulic motor 42 11001400	
Bogie, type - length of ground contacting area of track, mm - distance between axes of chain tracks, mm - max machine speed during movement, m/min	crawler-tracked 3220 1900 3,3	
Dust suppression: - fan type - number of fans - fan capacity, m <sup>3</sup> /s	axifugal 1 2-2,62,66-3,33	
Electrical equipment: - voltage, V - version - total power of electric motors, kW	660/1140 explosion-proof 518526	
Basic dimensions, mm, max: - length - width on banquette milling cutters	12500 39004100	
Weight, t, max	70	71

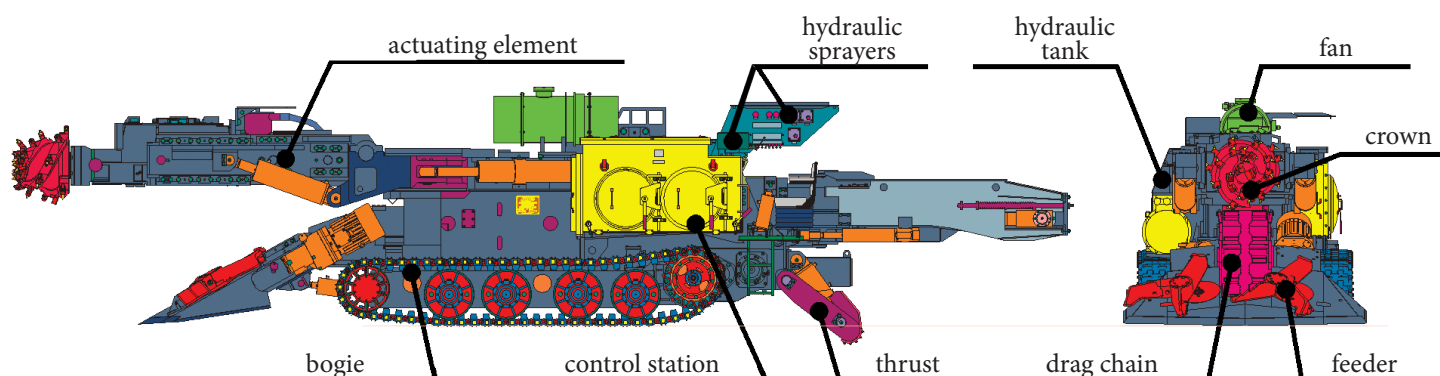


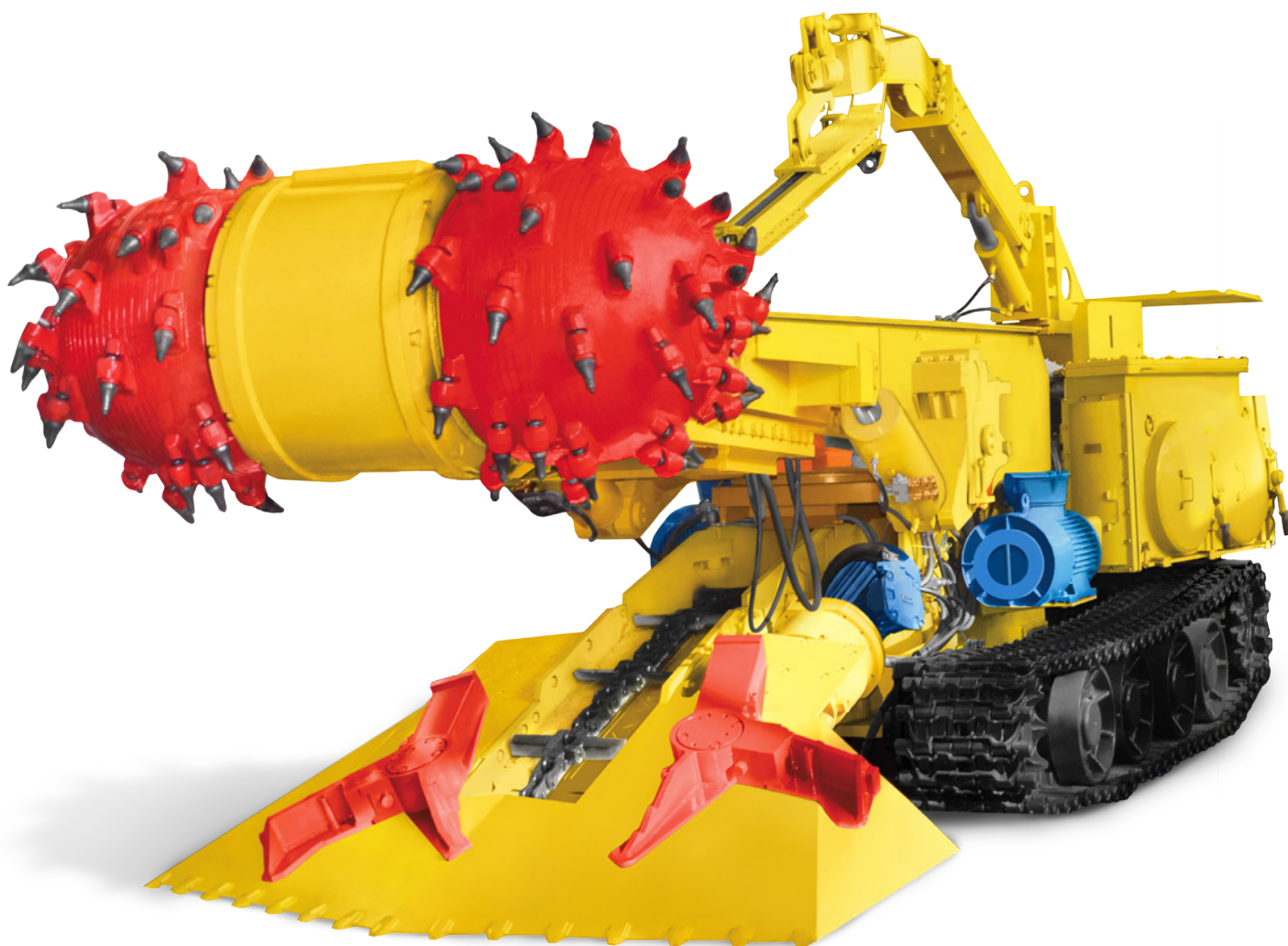




The machine is designed for mechanization of breaking processes and loading the mined rock during driving and maintenance of (previously passed) horizontal and inclined workings of arched, trapezoidal and rectangular forms with the cross-section from 7,5 m<sup>2</sup> to 27 m<sup>2</sup> during driving with the inclination of  $\pm 15^\circ$ , as well as for cutting in workings of box holes, chambers and niches.

Specifications					
Machine version	KID-220	KID-220M	KID-220M-01	KID-220M-02	KID-220MP
Machine output, t/min. min.	1,65				
Cutting resistance of saliferous rocks, N/mm	450				
Working dimensions: - height, m, max - width, m, max - working form - working angle of hade, deg., max	4,84 7,27 arched, rectangular, trapezoidal ±15				
Dimensional specifications, mm, max: - height - width - shoe width - length	2650	2440			2200
	2800				
	2500				
	11650	12270	11870	11500	
Actuating element	sweptback, telescopic				
Type of picks	D-6.22, PKS-1				
Travel of telescope actuating element, mm	630				
Descending of actuating element below ground level, min., mm	250				
Turning speed of jackbit, min <sup>-1</sup>	77,7				
Feeder: - type - feeder's turn to the right, deg. - feeder's turn to the left, deg. - descending below ground level, mm, min. - feeder's with without expanders, mm - feeder's with expanders, mm	swiveling, lifting with gathering double arms 24 18 150100 1800 2800				
Conveyor: - type - horizontal turn, deg. - vertical raising, deg. - rise height of conveyor jib, mm	scraping, raising and turning ±35 15 1760197518751810				
Bogie: - drive travel speed, m/min: - working - maneuvering - clearance, mm	hydraulic 2,5 5 340300				
Output of pumps, l/min.	315	205			243
Voltage of electrical equipment, V	660/1140				
- total motor capacity, kW	228,5	239,5			
Fan capacity, m³/s	3,65	1,16-2,33			
Maximum pressure rating in hydraulic system, MPa	10	20			
Weight, t, max.	50				





The machine is designed for mechanization of breaking processes and loading the mined rock during driving and maintenance of (previously passed) horizontal and inclined workings of arched, trapezoidal and rectangular forms with the cross-section from 7,5m<sup>2</sup> to 27m<sup>2</sup> during driving with the inclination of  $\pm 15^\circ$ , as well as for cutting in workings of box holes, chambers and niches. The distinctive feature of the series KID-220 and KID-220M2 is the sweptback telescopic actuating element with double cross-cutting crown.



Specifications	
Machine version	KID-220M2
Machine output, t/min, min.	3
Cutting resistance of saliferous rocks, N/mm	450
Working dimensions: - height, m, max - width, m, max - working form - working angle of hade, deg., max	5,04 8,41 arched, rectangular, trapezoidal $\pm 15$
Dimensional specifications, mm, max: - height - width - shoe width - length	3000 2800 2500 12000
Actuating element	sweptback, telescopic with double cross-cutting crown
Type of picks	PTE-10,5; PKS-1
Travel of telescope actual element, mm	630
Descending of actuating element below ground level, min., mm	350
Turning speed of jackbit, min <sup>-1</sup>	65
Feeder: - type - feeder's turn to the right, deg. - feeder's turn to the left, deg. - descending below ground level, mm, min. - feeder's width without expanders, mm - feeder's width with expanders, mm	swiveling, lifting with gathering double arms 24 18 100 1800 2800
Conveyor: - type - horizontal turn, deg. - vertical raising, deg. - rise height of conveyor jib, mm	scraping, raising and turning $\pm 35$ 15 1875
Bogie: - drive Travel speed, m/min: - working - maneuvering - clearance, mm	hydraulic 2,5 5 300
Output of pumps, l/min.	243
Voltage of electrical equipment, V - total motor capacity, kW	660/1140 286,05
Fan capacity, m <sup>3</sup> /s	1,9-3
Maximum pressure rating in hydraulic system, MPa	20
Weight, t, max.	50



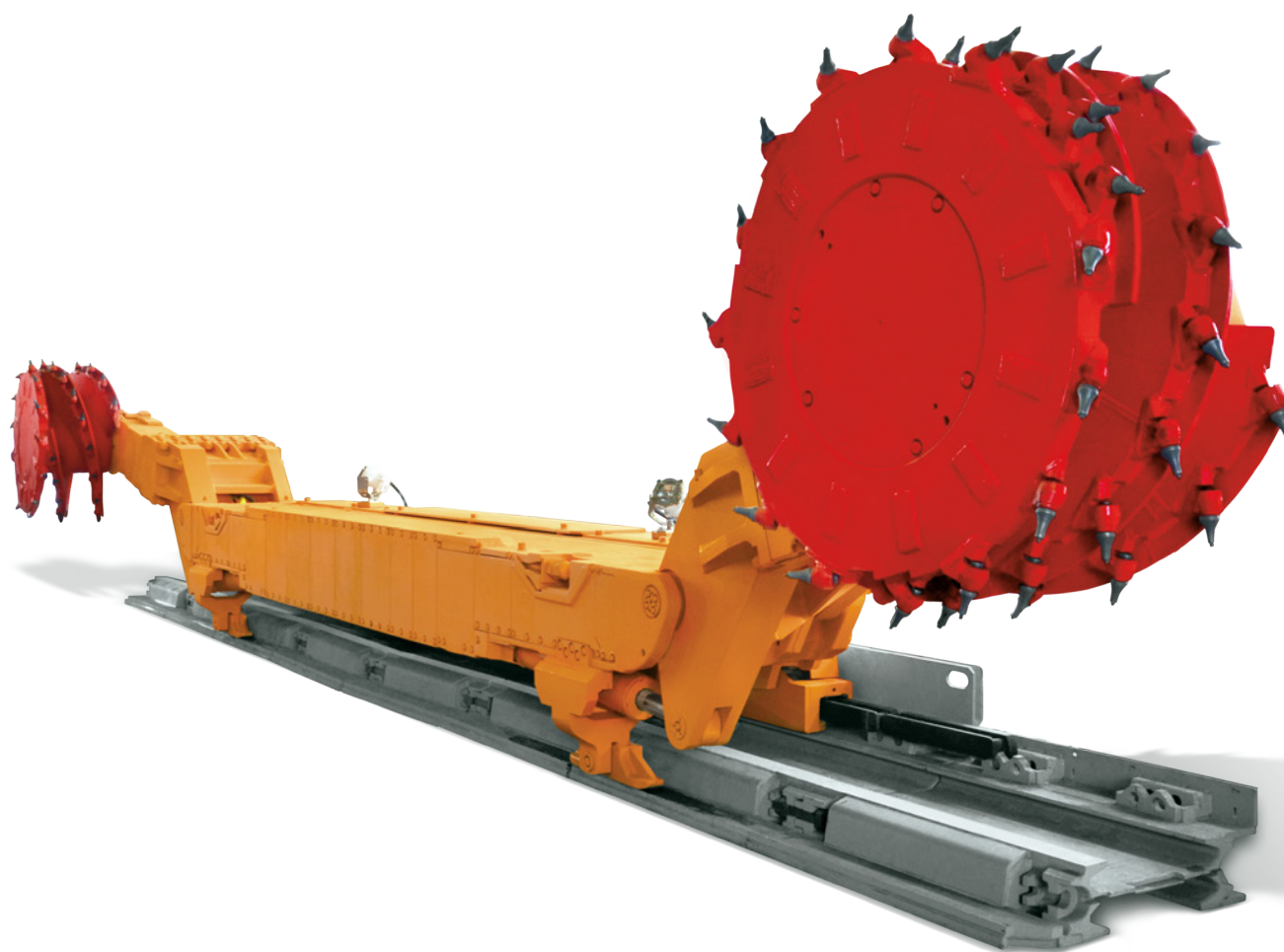


The machine is designed for cutting of compensation slots at any angle on perimeter of horizontal and inclined up to  $\pm 15^\circ$  workings with the height of 2,6-3,0 m ventilated with the first-of-the-air with cutting resistance up to  $A_p=450\text{N/mm}$ .

This machine is designed for operation in macroclimatic areas with moderate climate and is manufactured in accordance with GOST 15150-69, version Y, category 5 for ambient temperature range from  $+5$  to  $+35^\circ\text{C}$ .

Specifications	
Technical capacity during cutting resistance $A_p=450$ N/mm min, $m/min$	1,5
Actuating element type	chain jib
Slot depth, m	max 1,2
Slot width, mm	140
Type of picks	3H3
Chain speed, m/s	5,2
Bogie:	
- type	crawler-tracked
- length of ground contacting area of track, mm	2300
- track center distance, mm	1500
- track width, mm	400
- max machine speed during movement min, $m/min$	5
- feed control	stepless
Gross installed motor power, kW	103
including actuating element, kW	55
Operating voltage, V	660/1400
Dimensional specifications, mm, max:	
- height, mm	9510
- width, mm	2480
- height, mm	2380
Weight, t	25





The shearer loaders SL-300/400 are designed for the layers extraction of average and high power according to the shuttle and unilateral operational schemes. Layer extraction is carried out by one or two cutting units, along with this the front forms the roof excavating the layer on the full gage of the cutting unit, and the rearward forms the bottom. Both cutting units are fitted with protective shields.

The machine is equipped with feeding direct current motors, on-board computer, radio control system and head-lamps for the cutting units illumination. Cutting electric motors are integrated directly into ranging arms.

Some machine nodes are joined into a single body with roof bolts which are tightened during machine assembly with a special hydraulic device. The machine is equipped with a local radio control system, and also has the ability to work with the remote control of wire guidance of certain length.

Shearer loader SL-300/400 is equipped with dust exhaustion system.

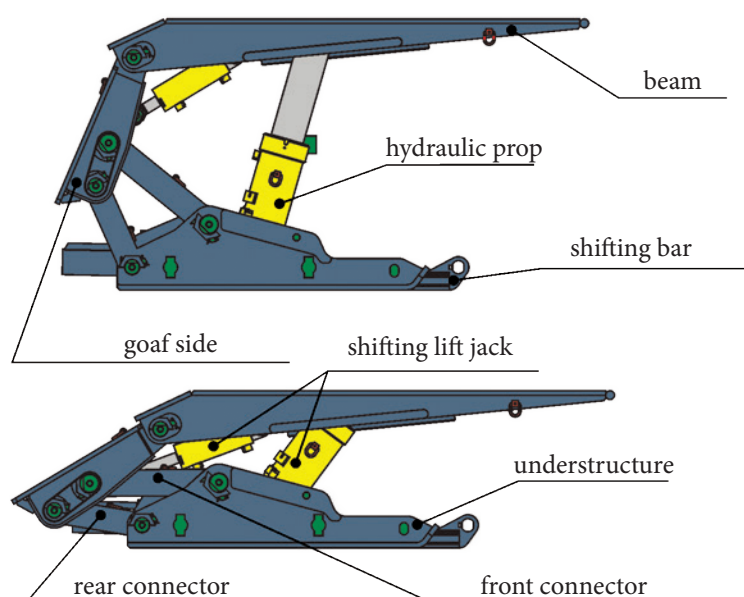
Specifications	
Minimum extraction height, m	2-2,6
Maximum traction force, kN	550
Shunt intake velocity, m/min	0-12
Turning number of big worn auger, r/min	48
Handle gear ratio with cutting unit 1400 mm, mm	29,96
Depth of soil undercut with cutting unit 1400 mm, mm	190
Width of cutting unit, mm	830
Shearer loader length of worn auger axes, mm	11350
Body length of the shearer loader, mm	6700
Body height of the shearer loader, mm	1788
Weight of ganging arm, kg	3700
Weight of the shearer loader, t	45

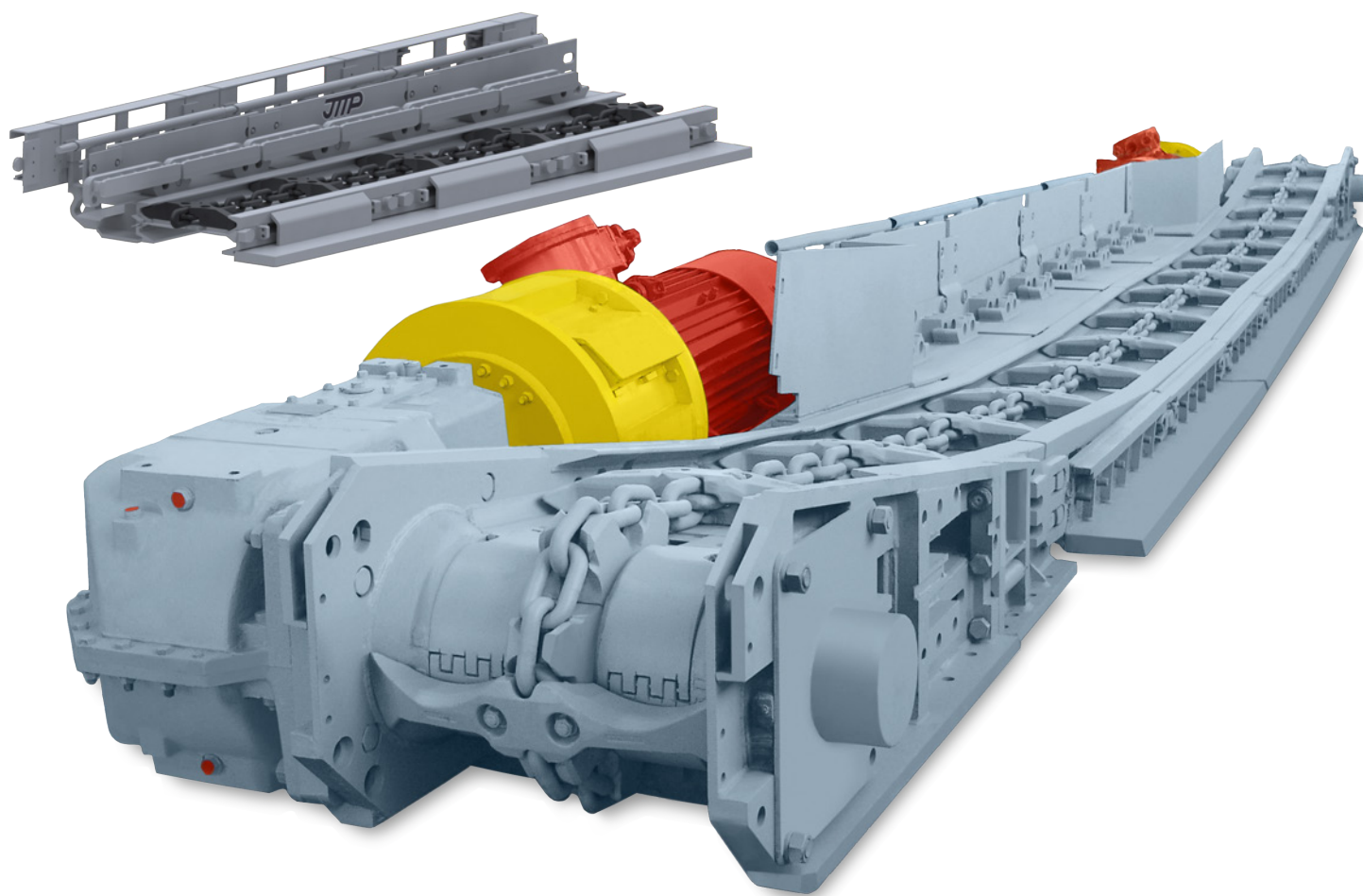


Powered roof supports belong to the mechanized complexes and designed for roof support, advancing of the face conveyor and security protection of the maintenance personnel – for personal safety.

Working in complex the supports can be equipped with monitoring system of loading of support sections of type MOPS, loud-speaking communication set and as well as with lamps in explosion-proof version.

Specifications		
Support type	KMS-09/15,5	KMS-16/24
Support height in stowed position, m	0,9	1,6
Open height, m	1,55	2,4
Support setting increment, m	2,0	2,0
Advance increment, m	0,8	0,8
Tilt angle, deg.	6	6
Hydraulic props safety valves setting, MPa	48	48
Rated resistance of hydraulic prop, kN:		
- under pressure of 25 MPa	866	866
- under pressure of 48 MPa	1662	1662
Number of prop stays in roof support unit, pcs.	2	2
Shifting reinforcement under pressure of 25 MPa, kN, min:		
- support unit	157	282
- flight	282	157
Supply pressure, MPa	25	25
Unit weight, kg	6850	7317





Single chain face conveyors KS300 with the flight width of 732 mm and double face chain conveyors KS300 with the flight width of 832 mm are designed for transportation of the freed ore from the face and transshipment it on the gate conveyor and also for shearer displacement along the face.

Gate conveyors KS-310 (straight) and KS-310-01 (with the left and right side curved drive) are designed for transportation of the freed ore from the face conveyor to the belt conveyor.

Specifications			
Conveyor type	KS300 single chain conveyor	KS300 double chain conveyor	KS-310, KS-310-01
Conveyor capacity, t/h	600	700	600 (700)
Conveyor length, m, max	280	300	94 (95,5)
Profile of pan flight	E74V	E74V	E74V
Pan dimension, mm	1500×732×225	1500×832×225	1500×732×225
Traction mechanism	30x108 or 34x126 (single chain)	30x108 or 34x126 (double chain)	30x108 (single chain)
Chain travel speed, m/s	1,0	1,0	1,0
Chain position	central		
Power of motors, kW	2×160*, 3×160*, 4×160, 2×250		2×132
Hydraulic couplings	Voith 562* Voith 650*	Voith 562* Voith 650*	Voith 487*
Position of drives towards conveyor pan	parallel and perpendicular		parallel
Pan width with side walls, mm	732	832	732
*- depending on conveyor length			



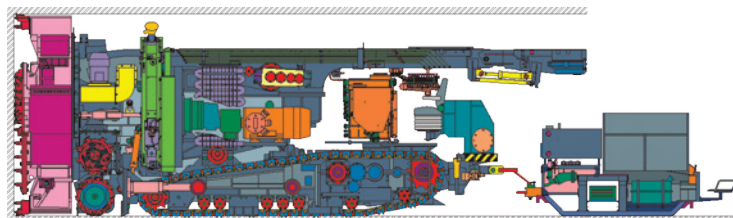
Oil pump station MS-2 is designed for self-contained power supply hydraulic system of all types of mining machines and other equipment during track side through horizontal and inclined (max 15°) workings, ventilated with fresh air through mine ventilating pressure drop.

It is also possible to use oil station with other devices that need power supply for hydraulic system operation provided with this machine.

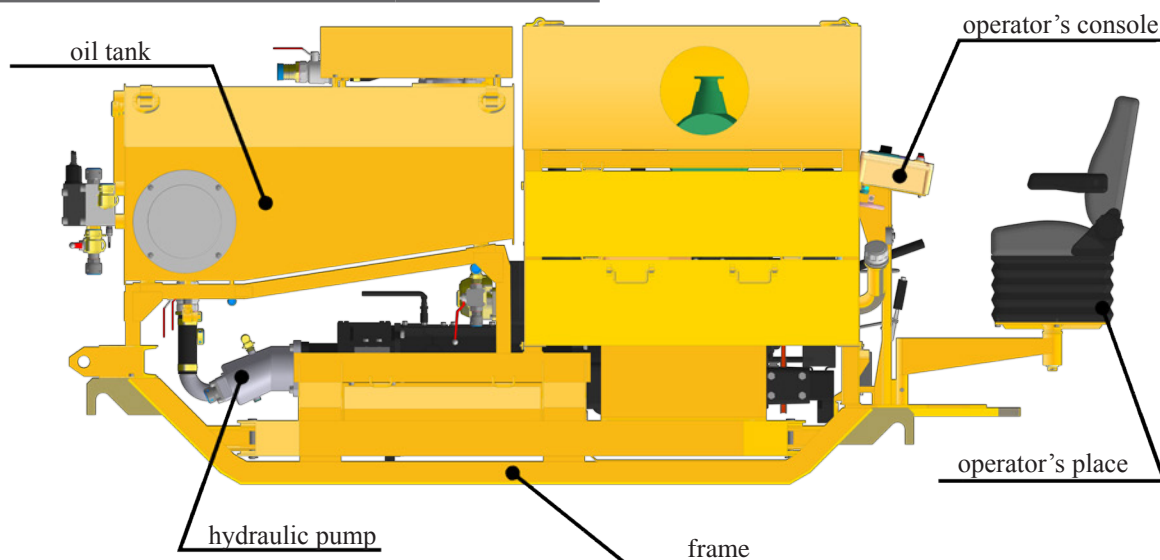
Application of oil station includes workings of mines in which the fresh air is conducted in amount providing concentration reduction of harmful components of mine air exhaust to sanitary standards but

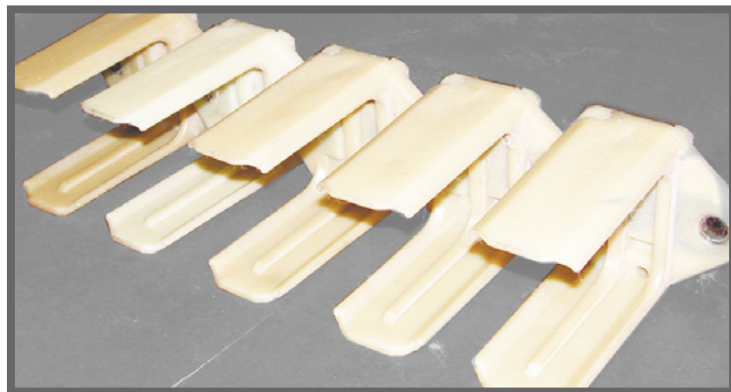
not less than 5 m<sup>3</sup>/min at 0,74 kW of engine power rating.

Specifications	
Motor:	
- type	D-243
- nominal output, kW	59,6
- number of fuel tanks, pcs.	2
- refill capacity of fuel tanks, dm <sup>3</sup> , min	127
- fuel rate at nominal output mode, g/kW×h, max	226
Hydraulic system:	
- pump type	310.3.112.04.06
- number of pumps, pcs.	2
- nominal displacement volume, cm <sup>3</sup>	112
- outlet pressure, MPa, max	8
Electric batteries:	
- nominal voltage, V	12
- number of electric battery, pcs.	1
Bogie type	sliding
Dimensional specifications, mm, max:	
- length	3250
- width	1410
- height	1570
Minimum road clearance, mm	70
Weight (operating), kg, max	5000



The application of oil station MS-2 with road heading machine with rotary cutting head PKK-3-660/1140

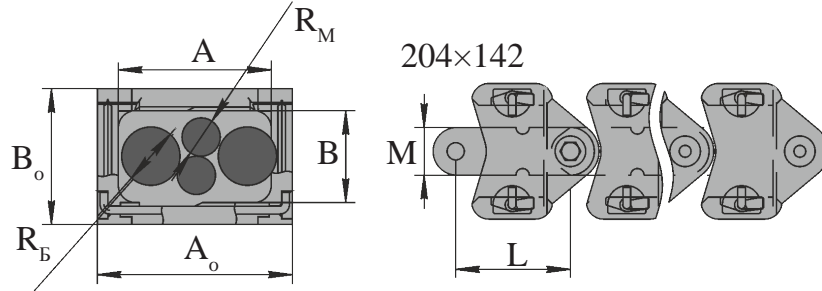
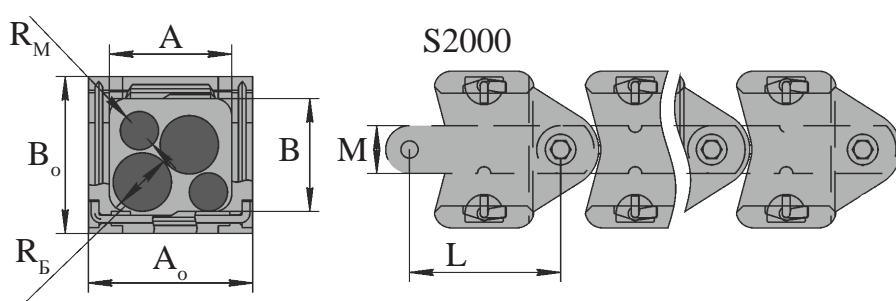
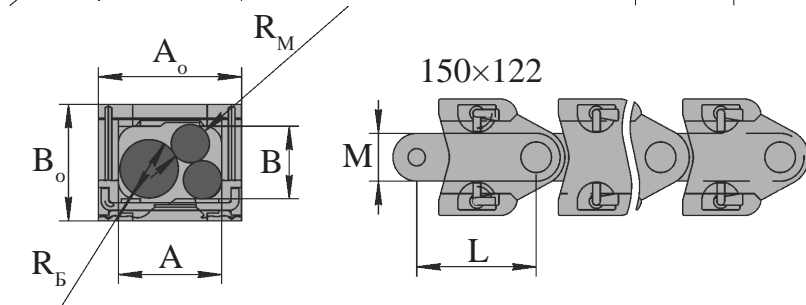
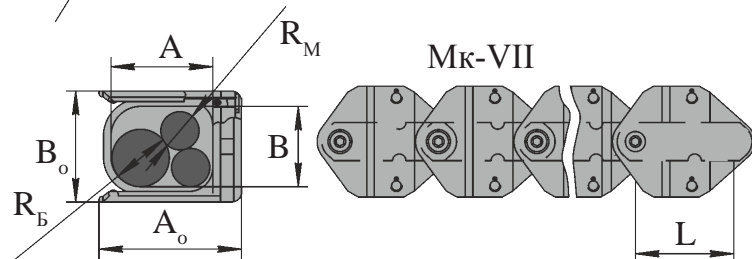
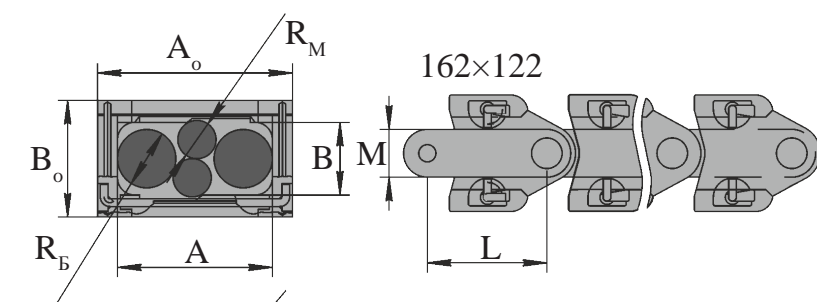




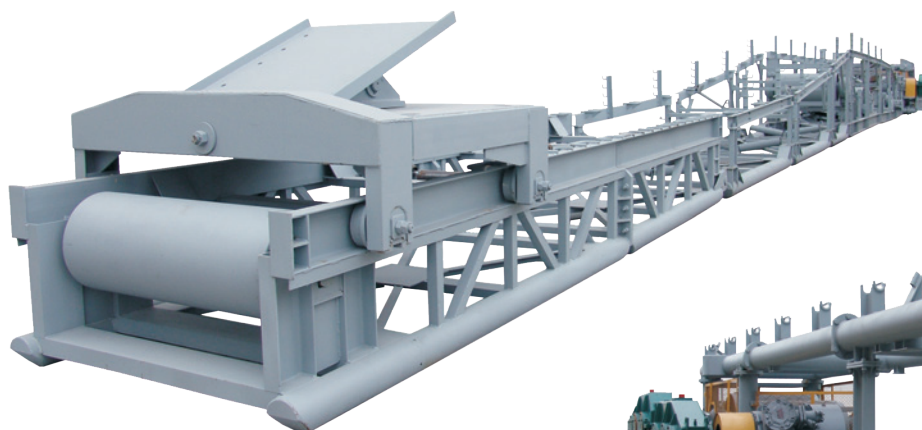
Cable layer is designed for allocation and protection of electrical cables and hydraulic hoses that feed the cutter loaders SL-500C, SL-300HE, ESA-150L, and protection it from deformation and excessive bending.

Cable layer is supplied by segments of 1250mm.

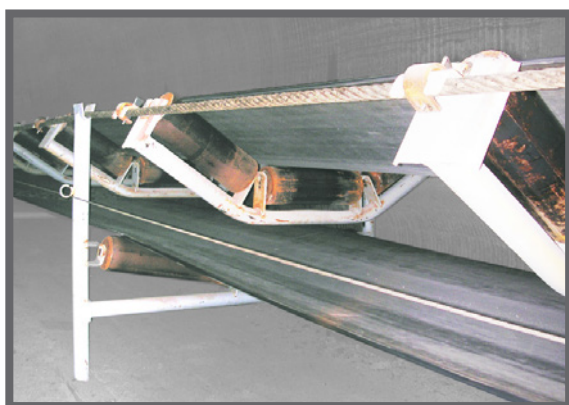
Cable layer overall length of supply is 160 meters.



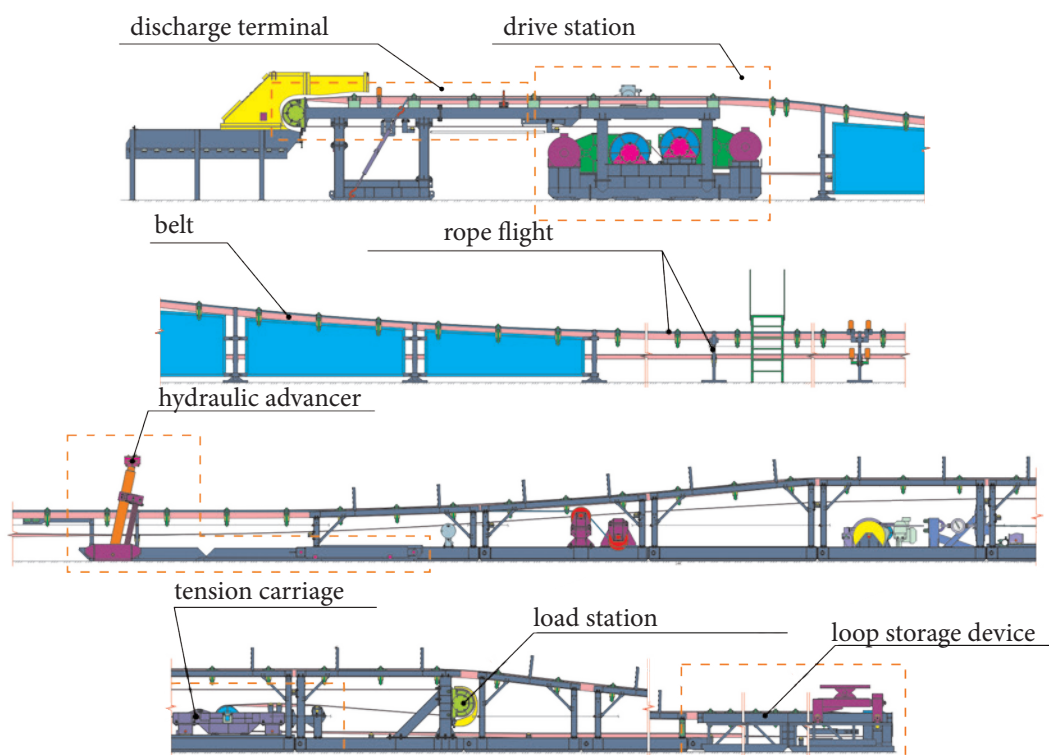
specifications					
Type	150×122	162×122	204×142	Mk-VII	S2000
A, mm	108	162	160	107	128
A <sub>o</sub> , mm	150	204	204	149	172
B, mm	76	76	204	84	118
B <sub>o</sub> , mm	122	122	142	116	164
R <sub>b</sub> , mm	61	61	61	60	61
R <sub>m</sub> , mm	40	40	40	40	40
L, mm	125	125	120	103	158
M, mm	50	50	50	40	50



Telescopic belt conveyor KLT-1000 is designed for the rock mass transportation from periodically moving hydraulic complex of the ore extraction to the panel belt. In addition the length of telescopic conveyor is reduced to 80 m without belt cutting.



Specifications	
Conveyor type	KLT-1000
Conveyor capacity, t/h	650
Belt travel speed, m/s	2,6
Maximum conveyor length, m	800
Belt width, mm	1000
Drive power, kW	2×75
Angle of hade, deg.	-3 ... +6
Belt storage capacity, m	160
Telescoping, m	80

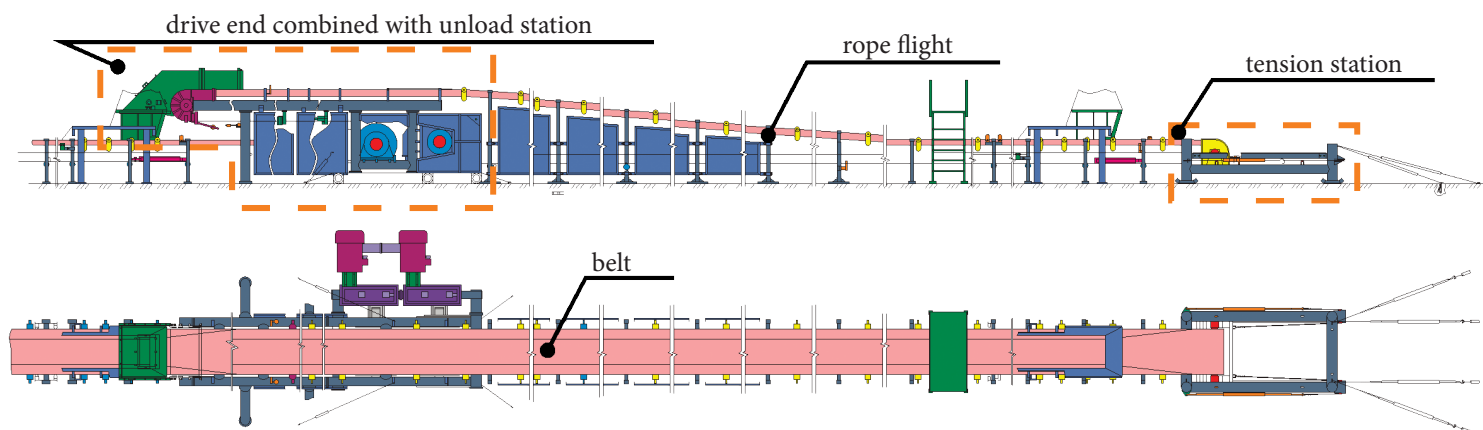




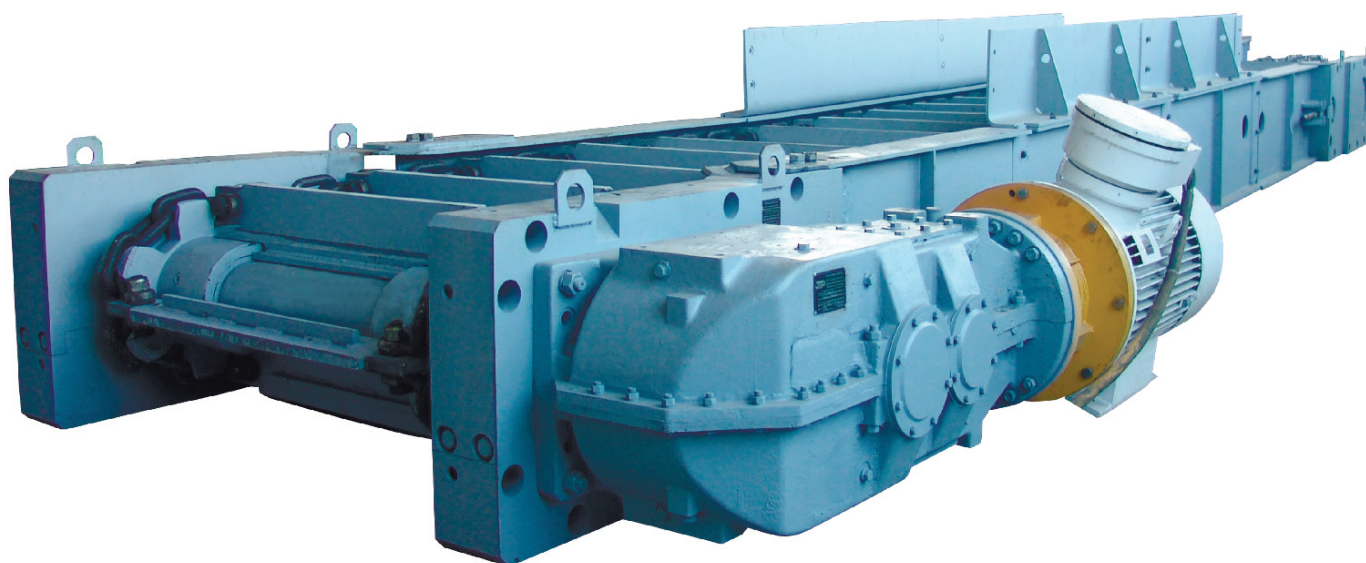
Belt conveyors are designed for the rock mass transportation along straight panel workings with angle of hade from -3 to +6 degrees.

During operation the conveyor receives transported material from the previous belt conveyor (or armored gate conveyor), transports it to the panel and overloads the material on the next panel belt conveyor or main belt.

Belt conveyors can be used as a part of hydraulic complex.

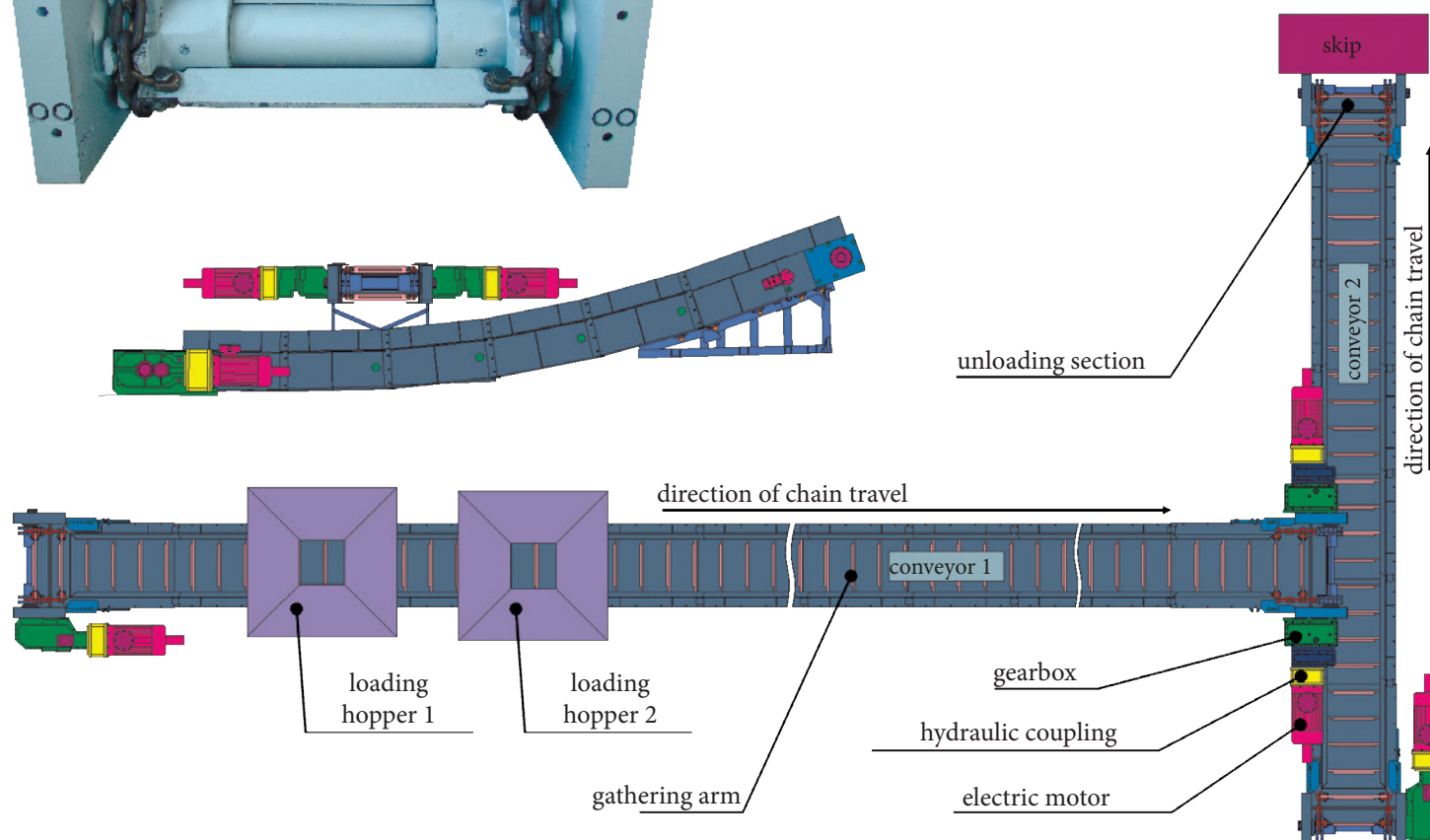
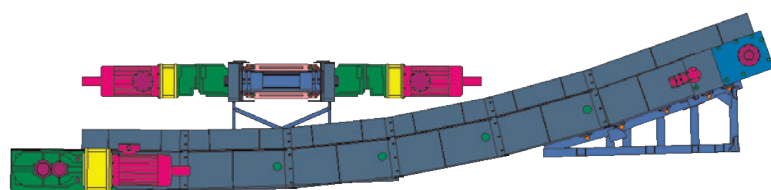
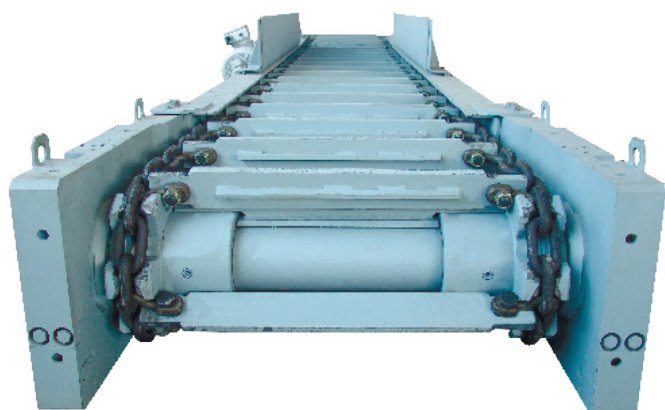


Specifications				
Conveyor type	KL-600, KL-600M	KLSH1-1000	KLSH2-1000	MKL2-1200
Conveyor capacity, t/h	650	650	800	1500
Belt travel speed, m/s	2,0 ... 3,15	2,6	3,15	3,15
Maximum conveyor length, m	1000	800	800	1500
Belt width, mm	1000	1000	1000	1200
Drive power, kW	2×75	2×75, 2×90	2×110	2×250
Angle of hade, deg.	-3 ... +6	-3 ... +6	-3 ... +6	-3 ... +6



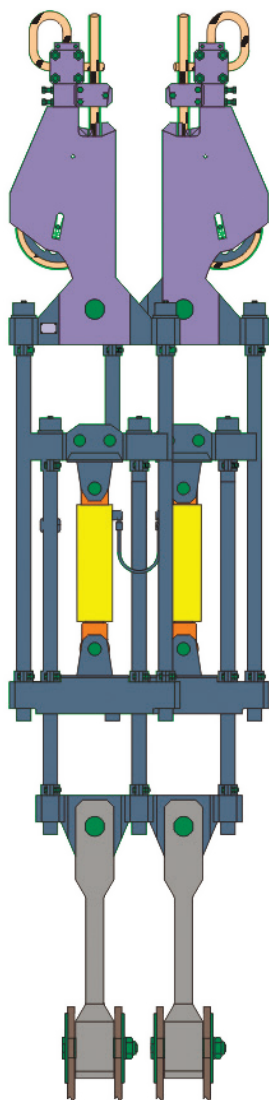
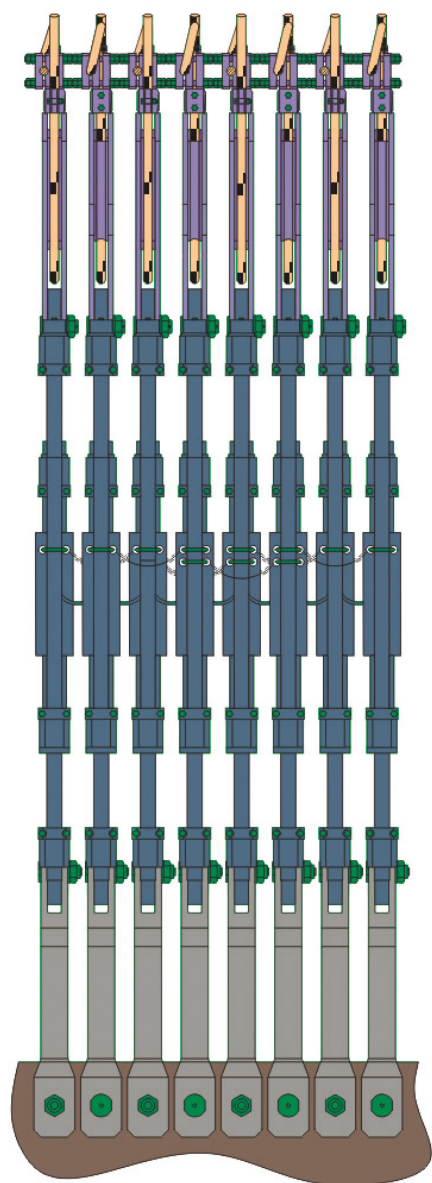
Chain-and-flight conveyor KS-2000 is designed for the transportation of bulk materials. Conveyors operate in conjunction with explosion-proof control station. By agreement with the customer it is possible to manufacture conveyors with other parameters.

Specifications	
Conveyor type	KS-2000
Conveyor capacity, t/h, min	2000
Chain pitch, mm	34×126
Flight width, mm	1400
Side guide height, mm	400



Hydraulic suspension gears 2UPG1 and 2UPG2 with wedge eyes of double-side rope grip are designed for the connection of main ropes to the mine skips of vertical multi-rope winding.

Suspension gears are designed for the connection of main ropes to the conveyances in vertical mine shafts equipped with single-rope hoisting plants.



Specifications		
Device type	2UPG1	2UPG2
Hoisting type	multi-rope winding	
Number of ropes	4	8
Static loading, kN	860	1720
Diameter of ropes, mm	43,5	43,5
Hoisting height, m	907	907

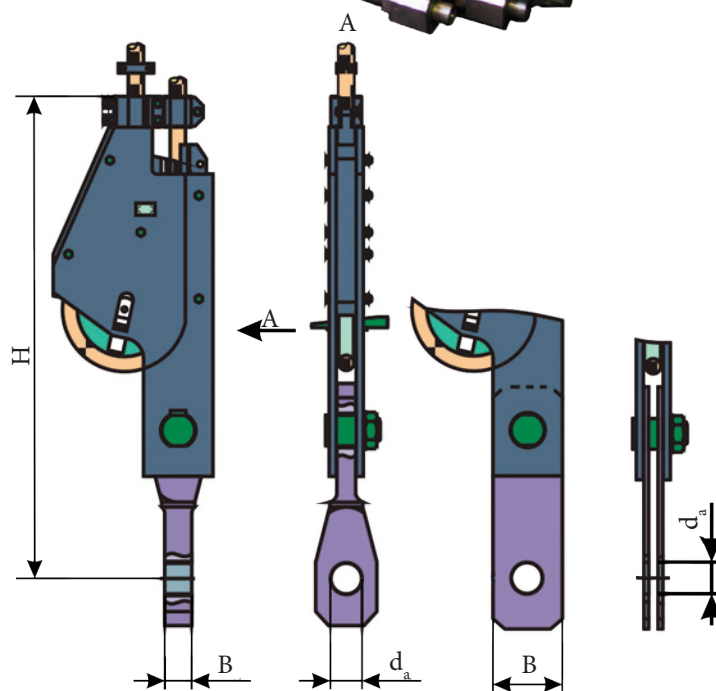
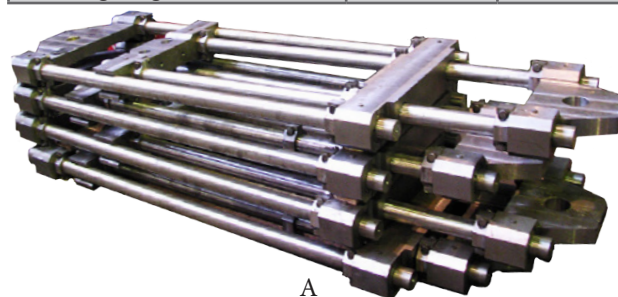


Figure 1

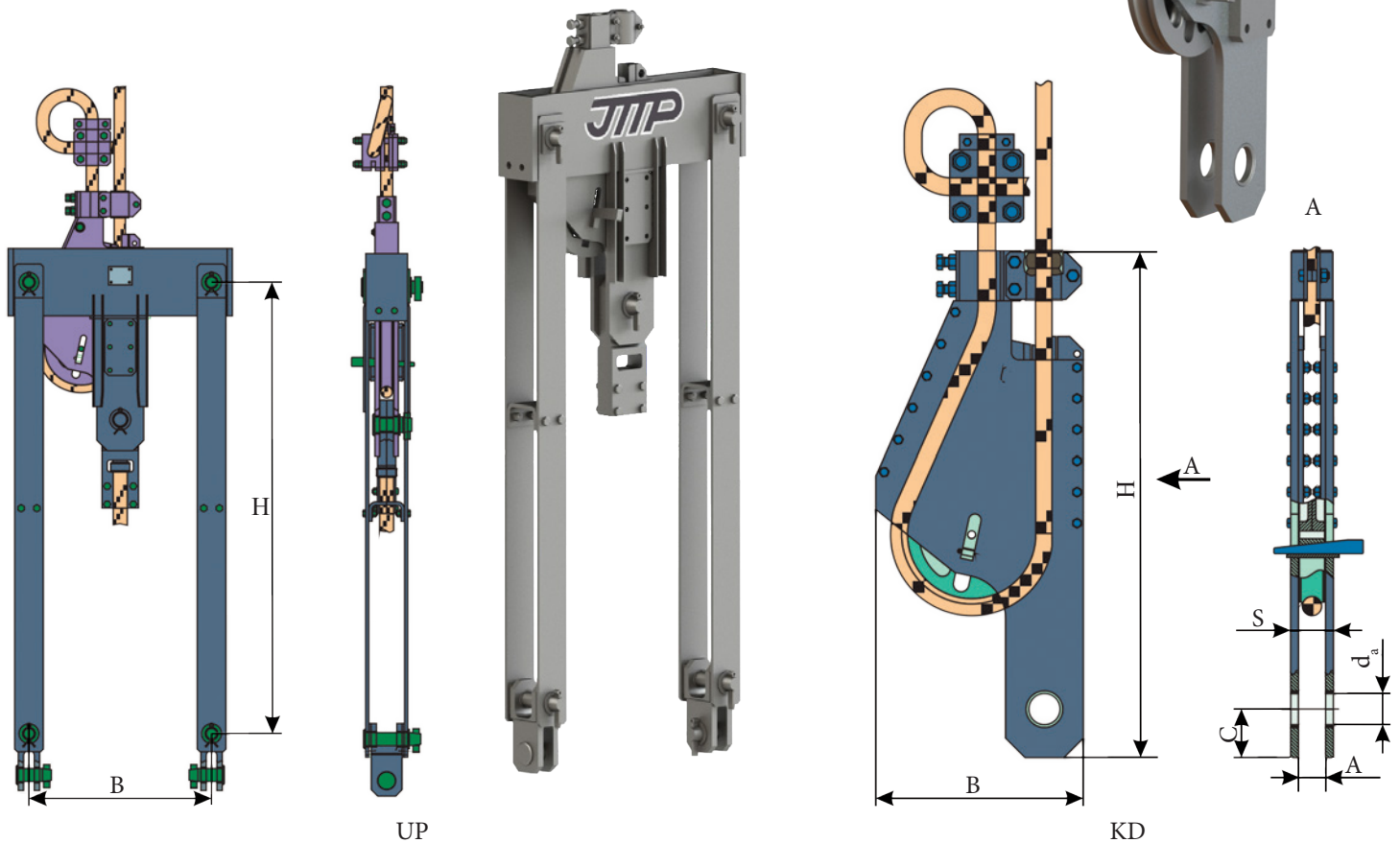
Figure 2

Specifications					
Device type	UPS-6,3	UPS-12,5	UPS-20	UPS-30	UPS-46
Static loading, kN	63	125	200	300	460
Rope diameter, mm	20,0 ... 36,5	27,0 ... 46,5	33,0 ... 58,5	42,0 ... 58,5	60,0 ... 65,0
Fig. 1	H max, mm	965	1255	1600	1735
	B max, mm	190	244	250	266
	D <sup>a</sup> max, mm	80	90	100	125
	Weight, max, kg	75	165	305	475
Fig. 2	H max, mm	1215	1470	1995	2126
	B max, mm	82	119	135	140
	d <sub>a</sub> max, mm	45	60	80	90
	Weight, max, kg	67	154	302	470

Hydraulic suspension gears 2UPG1 and 2UPG2 with wedge eyes of double-side rope grip are designed for the connection of main ropes to the mine skips of vertical multi-rope winding.

Suspension gears are designed for the connection of main ropes to the conveyances in vertical mine shafts equipped with single-rope hoisting plants.

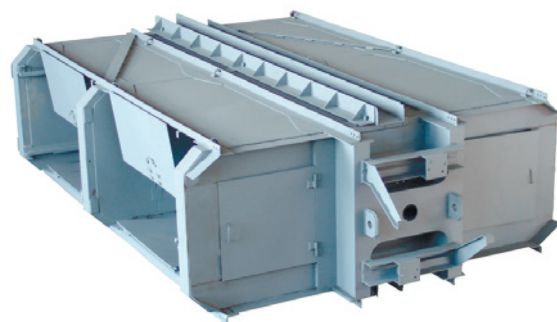
Specifications					
Device type	UP-6,3	UP-12,5	UP-20	UP-25	UP-30
Static load, kN	63	125	200	250	300
Rope diameter, mm	20,0 ... 36,5	27,0 ... 46,5	33,0 ... 58,5	36,0 ... 58,5	42,0 ... 65,0
B Width B, mm, max	550	700	850	900	1000
H Height, mm, max	1700	1900	2150	2250	2300
Weight, kg, max	215	410	700	910	1100



Specifications						
Device type	KD-6,3	KD-12,5	KD-20	KD-25	KD-30	KD-46
Static loading, kN	63	125	200	250	300	460
Rope diameter, mm	20,0 ... 36,5	27,0 ... 46,5	33,0 ... 58,5	36,0 ... 58,5	42,0 ... 58,5	60,0 ... 65,0
Weight, kg, max	48	113	216	260	338	590
H max, mm	754	996	1306	1339	1429	1610
B max, mm	322	423	539	550	600	680
A max, mm	48	55	70	75	75	80
C max, mm	70	100	125	135	150	195
S max, mm	72	91	106	125	125	145
d <sub>a</sub> max, mm	45	60	80	85	90	110



Non-tilting mine cages for vertical single-rope hoisting are designed for men-riding, transportation of mine cars (empty and loaded), as well as for equipment and materials along vertical shafts.



attaching point of suspension gear and parachute

handrailing

top boom

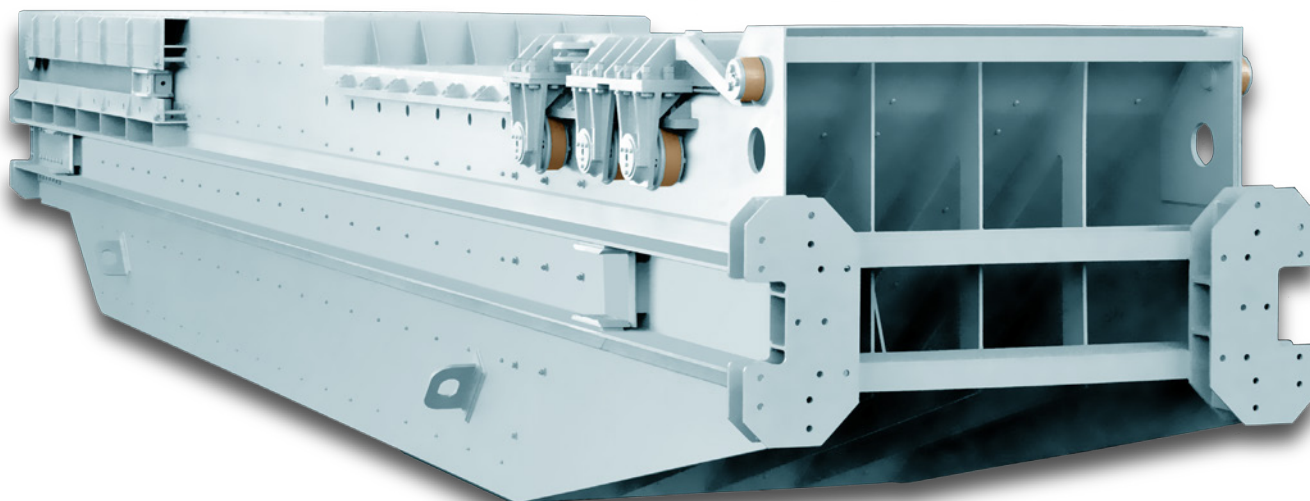
steel construction

gate

continuous  
U-shaped guide

bottom boom

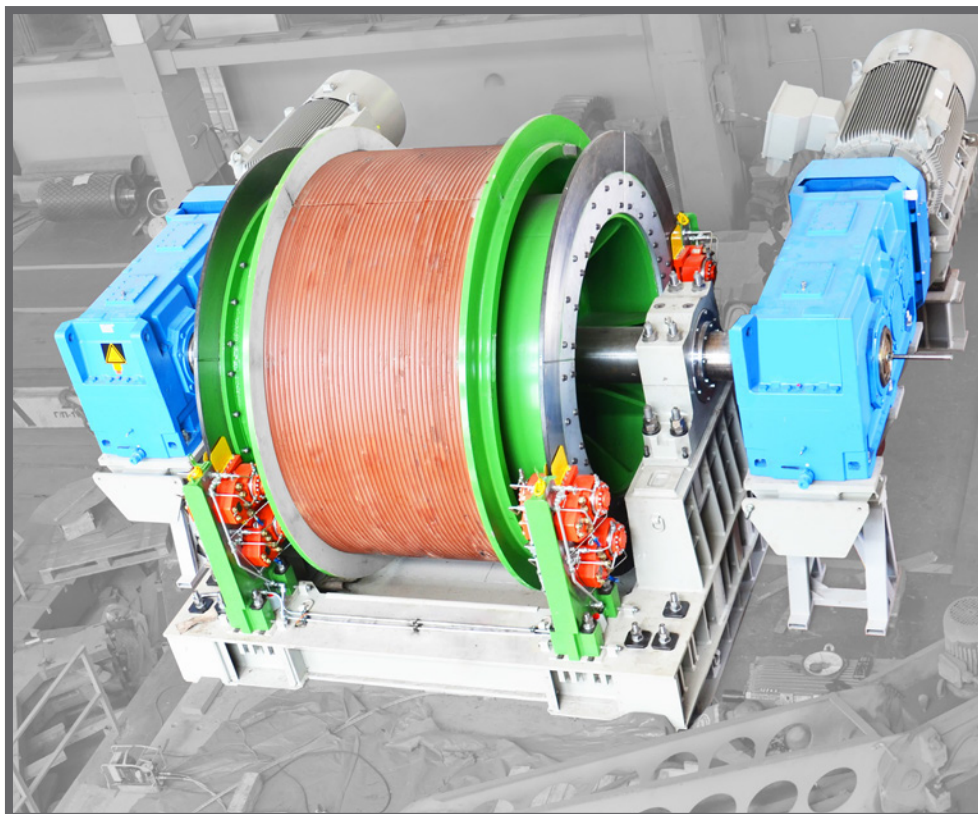
Specifications				
Cage	1-NOV4-6,6	1-NOV4-3,4-6,6	2NOV4-150	INTER-4,17
Hoisting type	vertical single-rope	vertical single-rope	vertical single-rope	vertical multi-rope
Number of floors	1	1	2	1
Loading capacity, kN	66	66	150	170
Number of persons for lifting, max	28	28	56	61
Guides	timber	timber	timber	rope
Number of main ropes	1	1	1	4
Dimensional specifications, max, mm:				
- length	4000	4000	4000	5500
- width	1460	1460	1500	3260
- height	3200	3400	5700	10650
Weight, kg	3720	4950	7300	26000
Mine car type	VD 3,3; VG 3,3			VD 6; VG 6
Standard size of suspension gear	UP-12,5	UP-12,5	UP-25	4UPGN500
Standard size of parachute	PTKA-12,5	PTKA-12,5	PTKA-25	-



Mine skips allow hoisting of the ore along vertical shafts using single- and multi-rope hoisting plants from the depth of 900 m.

Specifications							
Skip type	SOK-6,4	SNM-19	SN-19,5		SN-22,5		SNM-35
Body capacity, m³	6,4	19	19,5		22,5		35
Loading capacity, t	13,34	25	27		30		42
Method of loading, unloading	in suspension						
Gate type	deviating body	sector gate	sector gate with telescoping pan	sector gate	sector gate	sliding gate	sector gate
Guides	metal, box-section						
Guide section, mm	180×200	180×180	180×180		200×200		200×200
Distance between guides, mm	1534	1850	1850	1820-1850	1850	1840	2100
Standard size of suspension gear	УПГ-30	2УПГ1	УПГ-46		УПГ-46	УПГ-55	2УПГ2
Number of main ropes	1	4	1		1		8
Type of tail ropes	-	rub-ber-rope belts	-		-		rub-ber-rope belts
Section of tail ropes	-	210×35	-		-		400×25
Number of tail ropes, pcs.	-	two belts with two sides	-		-		two belts with two sides
Maximum load on the main rope, kN	229	860	460		460	550	1720
Skip weight without suspension gear, t	9,1	23	17	17,1	15,13	18,6	41,5





Winding engine MPPP-21 is a part of mine cager lifting that is provided for people driving, transportation and extraction of materials, personal drive, bore revision, cager team driving, cager works and revision of lifting elements.

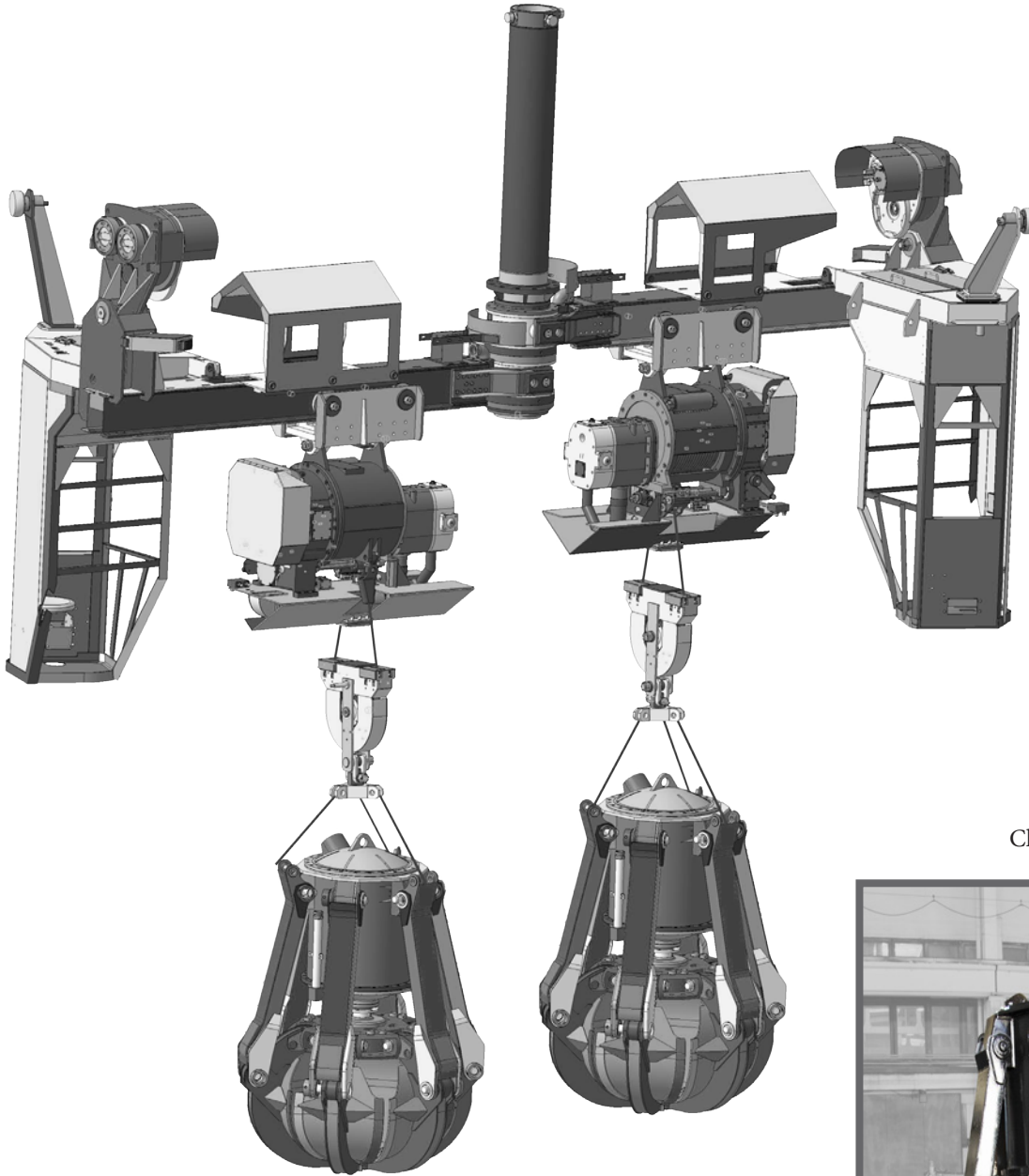
The machine is designed for establishing at the mining plant surface at the edge of the working of mining cager lifting.

Specifications	
Winding diameter of the rope on the drum in the sill floor, mm	3000
Width of the winding rope zone on the drum, mm	1516
Electric motor power, kW	2×780
Lifting full speed, m/s	6
Maximum static force in the rope loading the drum, kN	200
Maximum static moment on the main shaft, kNm	300
Permissible pressure exerted by the rope on the drum shell, MPa	7,0
Maximum power that plucks the rope, kN*m	1600
Rope diameter, mm	36
Number of winding rope layers Ø 36 mm	3
Number of conveying ropes, pcs.	1
Angle range of rope incursion on the drum relative to horizontal plane	от 30 до 60
Rope incursion on the drum	from below
Recommended distance from drum axis to the rope pulley axis, m	35-80
Oil disc brake with nominal working pressure, MPa	22
Weight of rotational torques is presented on the diameter of rope winding Ø 3000( without rope), kg	47510
Mass moment of machine inertia (without rope), kg*m <sup>2</sup>	106900
Total weight (mechanical portion), kg	79600
Dimensional specifications (WXLXH), mm	6270×6490×3400



Shaft mucking machine of MPS type is designed for mechanization of blasted rock loading in conveyances during driving in the face of vertical shaft in coal, ore mining and shaly industry. MPS machine - with one grab, 2 MPS - with 2 grabs.

The machine is equipped with hydraulic equipment for the thrust of sinking platform in shaft walls (pump station, hydraulic advancing cylinders).

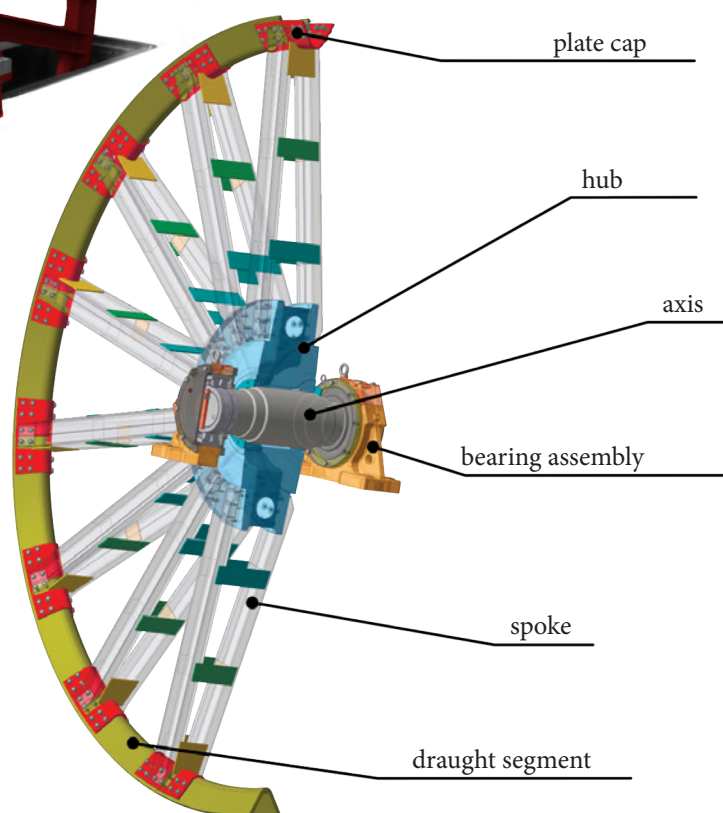
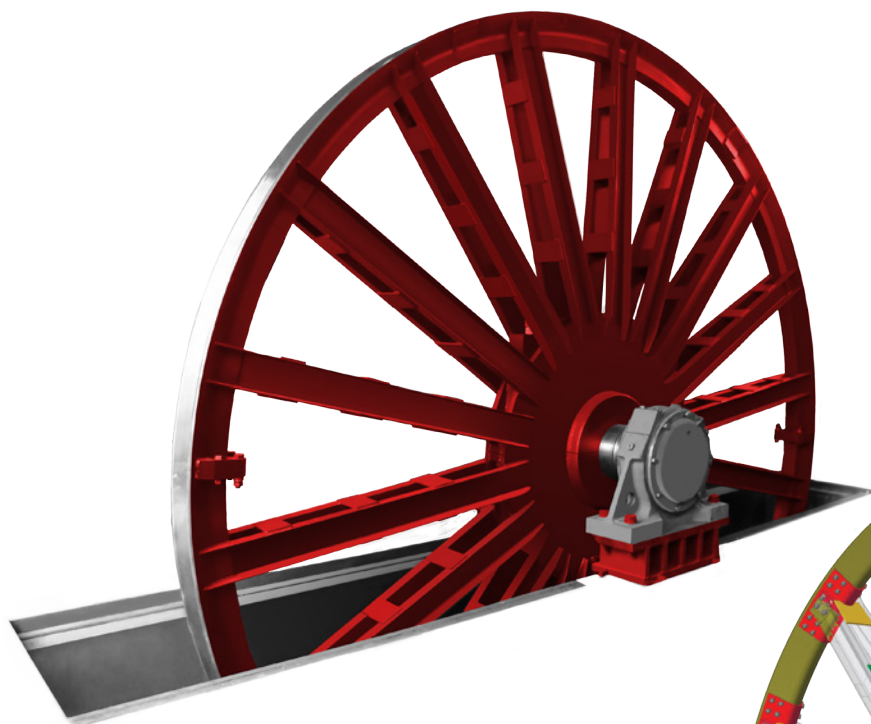


Clamp hook



Specifications					
Machine version	MPS	MPS-01	MPS-02	2MPS	2MPS-01
Inner shaft diameter, m	6,0	7,0	8,0	8,0	9,0
Capacity, m <sup>3</sup> /min	1,7			3,0	
Maximum piece size of submersible rock, mm	300			300	
Actuating element capacity, m <sup>3</sup>	0,7			2×0,7	
Power, kW	51,9			103,8	

Hoisting pulleys are designed to work as a part of hoisting mining equipment and provide maintenance and the direction of steel-wire ropes of single-rope hoisting plants.



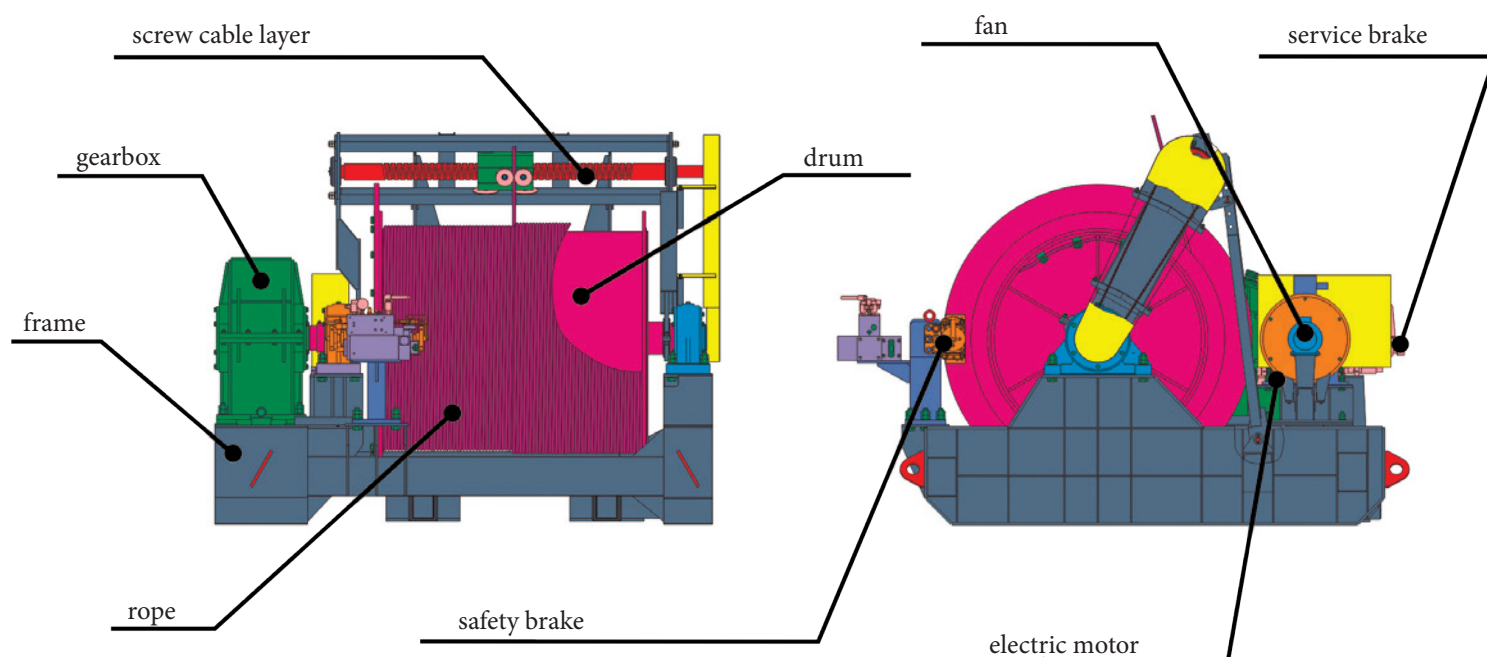
Specifications									
Pulley type	SH1,8	2SH1,8	SH3	SH4	SH5	SHKS-5-45	SH6A	SH336-1	SH336-1
Diameter of rope winding, mm	1800	1800	3000	4000	5000	5000	6000	6000	6000
Distance between bearing axes, mm	540	1130	1030	1030	1030	1180	1160	1180	1300
Distance between holes in bearings case bottom, mm	200×440	200×400	150×560	180×640	180×640	220×940	180×700	220×940	220×940
Dimensional specifications, mm									
- diameter	1900	1900	3120	4328	5246	5284	6356	5240	6356
- width	800	1390	1390	1320	1320	1560	1540	1560	1680
Pulley weight, kg, max	1200	2300	2800	6400	6620	11700	9155	11128	15910
Maximum load on the pulley, kN, max	200	400	408	300	500	500	700	500	700



Winch L-3,5 is designed for replacement of shaft equipment and guides in mine shafts, as well as for hoisting and lowering of load with the weight up to 3,5 t. Winch control is performed at the installation place of the control cabinet or from the portable control panel.



Specifications	
Loading capacity, kN	35
Rope speed, m/s	0,1 ... 0,5
Speed adjustment	by frequency converter
Rope diameter, mm	20
Coiling length of drum, m	1000
Dimensional specifications, mm, max:	
- length	3520
- width	3110
- height	2410
Winch weight, kg	12370
Supply voltage, V	380
Power frequency, Hz	50
Main drive nominal output, kW	75
Protection level of electrical equipment	IP54



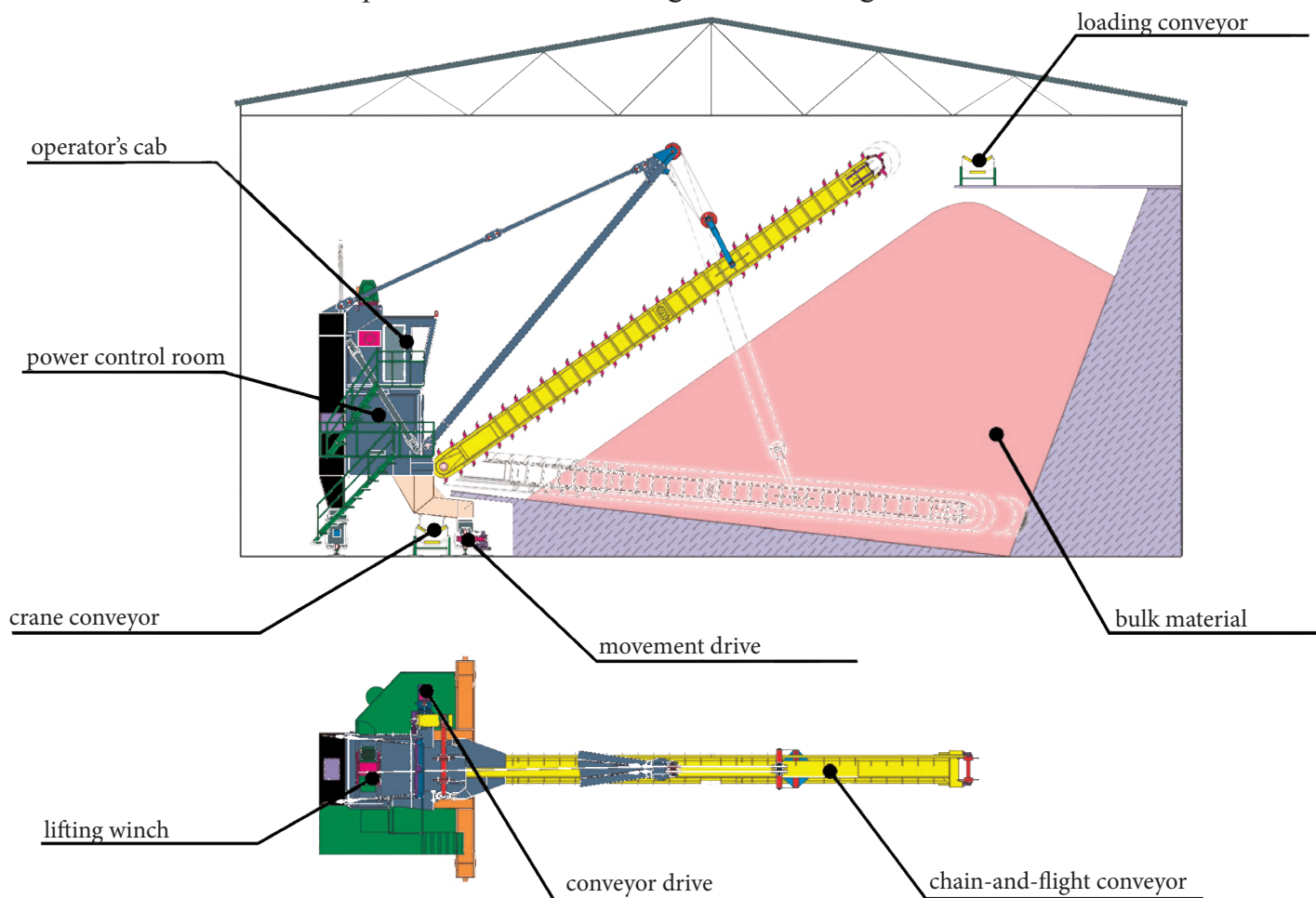


Boom scraper reclaimer is designed for unloading of bulk materials (close grained KCL, rock mass, etc.) from arched warehouses.



Specifications	
Conveyed material	loose goods
Output, t/h	200
Track width, mm	4100
Travel speed, m/min	0 ... 5
Distance between chain wheels axes, mm	17650
Working width of scrapers, mm	1000
Chain-drive capacity, kW	30

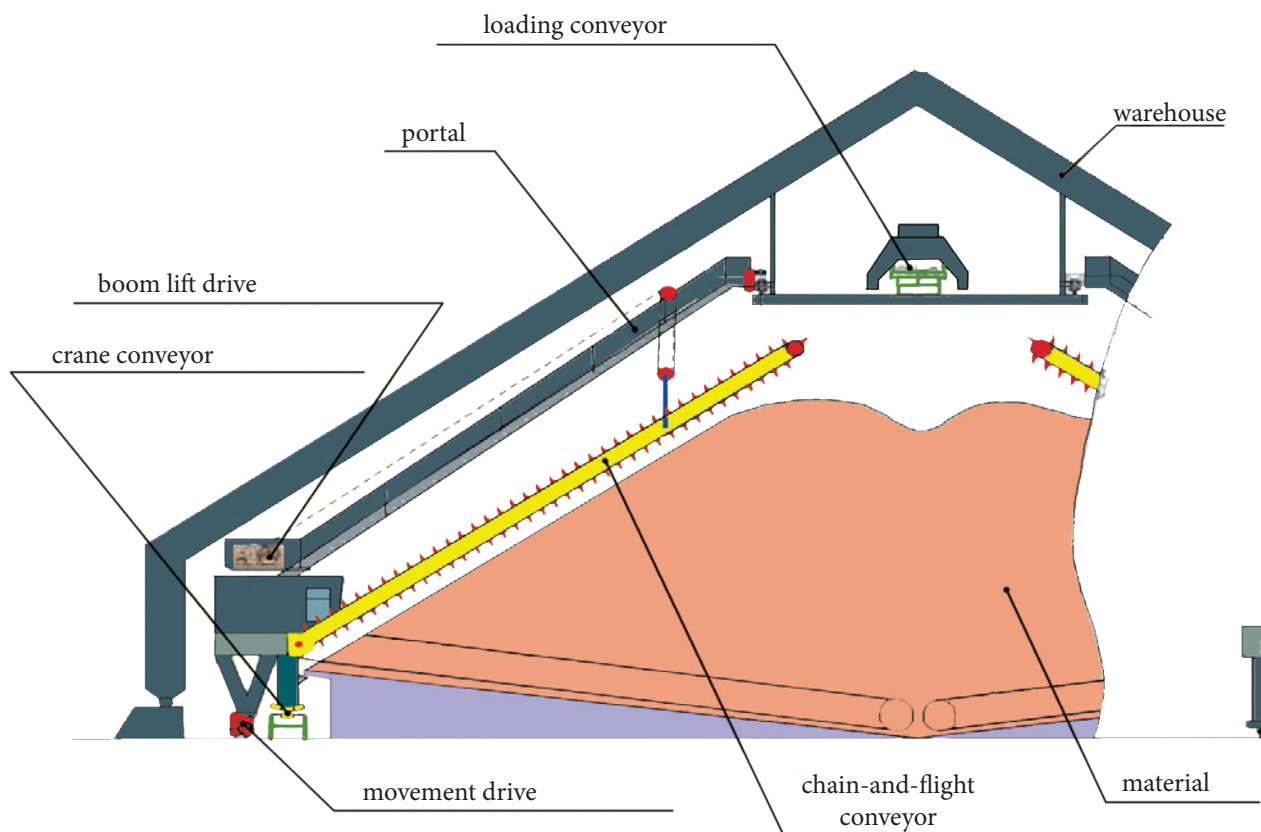
Boom scraper reclaimer for loading and unloading of bulk materials





Semi-portal scraper reclaimer is designed for unloading of bulk materials from the warehouses.

Specifications	
Conveyed material	loose goods
Output, t/h	200
Track width, mm	16400
Travel speed, m/min	1,6-10
Height distance between levels of rails, mm	16500
Ordinary conveyor:	
- distance between axes, mm	19250
- working width, mm	100
Chain-drive capacity, kW	22

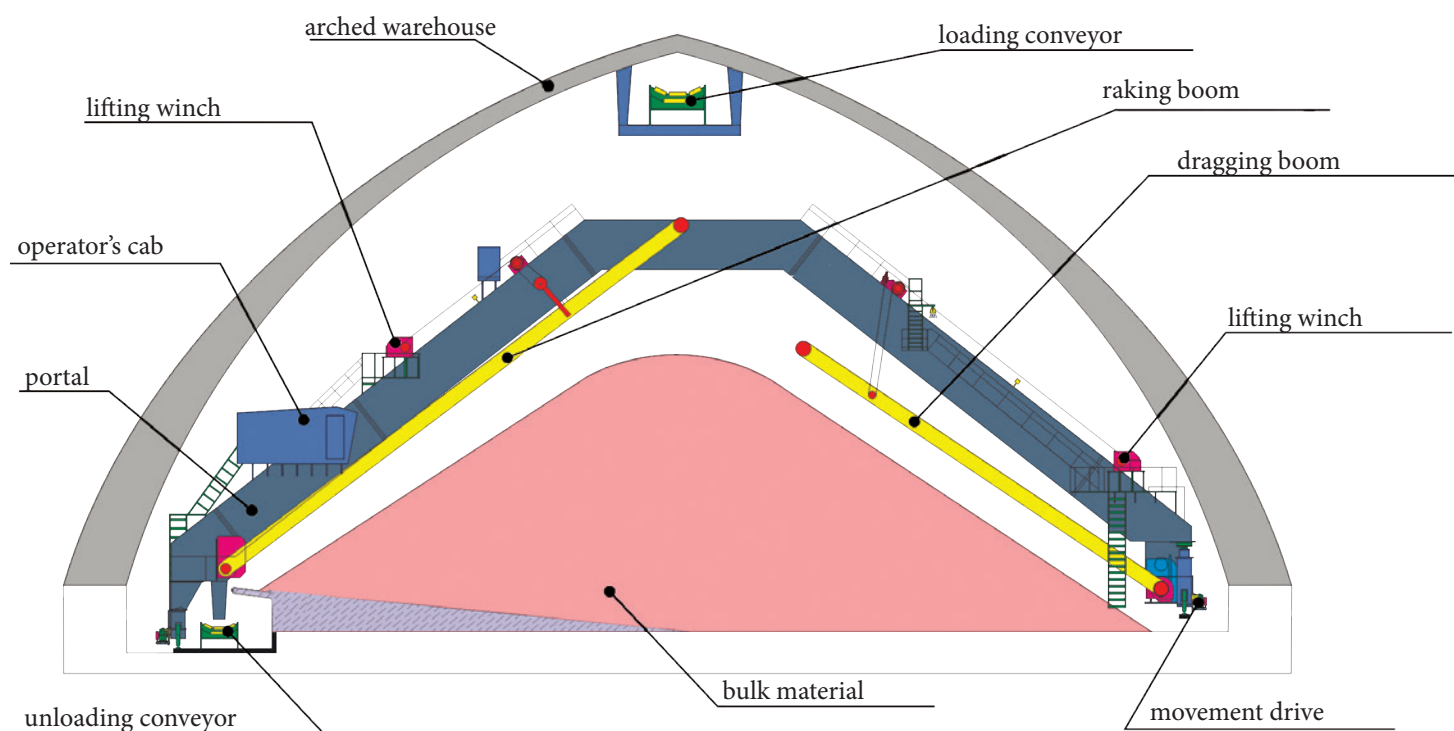




Portal scraper reclaimer is designed for unloading of bulk materials (close grained KCL, rock mass, etc.) from arched warehouses.



Specifications	
Slope angle, deg.	37
Bulk weight, t/m <sup>3</sup>	1,2-1,35
Output	1000
Travel mechanism, pcs.	4
Track width, mm	39700
Distance between axes of running wheels, mm:	
- at the hinged side	6300
- at the fixed side	7300
Running wheel diameter, mm	800
Travel speed, m/min	5,7
Height distance between levels of rails, mm	1350
Raking boom:	
- distance between axes, mm	22500
- scraper working width, mm	1740
- chain speed, m/s	0,79
Dragging boom:	
- distance between axes, mm	1900
- scraper working width, mm	1740
- chain speed, m/s	0,79





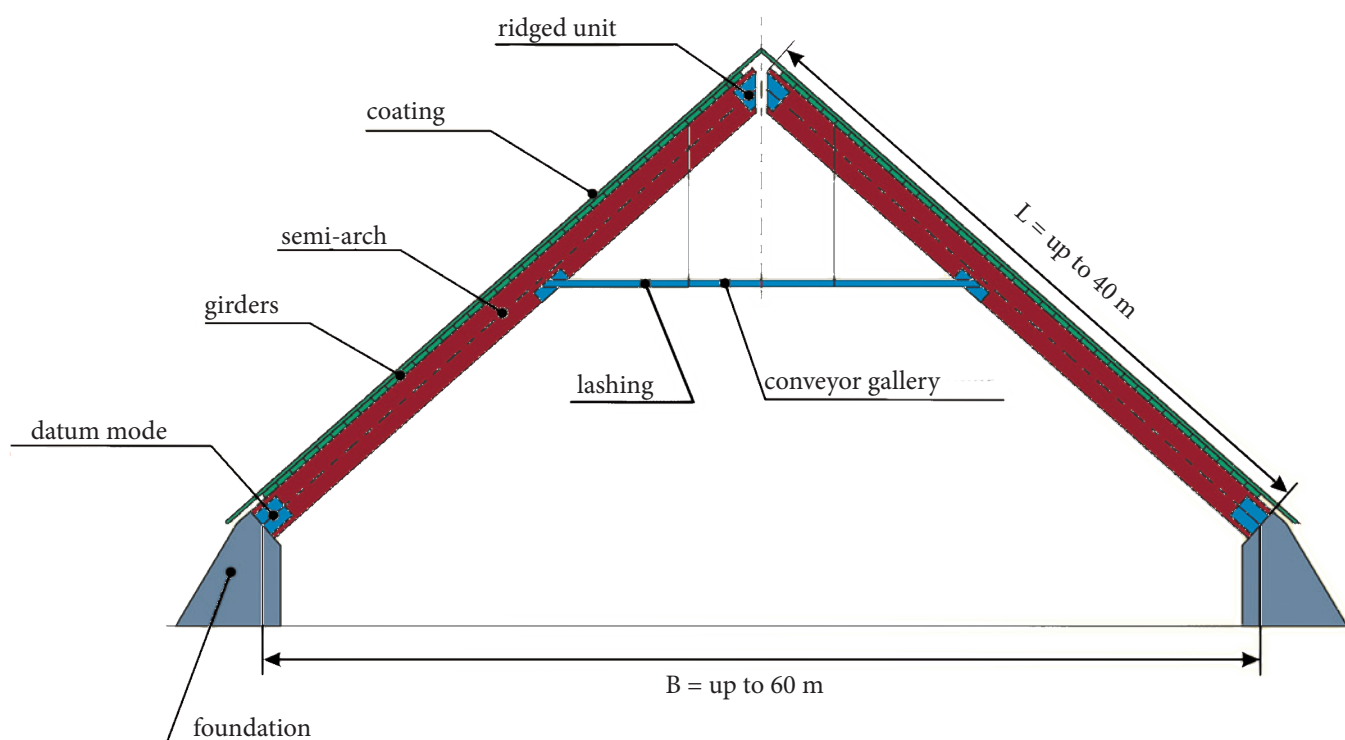
Warehouses of mineral fertilizers are designed for bulk storage of mineral fertilizers (except ammonium nitrate) and other bulk materials.

The basis of the main framework of tent-roofed warehouse consists of rectilinear glulam semi-arches based on reinforced-concrete foundations. These semi-arches are interconnected with vertical and horizontal links from glued wood for geometric form storage from load action.

Warehouse coating is made on girders from sawn and glued wood. Frame structures are made from glulam columns interconnected with girders. Coating is made on girders. At the top of the warehouse there is a balcony for conveyors arrangement carrying out

warehouse loading. Warehouse fire-resistance is not lower than R30. Timber constructions are exposed to biological fire-protective processing. Metallic elements have corrosion-resistant coating and fire-resistance coating.

Warehouse construction can be performed under its loading with belt tripper or retractable belt conveyor, unloading with portal, semi-portal scraper reclaimers and shovel loaders.



Roll compactor is designed for compaction of fine-grained potassium chloride during production of granulated fertilizers.

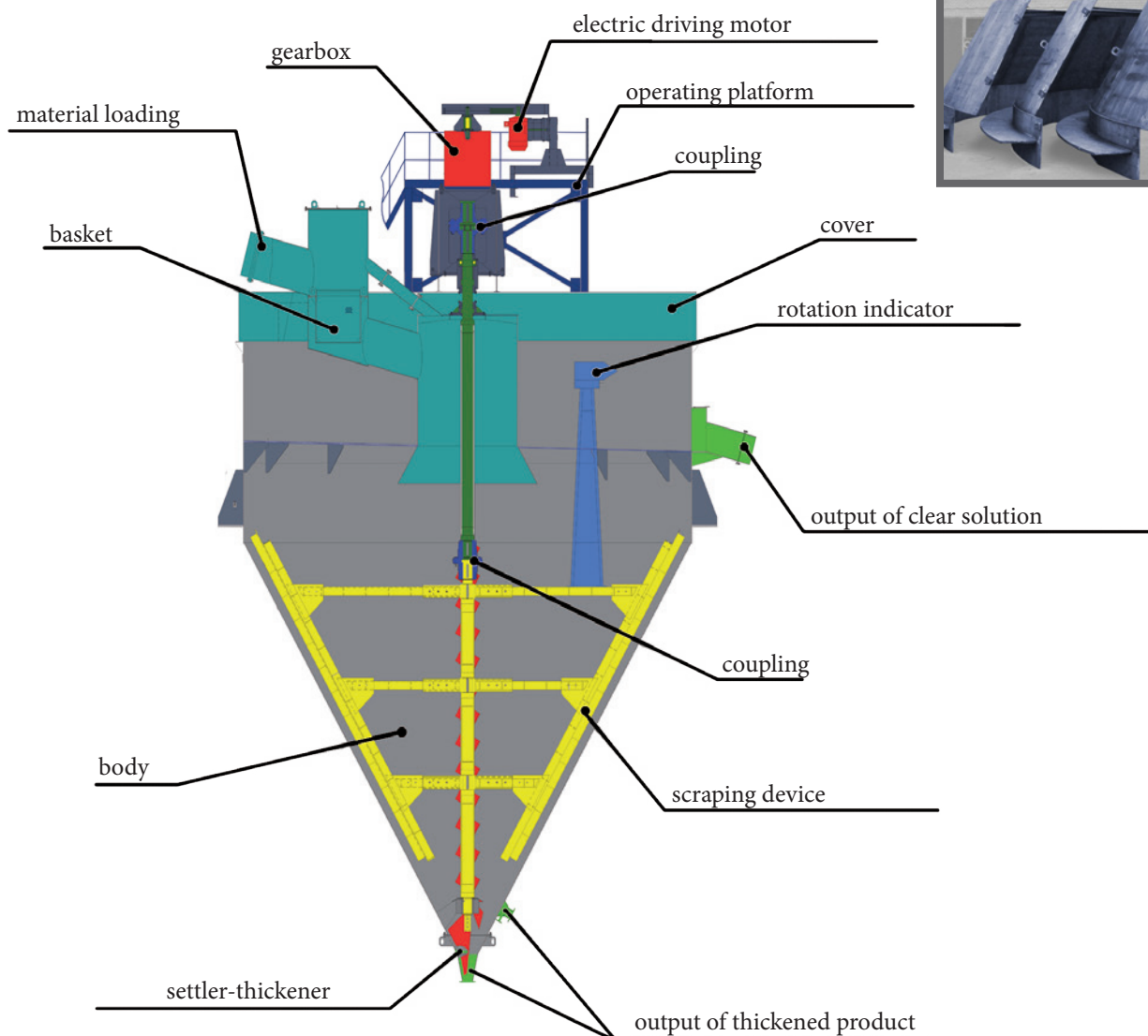


Specifications		
Roll compactor	PVP 1000x650 MG	PVP 1200x650 GM
Plate output, t/h, min	50 (by salt working) 65 (by flotation)	55
Plate density, t/m <sup>3</sup> , min	1,97	1,97
Drive power, kW	560	630
Control	- automatic mode (from operator's room) - remote mode (from operator's panel) - maintenance mode (from local console)	

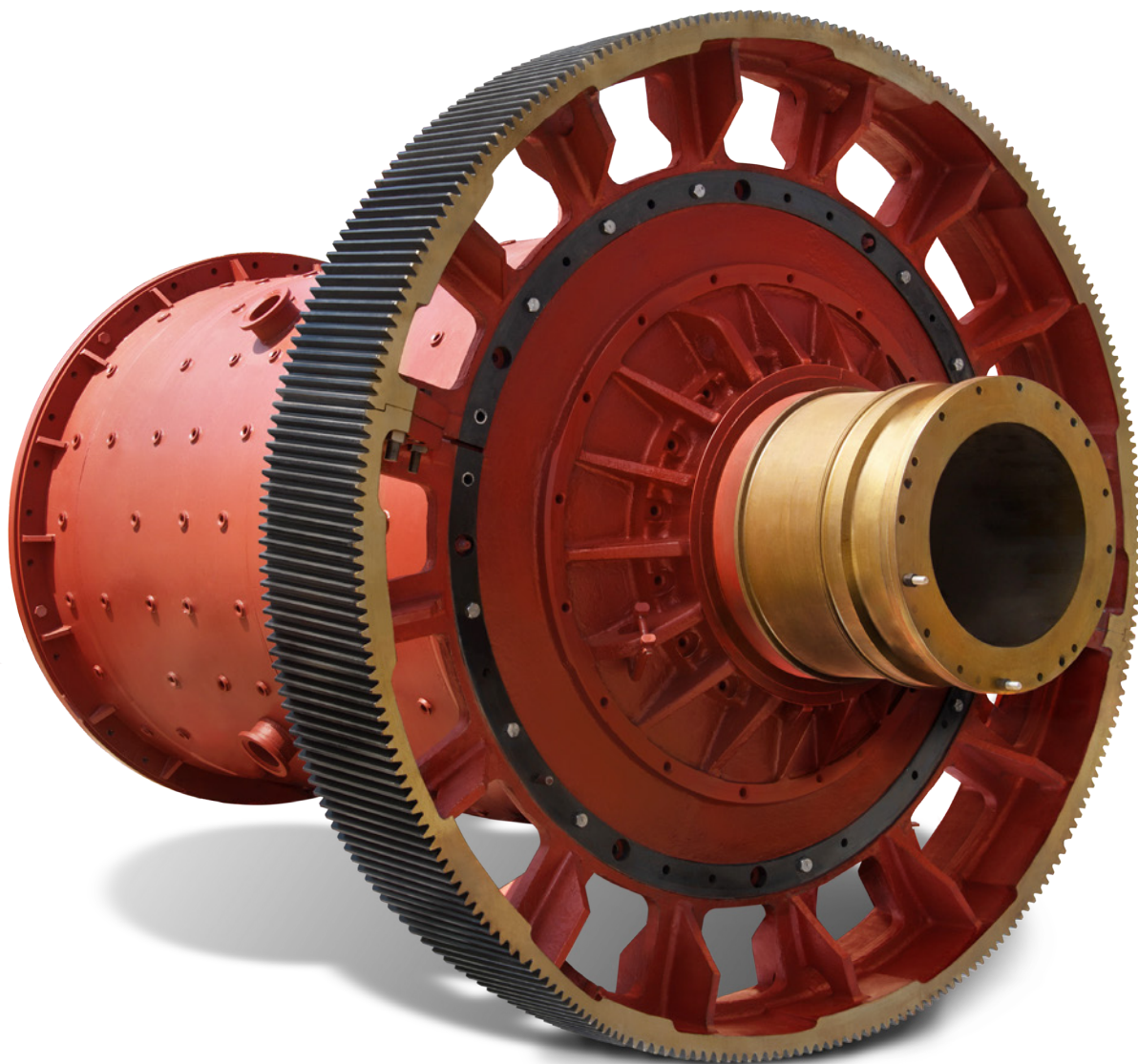


Clarifier is designed for the first stage of lyes clarification (thickening) (suspension at first dehydration stage) in slime removal compartment (thickening and centrifuging) of the processed plant using natural salts.

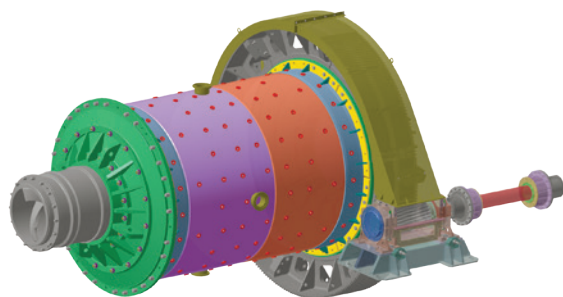
Specifications	
Body volume, m <sup>3</sup>	322
Operating environment composition	KCl; NaCl; MgCl <sub>2</sub> ; CaSO <sub>4</sub> ; CaCl <sub>2</sub>
Output on steamed suspension "Brandes and Dorr", m <sup>3</sup> /h	550-600
Dimensional specifications, mm:	
- length	9000
- width	10000
- height	18000
Device weight during hydrotest, kg	384110



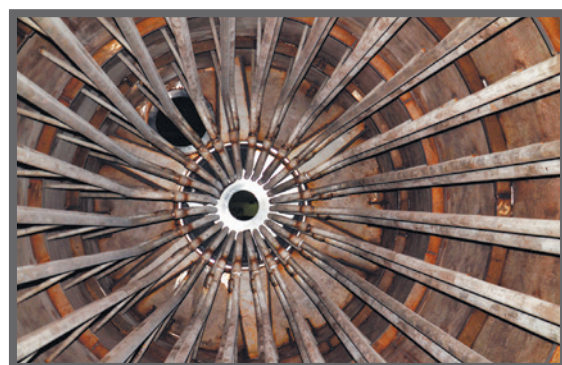
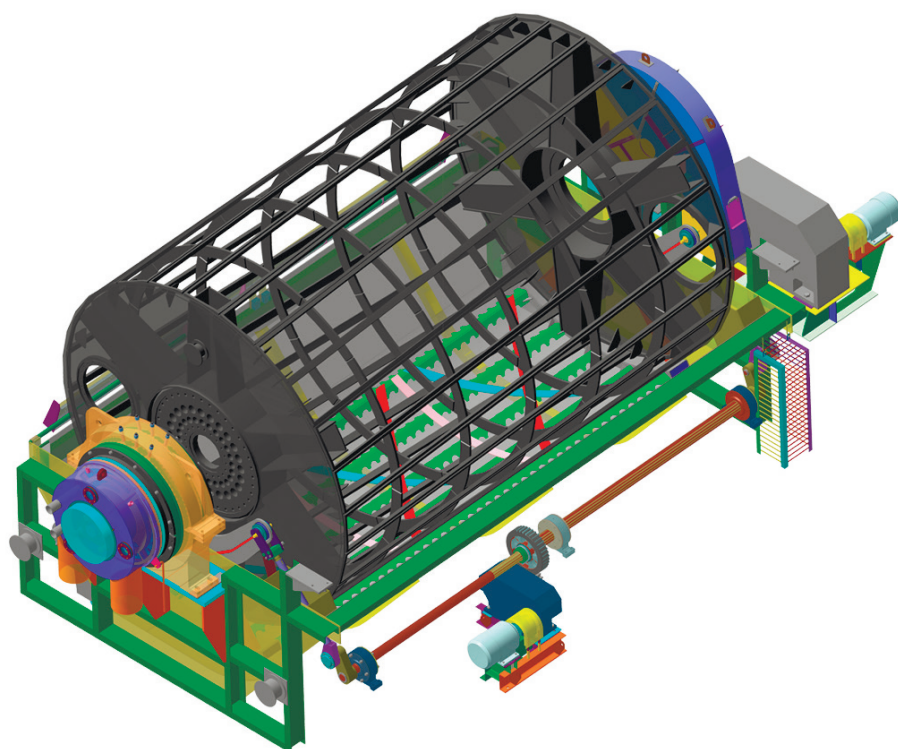
Rod and ball mills are designed for wet grinding of various ores and other materials.



Specifications		
Mill type	rod	ball
Drum:		
- inner diameter, mm	3200	3200
- inner length, mm	4520	3136
- volume, m <sup>3</sup>	32	25
- drum turning speed, r/min	14,46	19,78
Drive:		
- number of pinion shaft teeth	22	22
- number of ring gear teeth	254	278
- module in the normal cross-section	20	16
- centre distance	2771	2394
Electric motor:		
- type	DSP-260/39/36	SDM-1250KA-24
- capacity, kW	900	UHL4
- turning speed, r/min	166,6	630
- coefficient of efficiency, %	93,3	250
		93,3



The filter is designed for filtering of suspensions of halite tails type of potash production with afterflush, drying and automatic residue unloading.



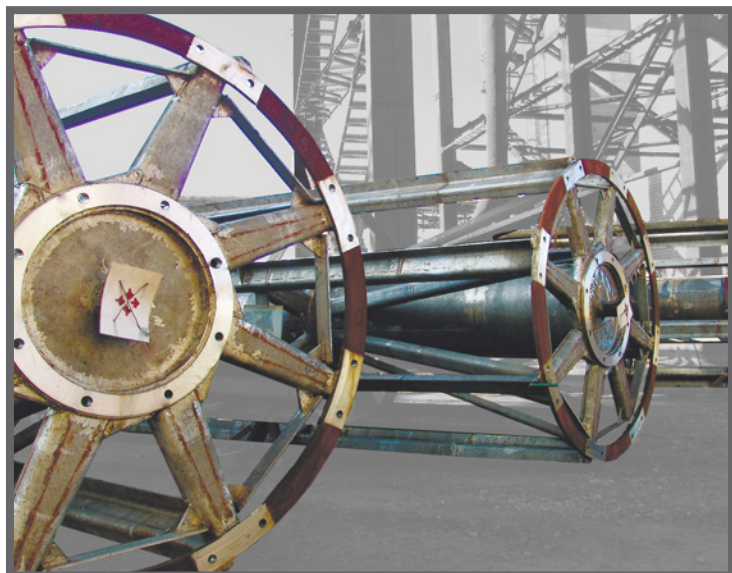
Specifications	
Filter type	drum-type
Residue removal	knife
Filtering surface, m <sup>3</sup>	40
Drum diameter, mm	4300
Suspension temperature during filtration, °C	от 0 до 50
Filter dimensions:	
- length, mm	8110
- width, mm	4650
- height, mm	3440
Weight, kg	21200

Screw dissolver is designed for the leaching of potassium chloride from sylvinite ore.



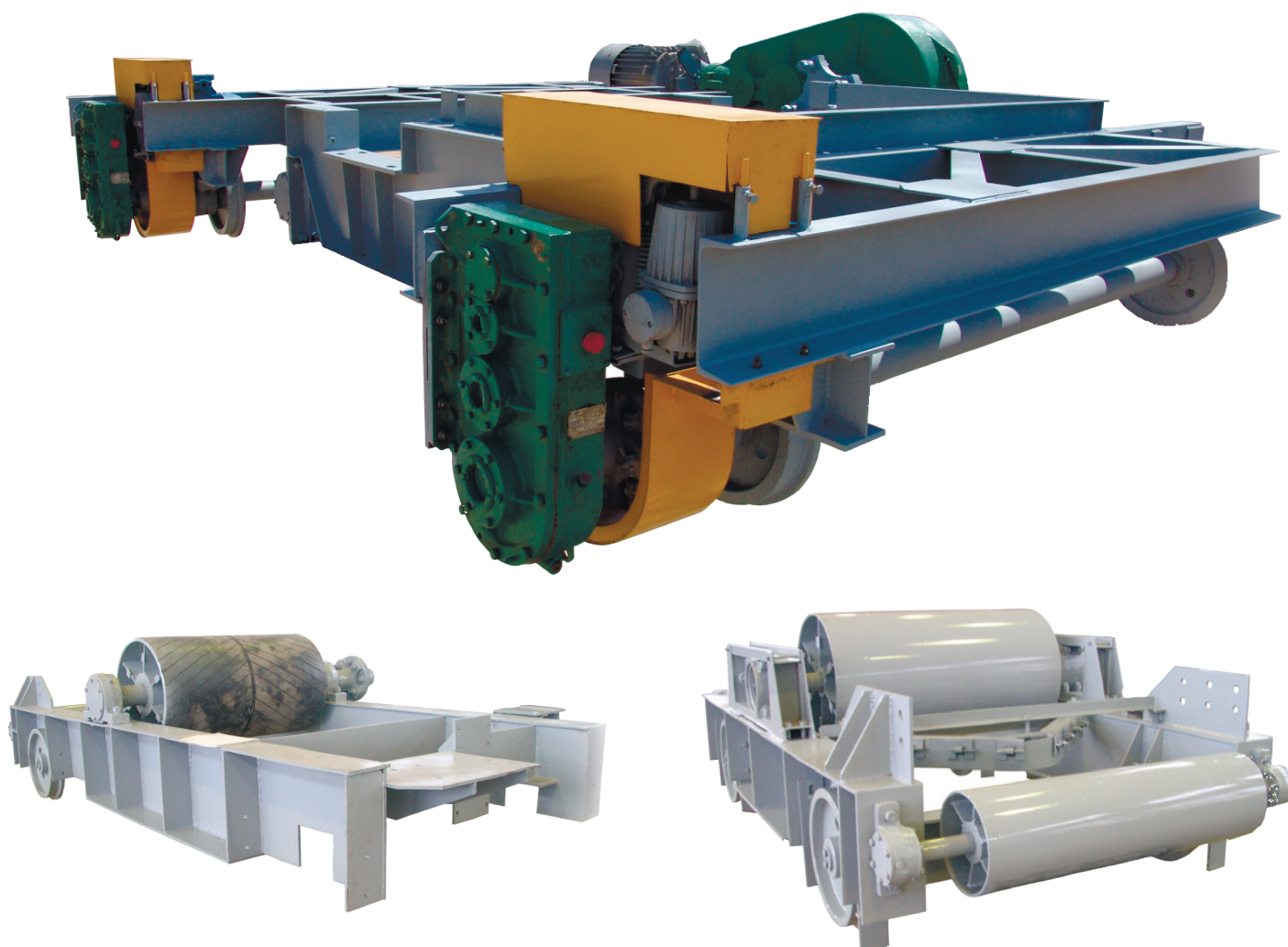
Dissolver feedstock is suspension of ore, aqueous solution of potassium chloride, sodium, magnesium, calcium with temperature up to 18 °C (dissolving leach) and salt slime.

Specifications	
Drive:	
- gearbox	TSDN-710-50-33
- rotary turning speed	6
- electric motor power, kW	132
Noise level during device operation, dB, max	80



These conveyors represent self-travelling transport machines of continuous operation installed on the railway track.

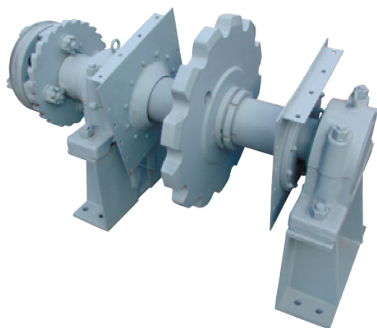
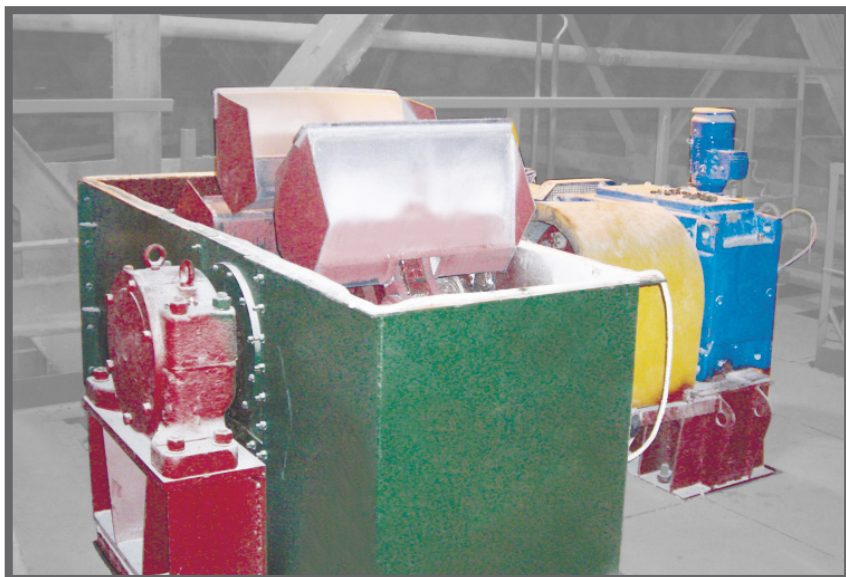
Retractable belt conveyors provide unloading of conveyed material in any place of the warehouse.



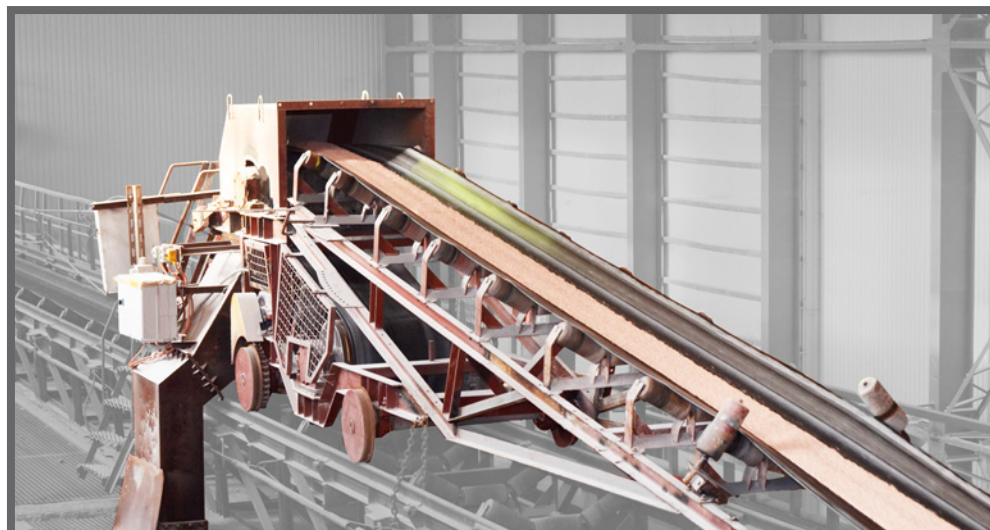
Specifications					
Conveyor type	KLK-800	KLK-1000	KLK-1200	KLK-1400	KLK-2000
Maximum output, t/h	250	550	1200	1400	2000
Conveyor length, m	50	14,7	38	14	30
Belt width, mm	800	1000	1200	1400	2000
Belt travel speed, m/s	1,25	1,8-1,9	2,3	2,2	2,0
Belt drive power, kW	18,5	15	22	30	55
Gearbox type of the belt drive	KTS (FLENDER)	KTS2-500	SK9072,1 AZX-200L	KTS1-400	KTS2-100
Conveyor travel speed, m/s	0,27	0,17	0,15	0,17	0,5
Power of the conveyor drive, kW	2×14	2×2,2	2×2,2	1×4	4×5,5
Gearbox type of the conveyor drive	KTS (FLENDER)	VK475	SK9052,1 AZD-100L	VK475	VK475

Bucket elevators are designed for vertical transportation of bulk materials. These elevators can be used as shop conveyance and interdepartment transport.

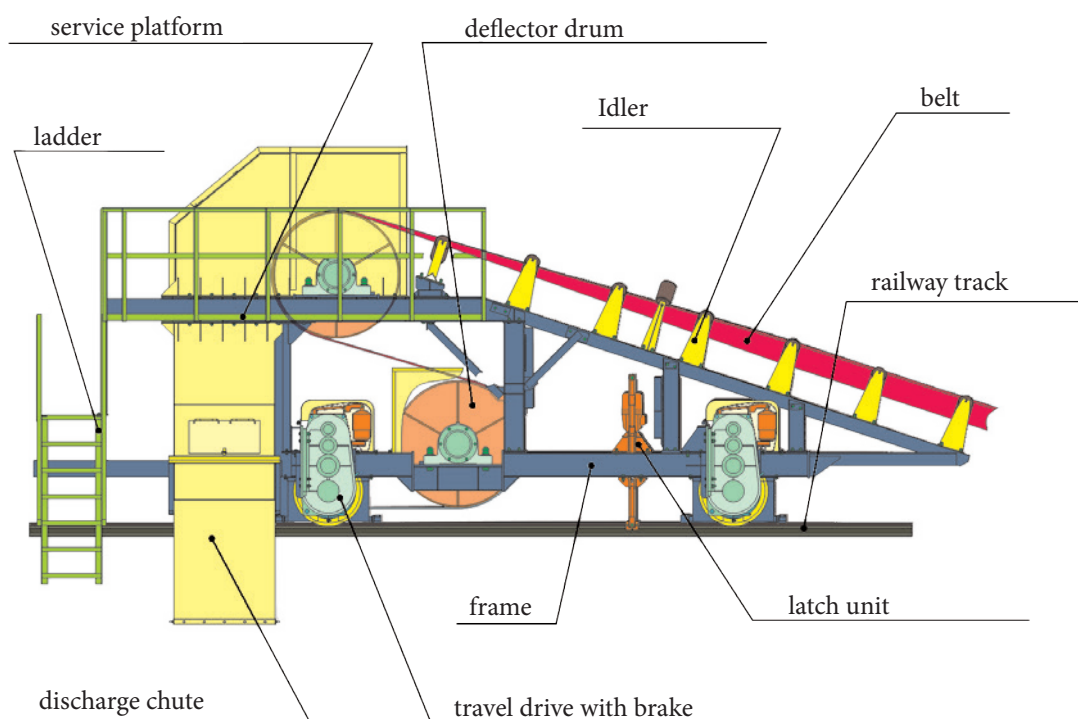
Bucket elevators can be installed indoors and outdoors.



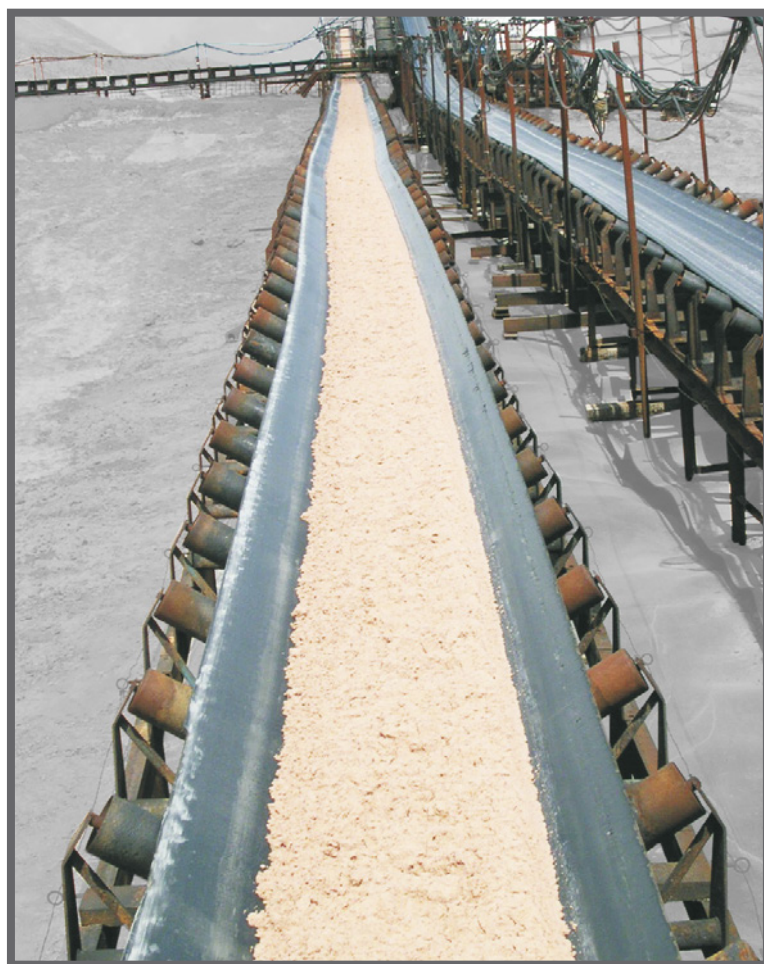
Specifications						
Elevator type	Bucket width, mm	Bucket pitch, mm	Belt width, mm	Bucket travel speed, m/s	Capacity, m <sup>3</sup> /h	Elevator rated altitude, m
chain elevator TSGT-200	200	400	-	1,31	19	30
chain elevator TSGT-300	300	320	-	1,1	50	42
chain elevator TSGT-400	800	320	-	1,1	100	40
chain elevator TSGT-500	500	320	-	1,1	150	40
chain elevator TSGT-650	650	400	-	1,24	440	40
chain elevator TSGT-800	400	400	-	1,1	600	30
LG-100	100	200	125	1,9	5	15
LG-160	160	320	200	2,0	17	20
LG-200	200	400	250	2,0	18	20
LG-250	250	400	300	1,6	28	40
LG-320	320	500	400	1,6	45	40
LG-400	400	500	500	2,0	88	40



Travelling tripper is designed for unloading and storage of bulk materials throughout the length of the warehouse. It is used together with belt conveyor.



Specifications						
Standard size	B-65.50	B-80.50	B-80.63	B-80.80	B-100.63	B-100.80
Belt width, mm	650	800	800	800	1000	1000
Drum diameter, mm	500	500	630	800	630	800
Railtrack, mm	1100	1350	1350	1350	1550	1550
Dimensional specifications, mm:						
- length	4700	4950	5000	6300	6850	7000
- width	1950	2460	2460	2460	3300	3000
- height	1850	2000	2100	2500	2500	2700
Standard size	B-100.100	B-120.80	B-120.100	B-120.125	B-140.80	B-140.125
Belt width, mm	1000	1200	1200	1200	1400	1400
Drum diameter, mm	1000	800	1000	1250	800	1250
Railtrack, mm	1550	1750	1750	1750	1950	2250
Dimensional specifications, mm:						
- length	8000	7450	8800	9250	8900	9250
- width	3100	3650	3200	3260	3800	3770
- height	2850	2750	3500	3520	2700	3750



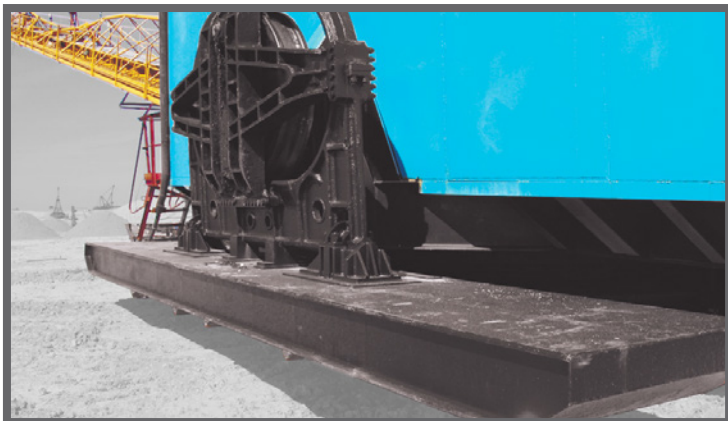
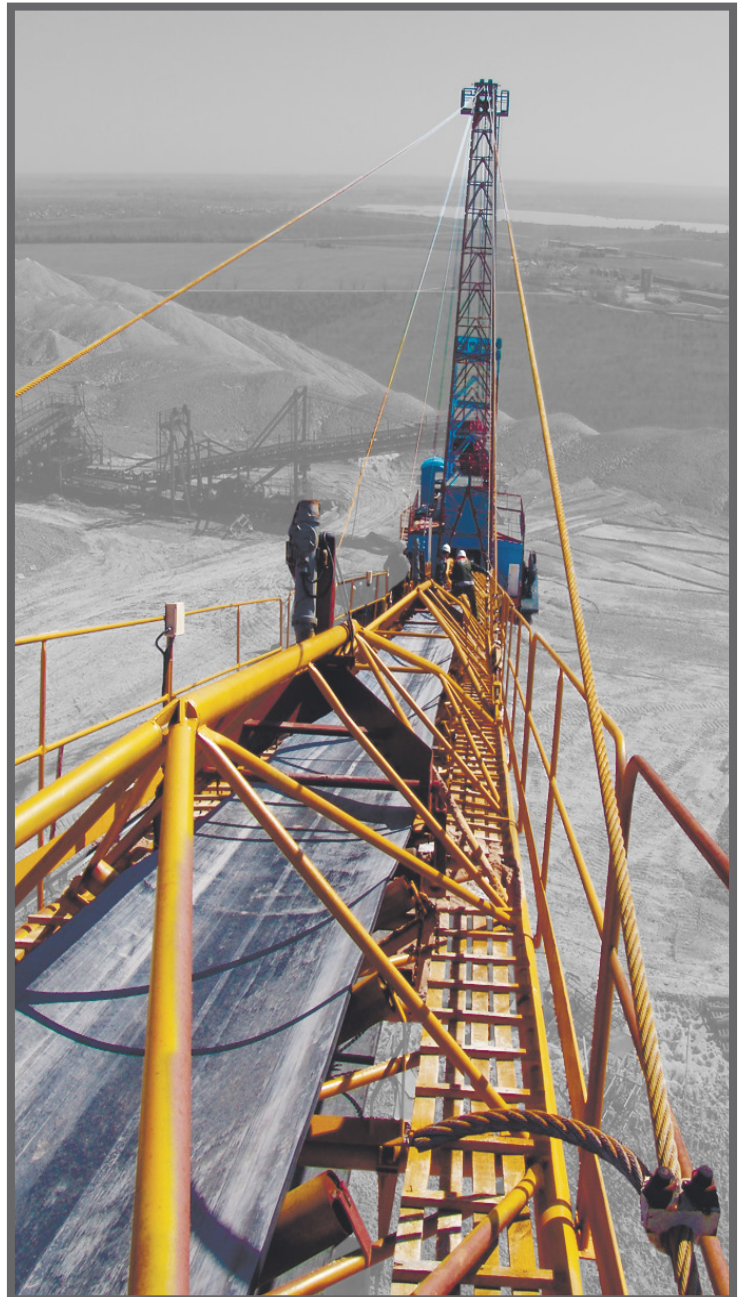
Conveyor KLMN-1200 with  $L=265$  m is used for industrial salt transportation. Conveyor construction and control equipment allow its use in the branched conveyor lines. The conveyor is designed for open-air operation in climatic areas with moderate climate.

Specifications		
Type	KLMN-1400	KJO-1200
Conveyed material	salt waste	
Bulk weight, $t/m^3$	1,4	
Load moisture, %	11	
Output, t/h	to 2000	to 1800
Belt speed, m/s	3,3	
Belt width, mm	up to 1200	
Conveyor length, m	to 450	
Drive, type	double-drum	
Electric motor	BAO2-450 LA-6; $N=250$ kW, $n=1000$ r/min	
Power, kW	2x250 kW	
Gearbox	TSDN-630-31, 5-21	
Arresting stop drive	pusher TE-50	



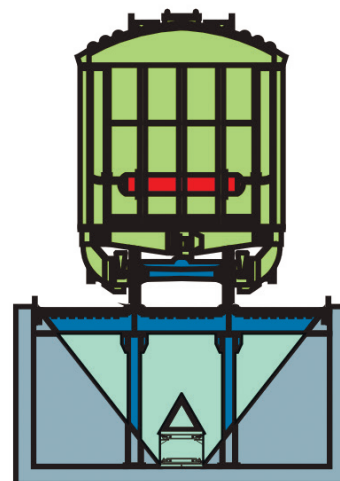
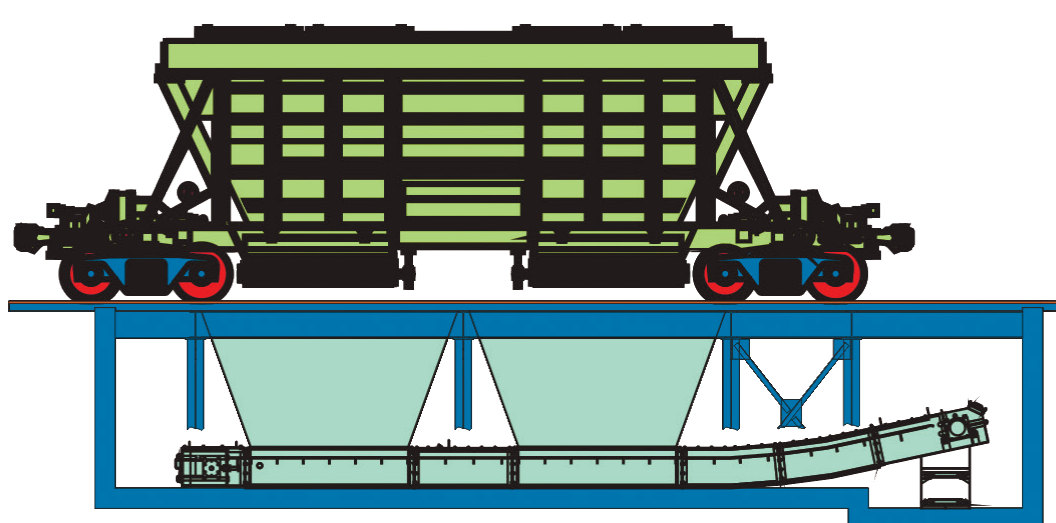
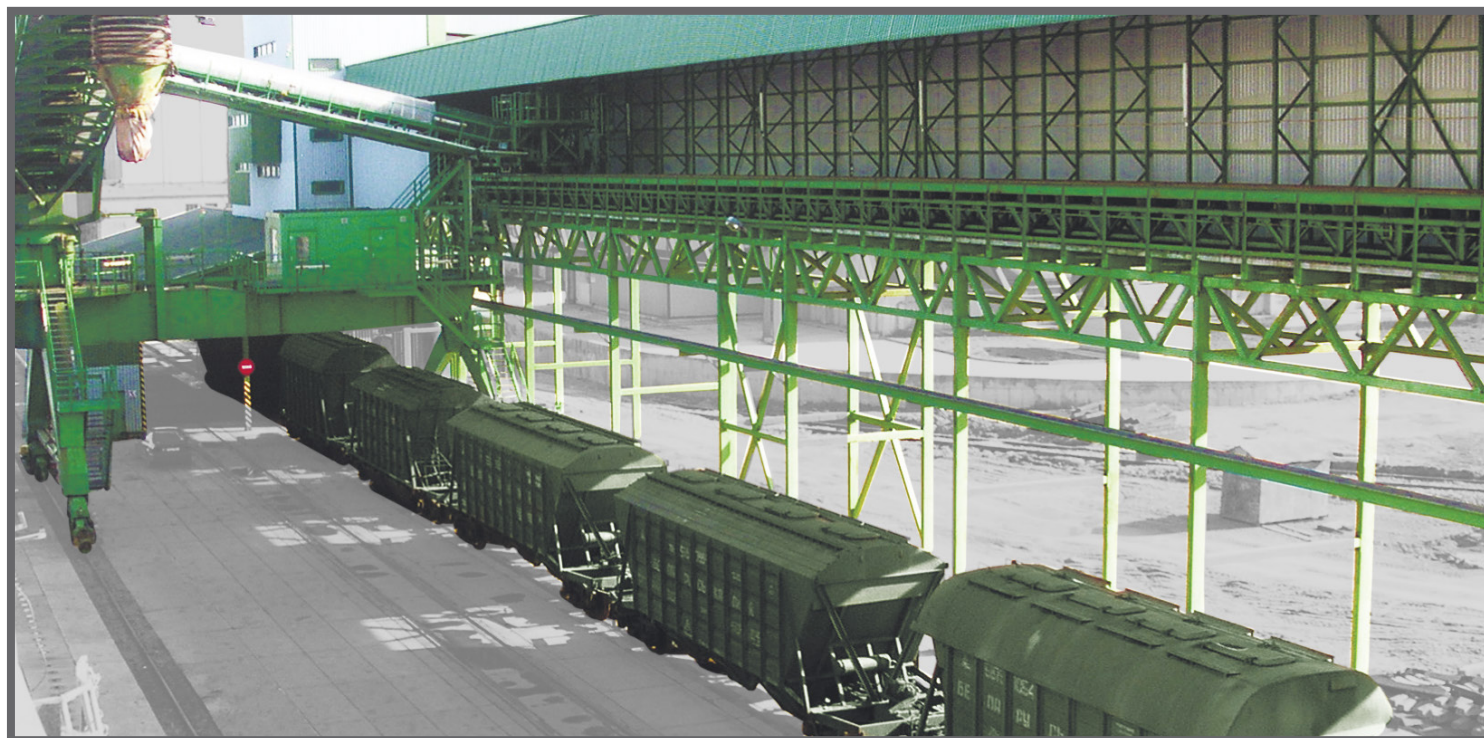


Specifications		
Spreader type	OSSH-102/1200	OSSH-150/1600
Conveyed material	salt waste	
Bulk weight, t/m <sup>3</sup>	1,4	
Load moisture, %	10-12,5	
Output, t/h	1200	1600
Belt width, mm	1200	
Belt speed, m/s	3,15	3,93
Length of stockpile jib, m	75	105
Length of tail jib, m	20	33,95
Overall length of conveyor, m	102	150
Conveyor angle of climb, deg.	18	
Angle of bend, deg.	360	
Loading height, m	5	
Unloading height, m	25,3	34
Travel speed, km/h	0,195	0,09
Resting base diameter, m	7,4	9,7
Stacker height, m	29,063	38,058
Stacker length, m	102,568	150,425
Stacker width, m	10,02	16,1
Installed capability of electric motors, kW	245,6	610
Kind and voltage of supply current	AC current 380	AC current 6000



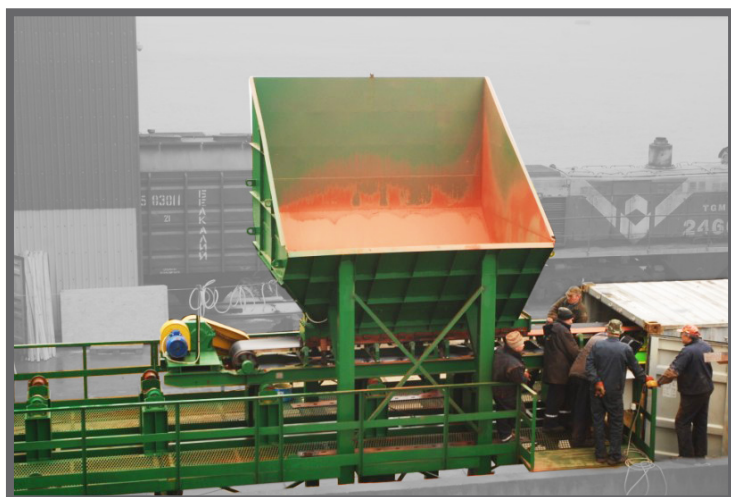
**FROM RAIL-ROAD CARS AND LOADING IT INTO VESSELS**

Machine complex for loading/unloading of bulk material from rail-road cars and loading it into vessels consists of receiving bunker and chain-and-flight conveyors, belt conveyors and elevators for loading of bulk materials into the warehouse and conveying from the warehouse on the car loader.



The complex is designed for loading of ship containers with bulk materials - mineral fertilizers with dense loaded density of 0,9-1,2 t/m<sup>3</sup>.

Specifications	
Receiving bunker: - capacity, m <sup>3</sup>	8
Bucket elevator TSGT-500-66 - output, t/h - bucket travel speed, m/s - drive power, kW	150 1,12 7,5
Chain-and-flight conveyor SPS-700: - length, m - output, t/h - chain travel speed, m/s - drive power, kW	7 300 0,95 11
Belt conveyor KLS-650-8,5: - output, t/h - chain travel speed, m/s - chain drive power, kW - conveyor drive power, kW - lifting capacity of the conveyor drive, kW	300 2,6 5,5 4 2×0,12
Complex capacity, t/h	300
Weight, kg	24400



Shunting devices are designed for indraught of rail-road cars to the place of their loading or unloading at the dead-ended railroad bed with the rail gage width of 1524 mm.



Specifications	
Draft force, kN	max 120
Friction pulley diameter, mm	560
Angle of contact, number of rope wraps	3
Rail-road cars travel speed, m/s	0,25
Standard size of haulage rope	25-G-I-N-1764(180) GOST 7669-80
Breaking tension of haulage rope, kN	max 380
Winch:	
- electric motor type	AIR180M4U3
- electric motor power, kW	30
- turning number of electric motor, r/min	1470
- gearbox ratio, $i_p$	40
- exposed drive ratio, $i_o$	4,59
- winch ratio, $i_l$	183,6

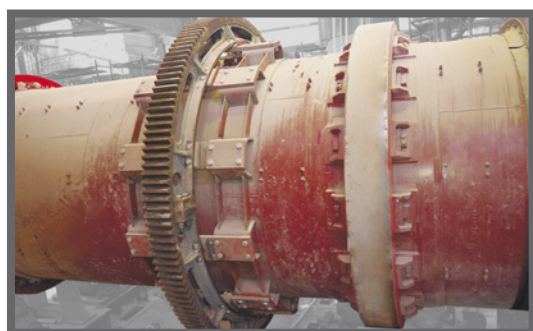
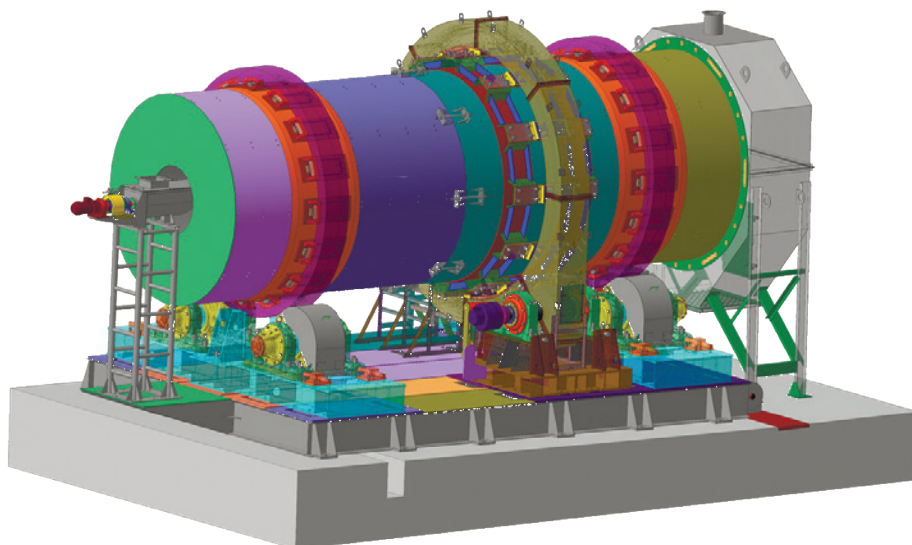


The complex is designed for cube-shaped crushed stone production. Feed output is 330 t/h.

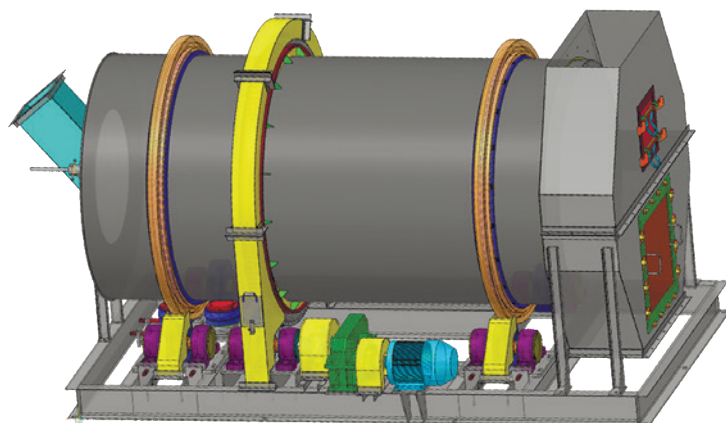


Drum granulator is designed for granulation of complex -mixed NPK fertilizers by rolling-back method.

Specifications	
Output, t/h	85
Mine temperature, °C	40-60
Drum granulator:	
Dimensions and parameters:	
- length, mm	9000
- inner diameter, mm	3000
- angle of hade, deg.	1-3
- turning speed, r/min	4-12
- ratio	6,8
Hydraulic motor:	
- rotational torque, kN×m	15
- turning speed, r/min	27,2-81,6
Pump station:	
- output, t/h	630
- electric motor power, kW	110
- hydraulic system pressure, max, bar	320



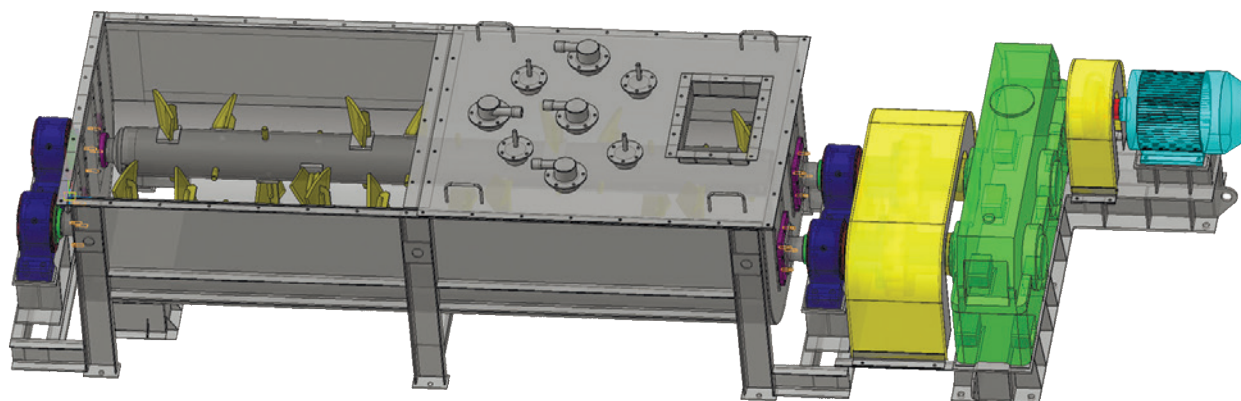
Rotary-drum mixer is designed for reagentizing of granular NPK fertilizers.



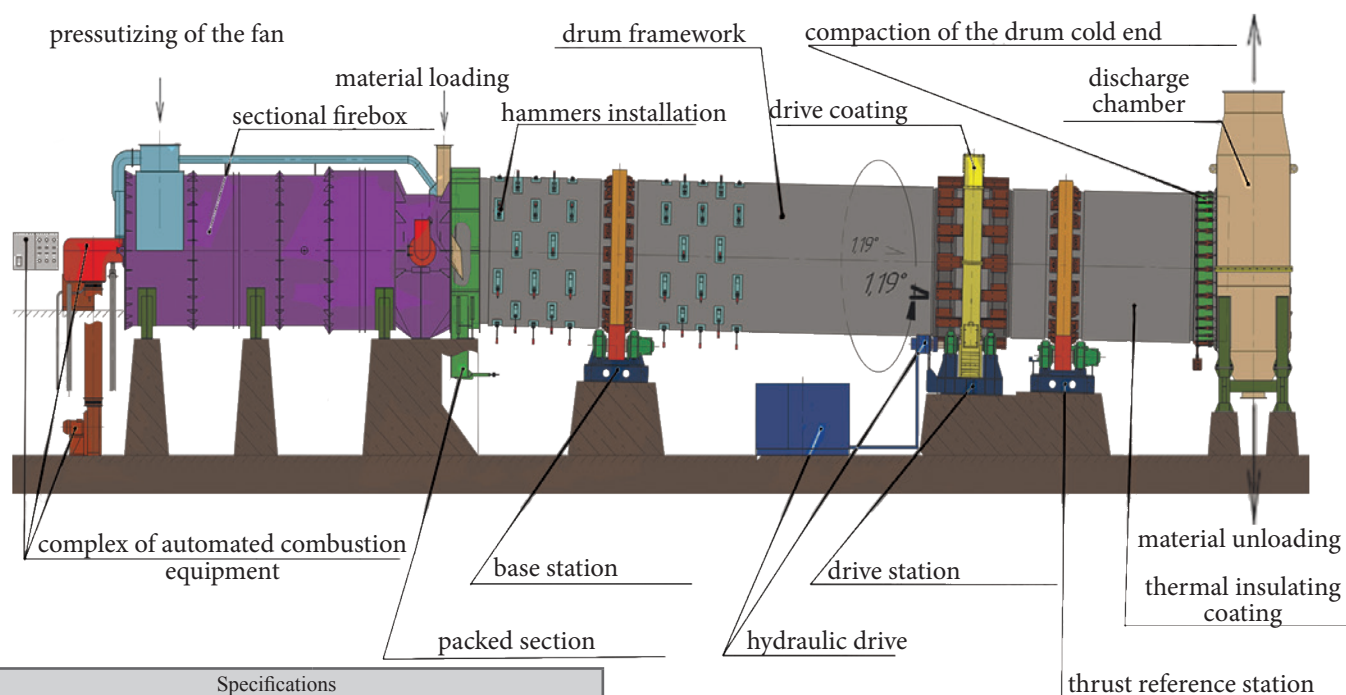
Specifications	
Output, t/h	35
Drum size:	
- inner diameter, mm	1800
- length, mm	3660
Drum turning speed, r/min	8-12
Drum dynamic factor	1,3
Drive :	
-gearbox	1TS2U200-2512TS-UZ
-electric motor	5A160S4
-frequency drive	(N=15 kW, n=1450 r/min)
	ABB ACS 800 (22 kW, 400 V)

Specifications	
Output, t/h	85
Dimensions of the duct in the clear, mm	3150×1185
Dimensions of the conveying worn auger:	
- diameter, mm	635
- length, mm	2640
- worn auger pitch, mm	880
Distance between shafts, mm	313
Shafts turning speed, r/min	70-100
Drive:	
- gearbox	AIR18M4
- electric motor	STSZU-315NM
- frequency drive	ABB ACS 800 (37 kW, 400 V)

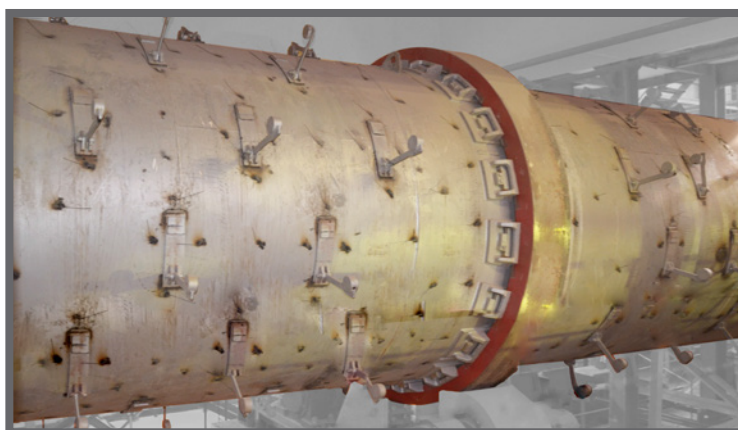
Twin-shaft mixer is designed for moistening, steam heating and intensive mixing of batch mixture of primary components and retour.



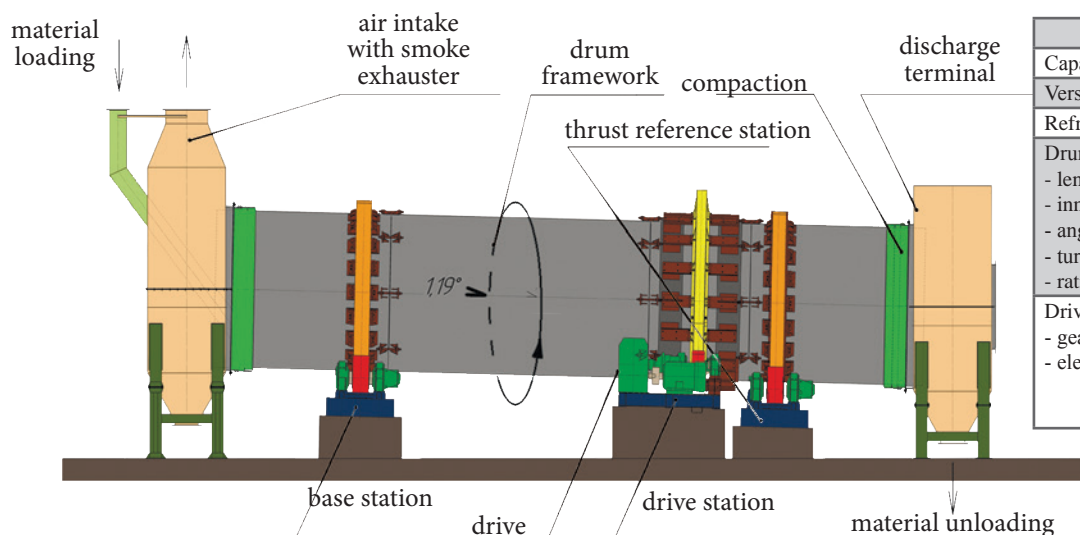
Drying installation is designed for drying of granular NPK fertilizers after a drum granulator.



Specifications	
Dry basis throughput, t/h	85
Version	direct-flow
Heat carrier	flue gases
Drum dryer:	
- length, mm	21300
- inner diameter, mm	3400
- angle of hade, deg.	1,19
- turning speed, r/min	3-6
- ratio	7,84
Burner:	GRP-1000ME combined with turbo head
Power, MW:	
- on gas	2,0-12
- on black oil	2,8-11
Hydraulic motor:	
- rotational torque, kN*m	30,1
- turning speed, r/min	23,5-47
Pump station:	
- output, l/min	630
- electric motor power, kW	160
- pressure in the hydraulic system, max, bar	320



Drying installation



Specifications	
Capacity, t/h	50
Version	counterflow
Refrigerating medium	air
Drum-cooler:	
- length, mm	18300
- inner diameter, mm	3500
- angle of hade, deg.	1,19
- turning speed, r/min	4,8
- ratio	7,84
Drive:	
- gearbox	TSZN-630-40
- electric motor	5AM315S4 (N=160 kW; n=1480 r/min)

NPK line is designed for production and packing in flexible containers of compound NPK fertilizers (up to 4 components) using dry blending.

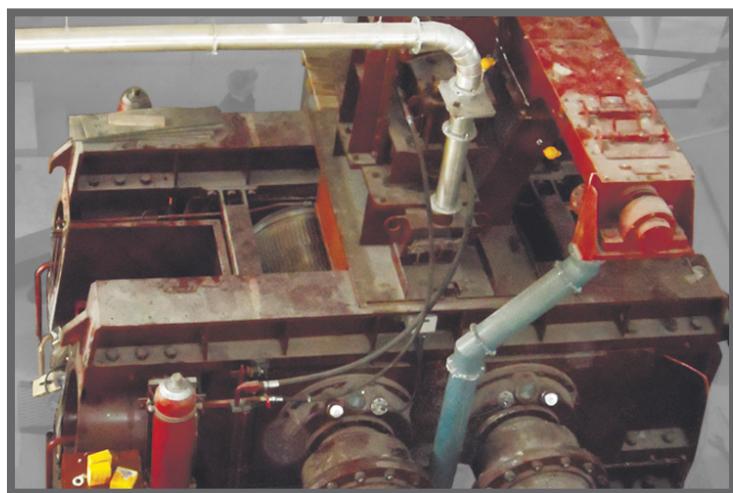
The line is a technological complex which includes a set of equipment for blending and filling weighing station for packing into inflatable containers. Weight of one container is from 0,5 to 1,0 t, line output - 50 t/h.



The plant produces finely crystalline granules of ammonium sulphate with diameter of 2-4 mm with better useful qualities (not set up and not dusty during storage, have a longer decomposition period) than raw product.

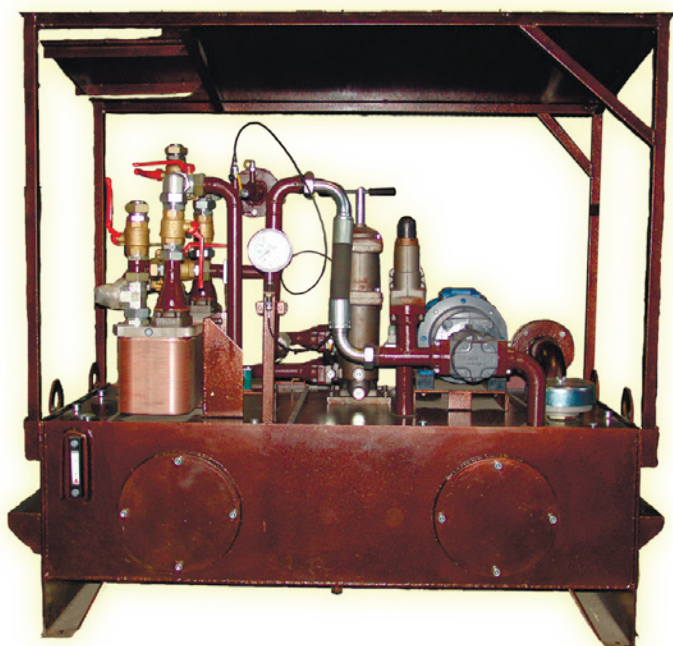
The equipment consists of roller presser as well as crushers, bolting mills, elevators and node of refining granules.

Line speed is up to 20 t/h of granular ammonium sulfate.



Oil stations MS 106.8 and MS 65.15 are designed for filtration, cooling and feeding of lubricating fluid to bearings, gearbox of the feeding screws and roll compactor's drive gearbox.

Hydraulic station GS 9.50-5.110 is intended to ensure hydraulic system operation longitudinally of milling machine 6M616, hydraulic station IR 1600 is designed for the use in hydraulic station of horizontal boring mill IR1600 for lubrication of table tracks.



MS 106.8

Specifications			
Name	Tank capacity	Full flow, l/min	Working pressure, bar
Oil station MS 106.8	400	160	8
Oil stations MS 65.15	-	65	15
Hydraulic station GS 9.50-5.110	150	9/5	50/110
Oil station of machine hydraulics IR1600	140	29	70



MS 65.15



IR 1600

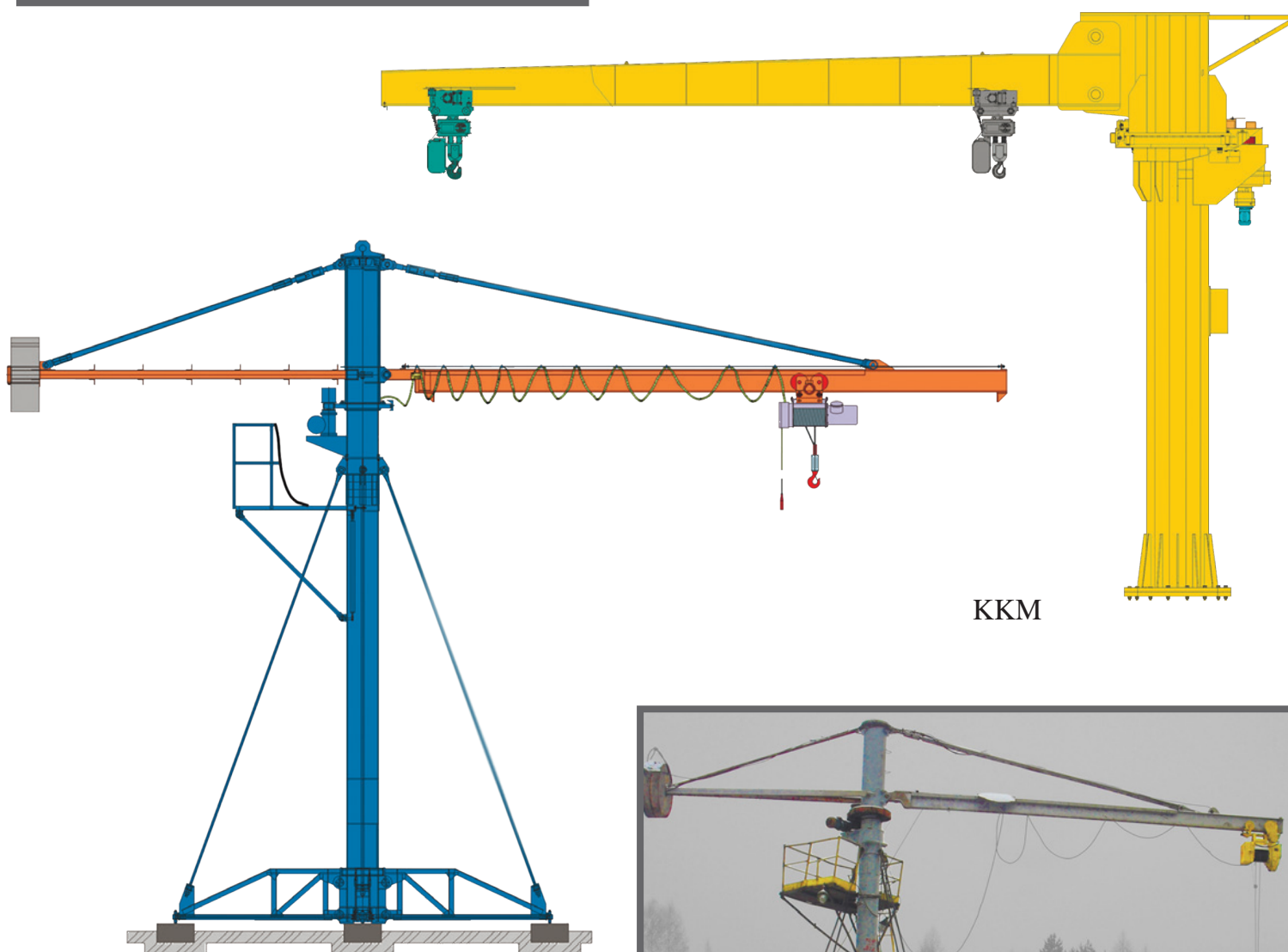


GS 9.50-5.11

The crane is designed for mechanization of load handling on drilling units, as well as on pipe yards, sites and workshops. This crane is applied as a part of assisting hoisting equipment of skid-mounted drilling unit.



Specifications		
Name	KPB-3M	KKM
Hoisting capacity, kg	max 3200	max 3000
Hoisting height, m	from 5 to 7	6
Handling radius, m	1,4 - 8,0	2 - 8
Angle of boom, deg.	270	270
Boom length from pivot point, mm	8000	8945
Dimensional specifications, mm:		
- length	8600	10250
- height	9100	6655
Crane weight, kg	7270	5293



KPB-3M

KKM

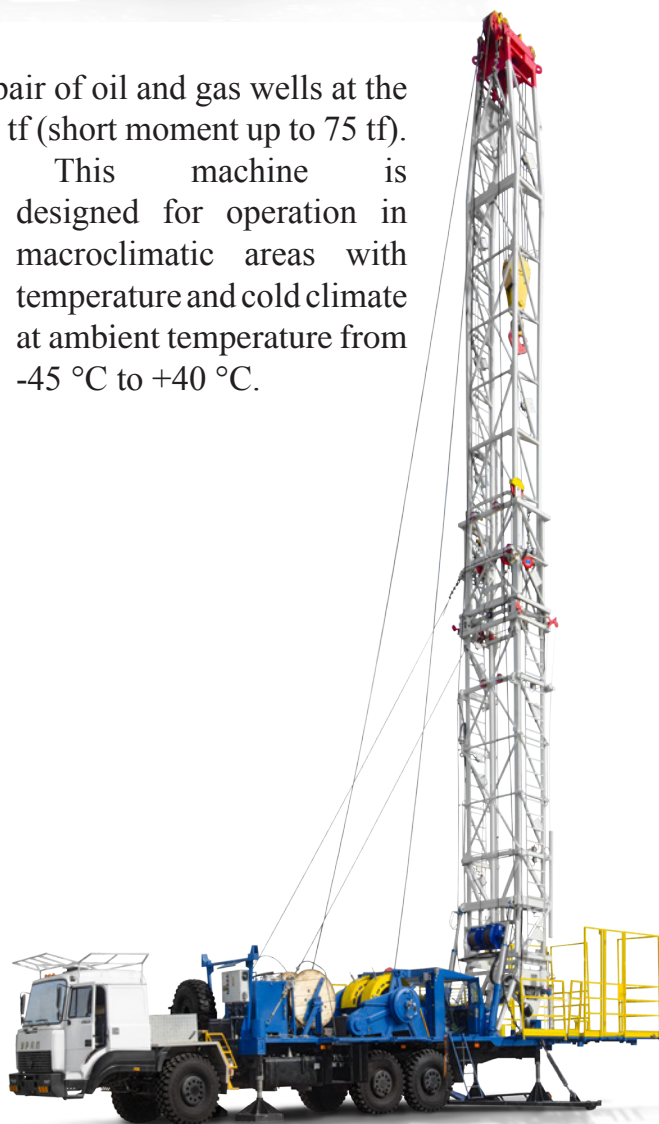


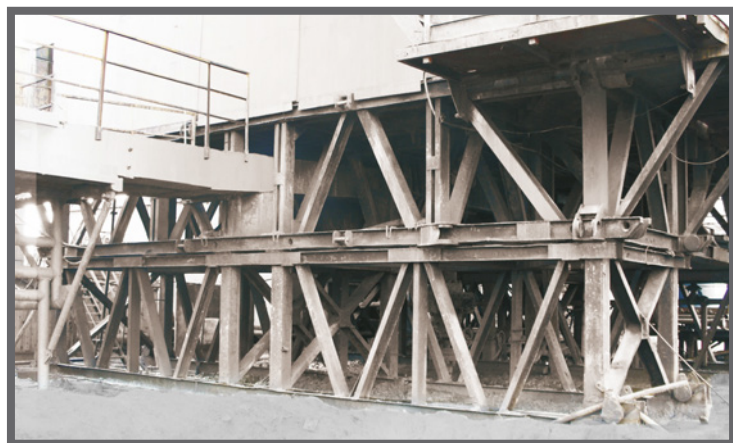


Workover rig APR-50/60 is designed for maintenance repair of oil and gas wells at the maximum operating loads on the hook of casing block of 60 tf (short moment up to 75 tf).

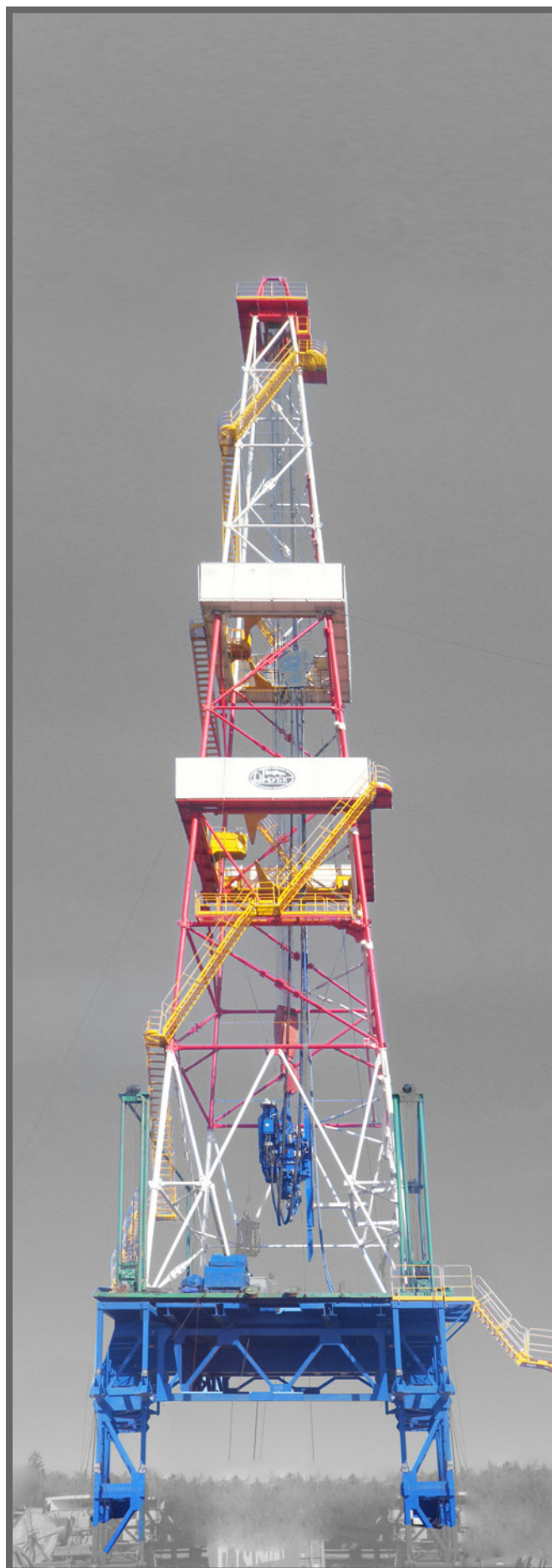
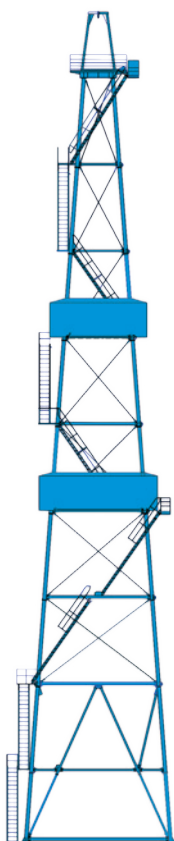
This machine is designed for operation in macroclimatic areas with temperature and cold climate at ambient temperature from -45 °C to +40 °C.

Specifications	
Load on the hook of casing block, kN (tf):	
- maximum operating load without installing guys to the ground	490 (50)
- maximum operating load with the installation of guys to the ground	588 (60)
- momentary load with the installation of guys to the ground	735 (75)
Chassis	Ural-63701
Winch	Single-drum, double-speed
Mast	Two-section, telescopic
Mast height from the ground level to crown block axis, m	24,0
Block-and-tackle arrangement:	
- equipment	3×4
- drilling line diameter, mm	25
- drum capacity of the drilling line bypass, m	500
Overall dimensions in transport position, mm, max:	
- length	15000
- width	2800
- height	4500
Workover rig weight in road weight, kg, max	30000

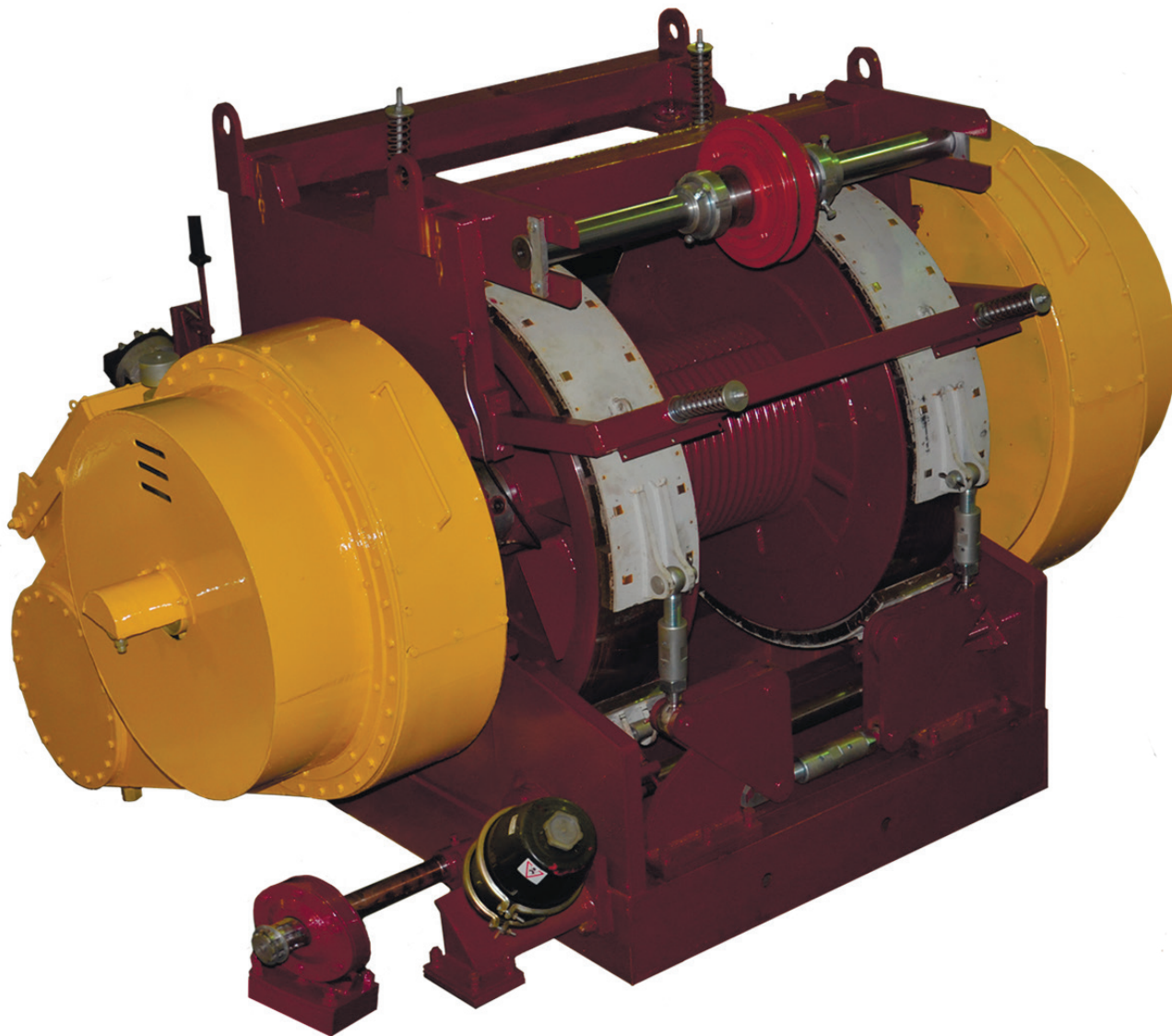




Specifications		
Rig type	VB 53×320M	VB 59×400R
Hook load capacity with accessory 6x7, kN	3200	4000
Construction	from tubes	from tubes
Lattice system	cruciate with flexible rods	cruciate with hard rods
Total height, m	57,5	62,35
Height before top of crane-way frame, m	53,5	58,35
Lower base dimension on legs axis, m	10×10	10×10
Upper base dimension on legs axis, m	10,5	10,5
Height of panels, m	32,1 and 35,07	23 and 35
Height of gate opening, m	7000 for Ø114 5000 for Ø140	5000 for Ø127



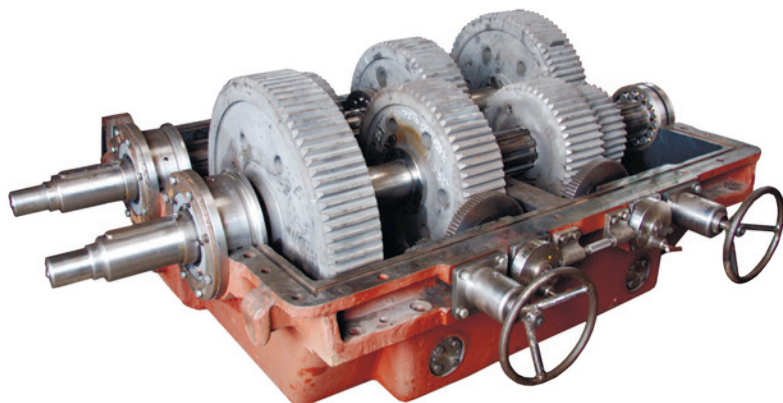
Single drum winch with chain drive in oil bath, double-band brake and plate clutches of drum powering. This machine is designed for carrying out of round-trip operations.



Specifications	
Hoisting velocity of traveling block, m/s:	
- minimum	0,1200
- maximum	1,444
Speed ratio of winch drive	2×8
Nominal draft force in winch rope at nominal load, kN (tf)	145 (14,8)
Power of winch emergency electric drive, kW, max	4,5
Drive type	hydraulic
Drilling line diameter OS-25-V-1770 GOST 16853-88, mm	25
Hydraulic system:	
- pump type	310.3.160.03.06
- number of pumps, pcs	2
- nominal working volume, cm <sup>3</sup>	160

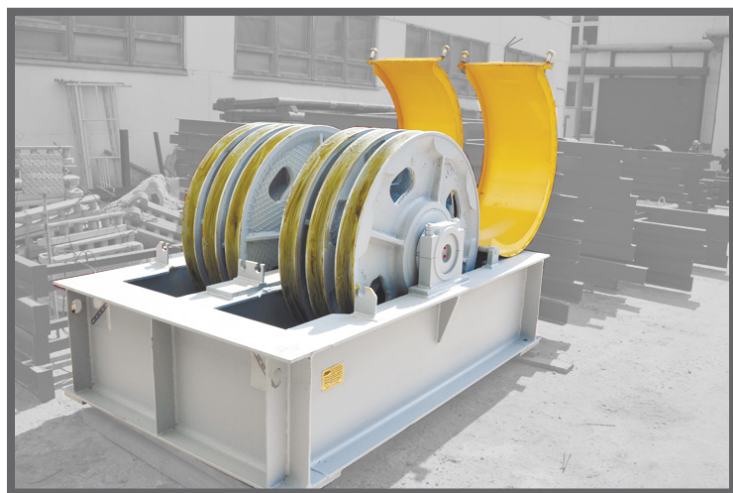


Transmission works in tandem with drill winch LBU-1200, which is designed for lifting and lowering of drilling tool and drive tubes, transmitting rotation to rotor, spinning-up and uncoupling of pipes and subsidiary works on the lifting and hauling of weights.



Transmission KPZ-900D

Specifications	
Transmitted power, kW	745
Turning speed of high speed shaft, r/min	1045
Lubricant	mechanic lubrication with oil station
Cooling	air cooling with oil station



Crown block UKB-6-270



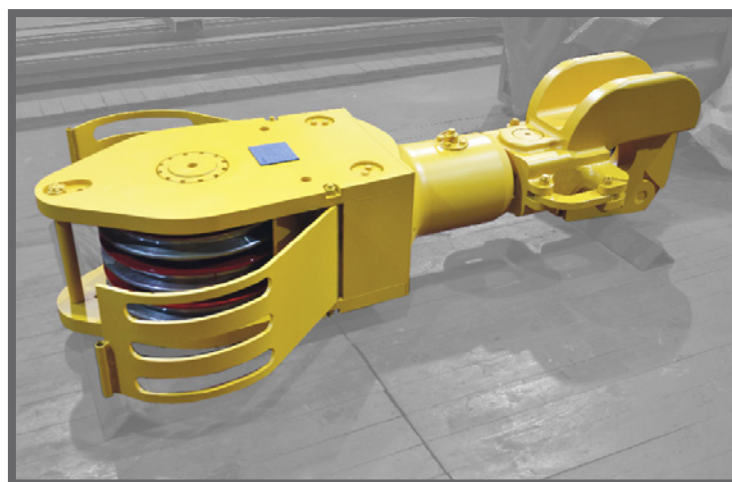
Drive rotary table ИЗ-255



Columned polymer boot (BKP)



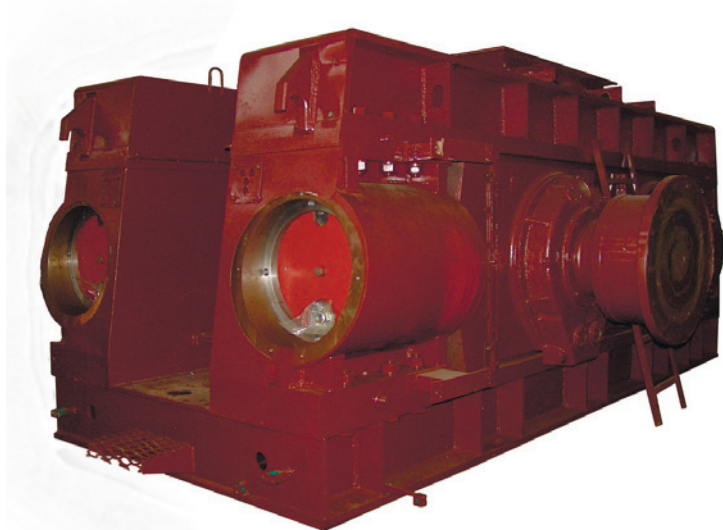
Valve unit TSKOD



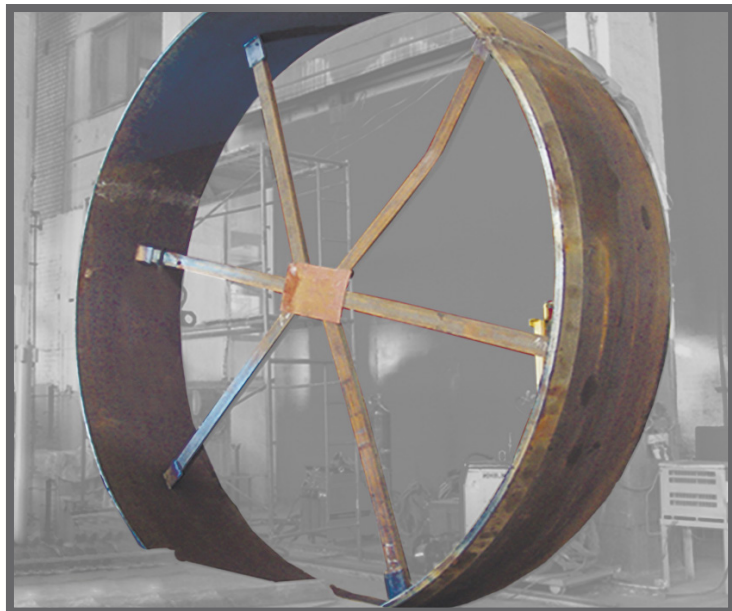
Traveling hook-block

Press crusher with plain rollers is designed for clinker crushing in cement production.

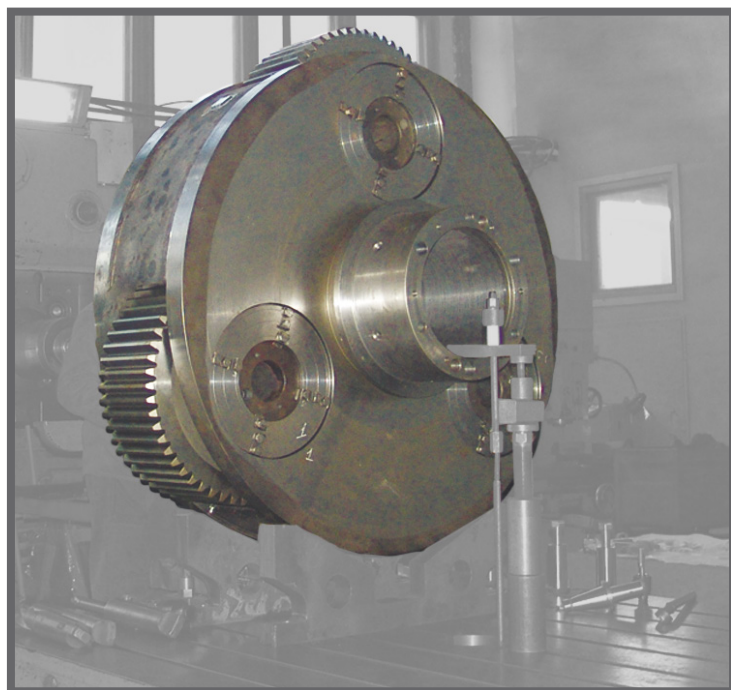
Roller press crusher



Shell of drying oven

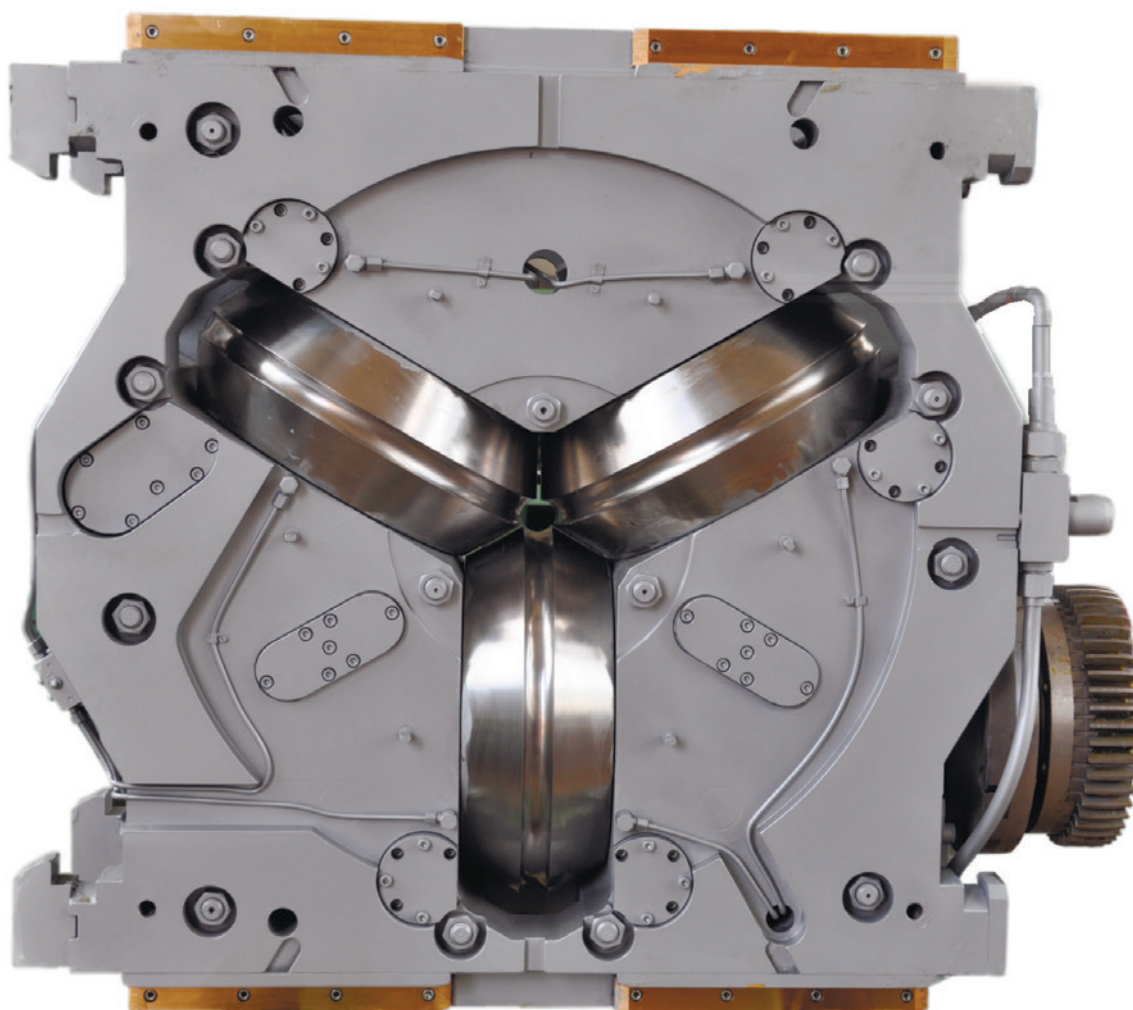


Specifications	
Output, t/h	min 130
Working stress of compacting, kN	4750
Drive:	
- parallel shaft gearbox	TSDN-710-2pcs
- electric motor	VAO 2-280
	M4-U2,5-2pcs
- power, kW	160
Total weight, kg	71000

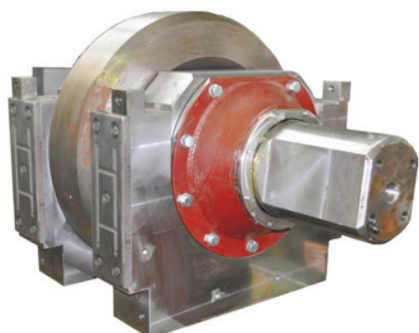


Planet gear

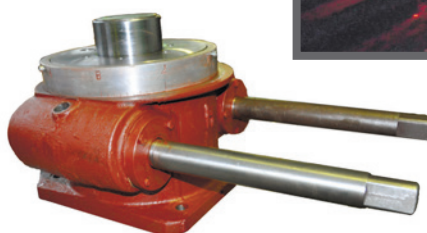
Metal-rolling stands are designed for metal pipes rolling.



Specifications	
Diameter of blank parts, mm	118, 175
Pipe diameter, mm	21,3 - 168,3
Pipe wall thickness, mm	2,3 - 32,0
Entrance velocity in stretch reducing mill, m/s	0,5 - 1,4
Exit from stretch reducing mill , m/s	5



Carriage



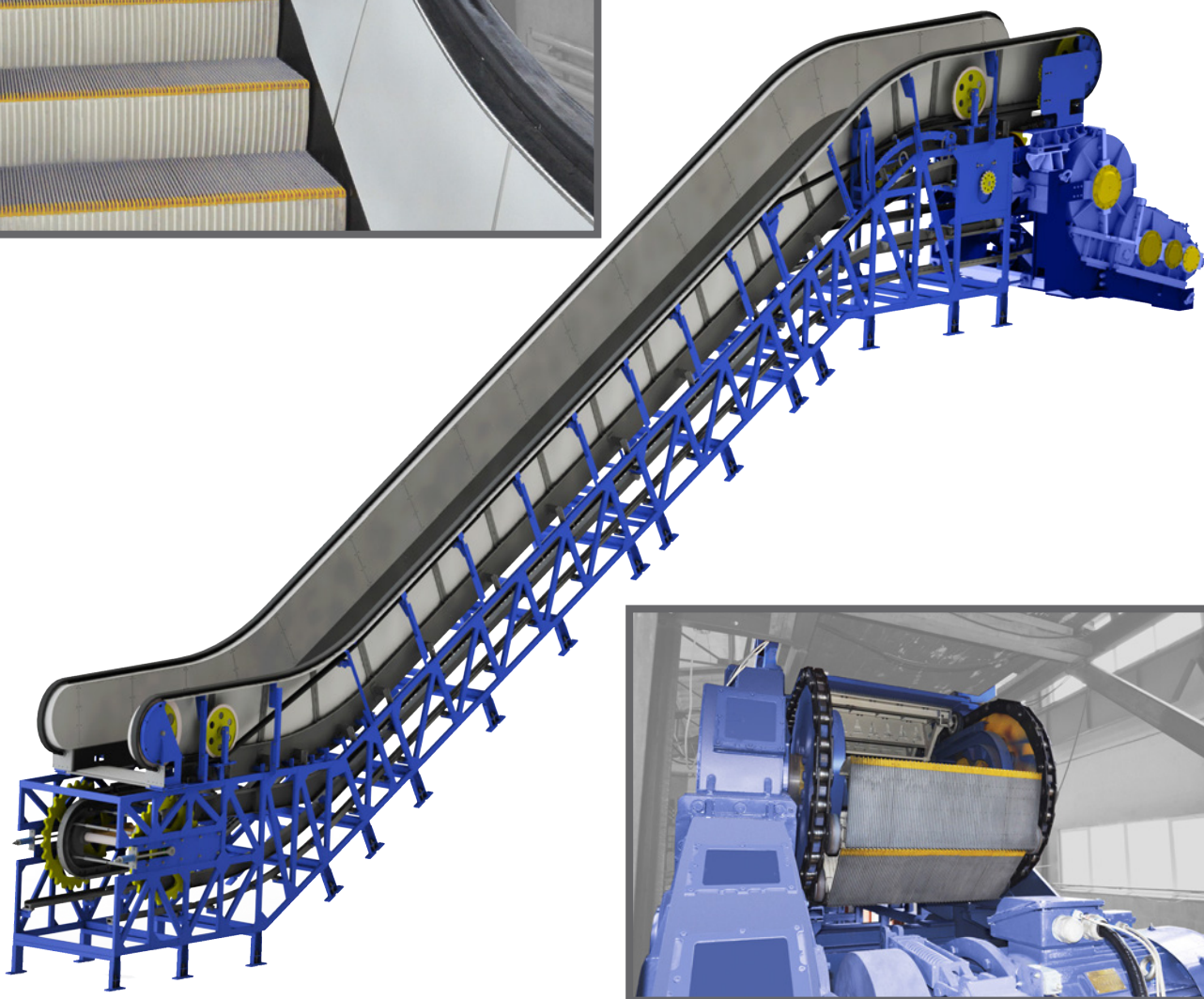
Worm gearbox

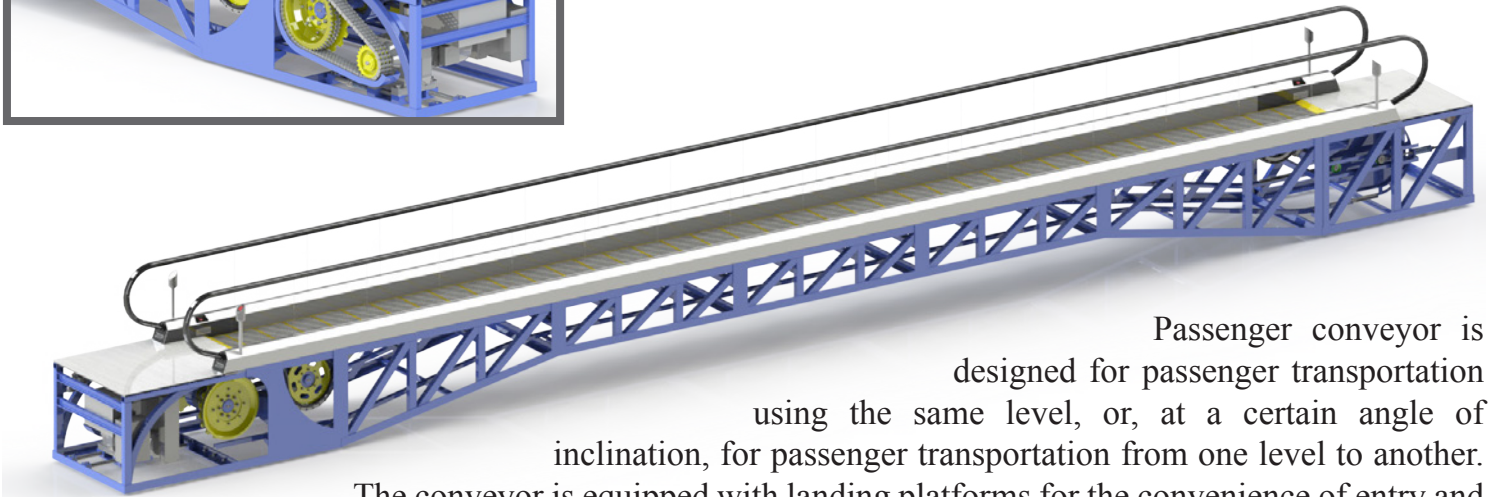
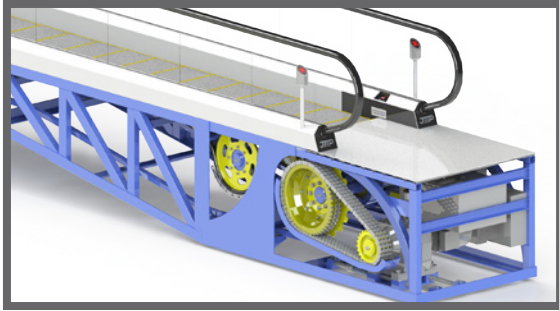


Escalator EBT-1 is designed for mass movement of passengers from one level to another on subway stations in altitude range from 3 to 25 meters.



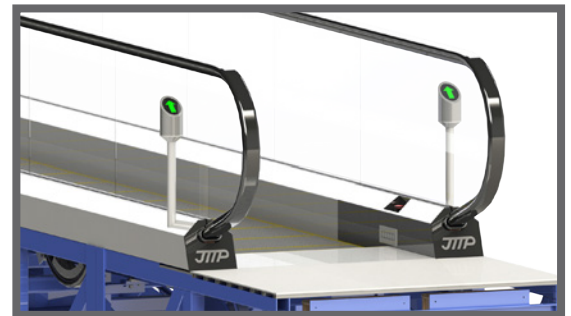
Specifications	
Hoisting height, m	15-25
Track angle of hade to the horizon, deg.	30
Track travel speed from the main drive (working speed), m/s	0,75
Drive power, max, kW	55
Transportation capacity, man/h, max	10125
Width of track step decking, mm	1003
Track nominal travel speed (maintenance speed), m/s	0,4
Volume level on the escalator track, dBA, max	70





Passenger conveyor is designed for passenger transportation using the same level, or, at a certain angle of inclination, for passenger transportation from one level to another.

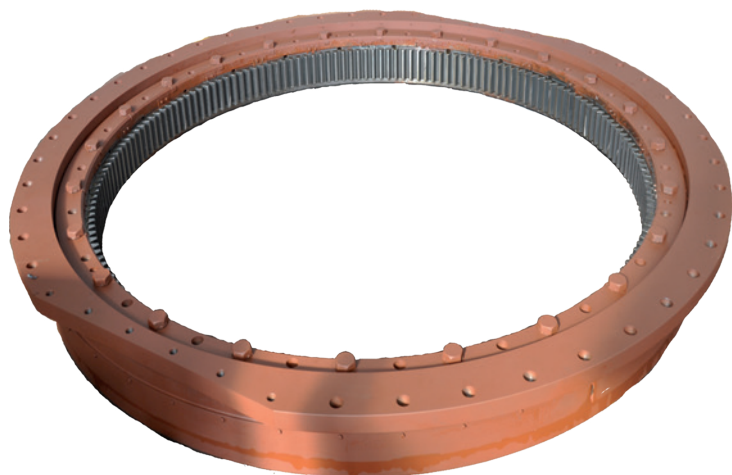
The conveyor is equipped with landing platforms for the convenience of entry and exit of passengers. In order to avoid emergency situations in the conveyor construction are provided interlocks, limit switches, which follow-up devices are input into electrical circuit. The passenger conveyor is designed for heavy-duty cycle and can be installed at underground stations, railway stations, airports, large exhibition complexes and other places with high passenger traffic flow. Passenger conveyor balustrade can be manufactured in two versions: with glazing and with shields from stainless steel (anti-vandal).



Specifications		
Conveyor type	KPB-02M	KPB-03M KPB-04M
Travel distance, m	from 5 to 150	-
Travel height, m	-	до 8,5
Cloth angle of inclination to the horizon, deg.	0	до 12
Cloth travel speed from the main drive (working speed), m/s:		
- minimum	0,50	
- maximum	0,75	
Drive power, kW	from 7,5 to 25	
Transportation capacity, man/h:		
- at minimum working speed	7040	
- at maximum working speed	8910	
Cloth decking width, mm	1003	
Nominal cloth travel speed (maintenance speed), m/s	0,04	
Sound level on the conveyor cloth, dBA, max	70	
Operational life, years	50	



Swing bearings are designed for load transfer from the platform carriage assembly to the no-turn (carrier) machine part and enable the rotating frame to rotate clear about the carrier.



Specifications		
Device type	bearing	
Maximum load, kN	400	1000
Boom-out at maximum load, m	15	6,5
Carriage assembly turning speed in relation to no-turn machine part, r/min, max	16	0,4
Dimensional specifications, mm:		
- outside diameter	2256	3395
- height	180	300
Weight, kg	1350	4220

It is possible to manufacture supporting and turning arrangements up to 12 meters in diameter.



Lifting platform serves as a bridge plate and it is used for driving of the loader from ramp into vehicle during car unloading in the service bay.



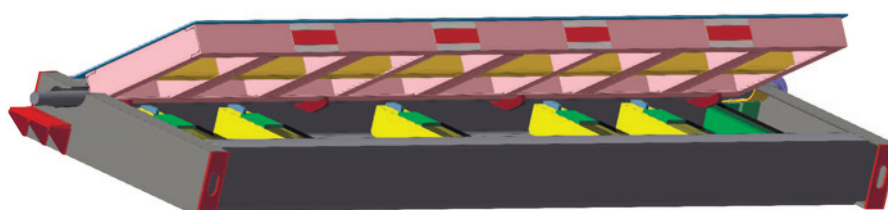
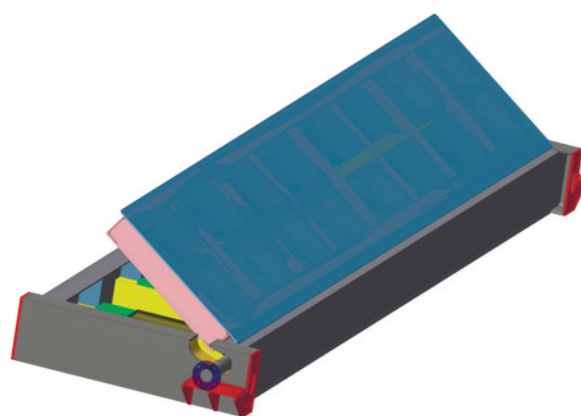
Specifications	
Device type	fixed with hydraulic drive
Detained lo weight in operative position, t	5
Operative range, mm	0...1250
Fixed load weight on the platform during lifting and lowering (with loader), t	3
Dimensional specifications, mm	3700×3520
Electric drive power, kW	15
Weight, t	3,47



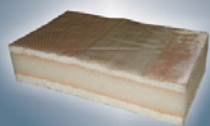
Forced stop device is designed to prevent the unauthorized driving of vehicles from border crossing points and provides driving line overlap.



Specifications	
Front bar hoisting height, mm, min	360
Blocked-out area width, m	3
Passing transport axis load, t, max	20
Opening time (bringing the forced stop device into position "OPEN", s, max	5
Working temperature, °C	from -30 to +60
Weight of ready-assembled forced stop device, kg, max	820



IZOMAT-2PPS

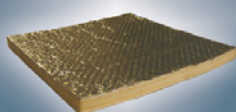


Composite materials have unique heat and sound insulating properties. These materials allow reducing the noise level to sanitary standards. Application: heat and sound insulation of passenger compartments, cabins, units and assemblies of cars, production facilities and welfare spaces.

IZOMAT-1PPF



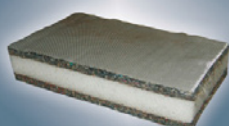
IZOMAT-2PPF(P)



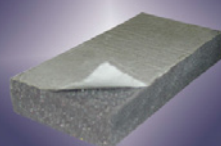
IZOMAT-2PPF



IZOMAT-2PPS-2



IZOMAT-P40(K)



SIPR-2S



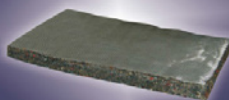
IZOMAT-2PP



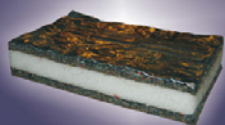
SIPR-2F



SIPR-2S2



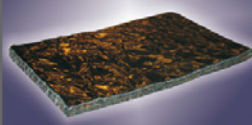
IZOMAT-2PPF-2



SIPR-1FS

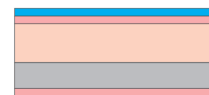


SIPR-2F2

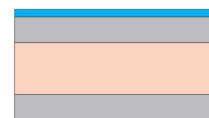
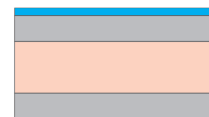


Heat and sound insulating materials

IZOMAT-1PPF



IZOMAT-2PPF

IZOMAT-2PPF(P)  
perforated

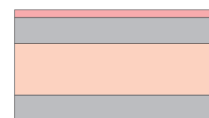
IZOMAT-2PPF-2



IZOMAT-2PP



IZOMAT-2PPS



IZOMAT-2PPS-2

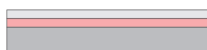


IZOMAT-P40(K)

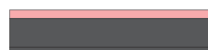


Materials conventions

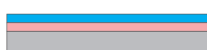
SIPR-1MS



SIPR-2S2



SIPR-1FS



SIPR-2F



SIPR-2S



SIPR-2F2



Aluminum foil

Silica material

Foamed polyurethane

Needle-punched fabric

Needle-punched fabric

Self-adhesive seal

Metalized film

Antinoise module cabin is designed for use as a room protecting workers from harmful noise, dust, vibration and high/low temperature.

The customer determines the dimensional specifications.

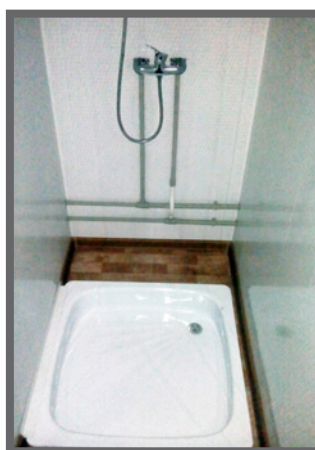
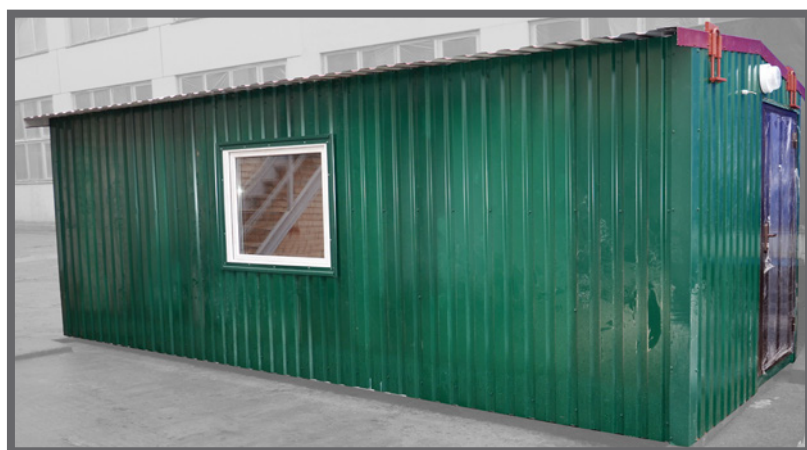
Specifications	
Sound level in the cabin, max, dBA	75
at sound level in the work shop, dBA	97
Vibration level in the cabin, max, dB	42
at vibration level of floor structure, where the cabin is installed, dB	58
Dimensional specifications:	
- length, m	4,0
- width, m	3,0
- height, m	2,5



## PORTACABIN

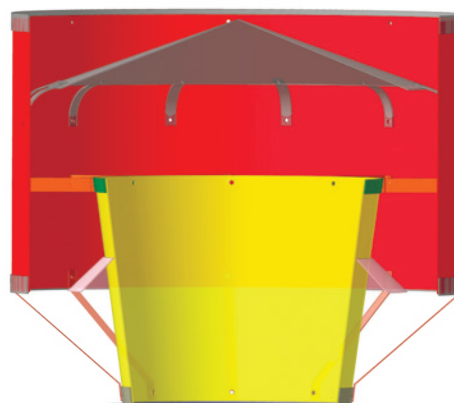
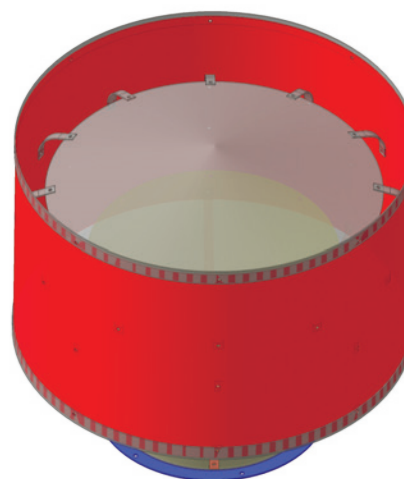
Portacabin is designed for the use as dwelling room or a space of household purposes.

The customer determines the dimensional specifications.



Deflectors are designed to provide natural ventilation of premises in processing plant departments.

Operating environment - aggressive steam-gas-air mixtures, atmospherical condensation. Environment temperature is from  $-400\text{ }^{\circ}\text{C}$  to  $+500\text{ }^{\circ}\text{C}$ . Deflector material includes non-flammable fiberglass (glass fabric sized by polyester resin) and flame-retardant material that is resistant to chemical wear and UV radiation.

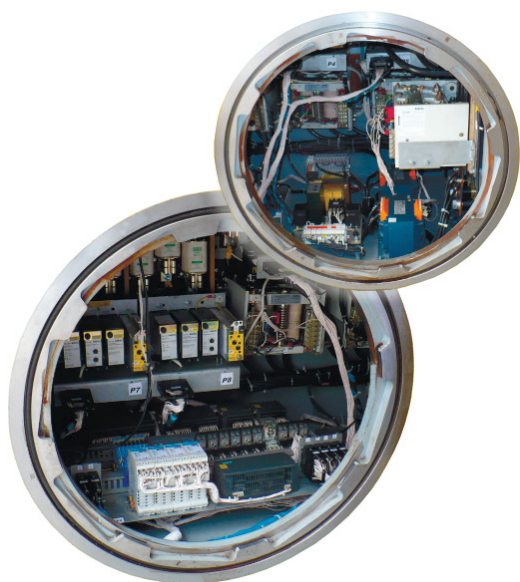


Specifications			
Type	Diameter, mm	Height, mm	Weight, kg
T22	1260	1083	51,9
T23	1600	1368	74,5
T24	2000	1708	107
T25	2500	2133	153,5

The compact micro processing station is designed for control of squirrel-cage motors, which are located on the road heading machines PKS-8M, PKS-8 MK1, PKS-8-2B/3,2, PKS-8-2B and KRP-3-660/1140.

This station has PB Exdial explosion-proof design.

Compact micro processing station is built on the base of Siemens SIPLUS S7-200 industrial controller using start-control equipment of Bartec company.



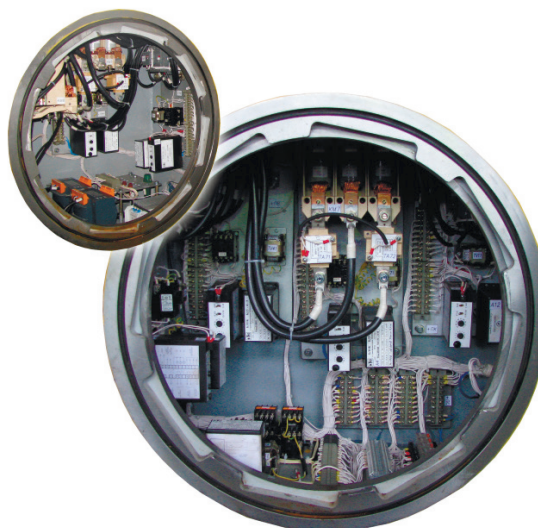
Specifications	
System nominal voltage, V	660/1140
Power frequency, Hz	50
Maximum total load current, A	500
Tap-off output capability of 36V, A	17,5
Intrinsically safe circuit voltage, V	5,36; 24
Light circuit voltage, V	36
Operating regime:	
- continuous;	
- intermittent continuous.	
Dimensional specifications:	
- length, mm	1890
- width, mm	850
- height, mm	1120
Weight, kg, max	1300
Protection level	IP 54
Climatic version in accordance with GOST 15150-69	UHL5

The explosion-proof control station is designed for control of squirrel-cage motors, which are located on the selective heading machines of and types 4PP-2SM KID-220.

This station has PB Exdial explosion-proof design and can be used in gas- (methane) and dust-hazardous mines.



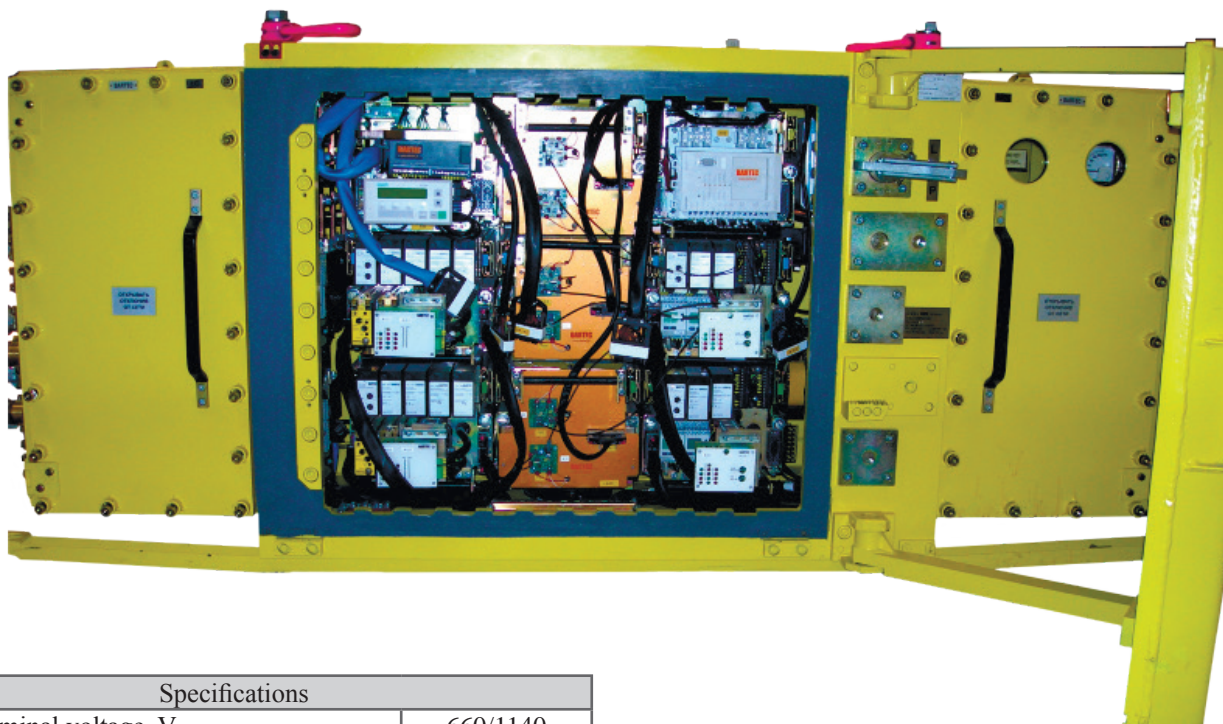
Specifications	
System nominal voltage, V	660/1140
Power frequency, Hz	50
Maximum total load current, A	400
Intrinsically safe circuit voltage, V	18; 24
Light circuit voltage, V	36
Tap-off output capability 36V, A	17,5
Operating regime:	
- continuous;	
- intermittent continuous.	
Dimensional specifications:	
- length, mm	1990
- width, mm	760
- height, mm	1100
Weight, kg, max	1330
Protection level	IP 54
Climatic version in accordance with GOST 15150-69	U5



The station is designed for remote stepless start control and stop control of squirrel-cage motors, which are operated in three-phase networks with insulated transformer neutral with 660V voltage, 1140 V in gas-(methane) and dust-hazardous mines.

This station has PB Exdiaibml explosion-proof design.

Compact station with cushion start is built on the base of Siemens SIPLUS S7-200 industrial controller using start-control equipment of Bartec company and cushion start control system of Siemens company.



Specifications	
System nominal voltage, V	660/1140
Power frequency, Hz	50
Maximum amount of rated load currents, A:	
- with thyristor start	500
- without thyristor start	500
Tap-off number, pcs.:	
- with thyristor start	4
- without thyristor start	4
Auxiliary tap-off voltage, V	42
Load capacity of auxiliary tap-off, A	4
Operating regime:	
- continuous;	
- intermittent continuous	
Dimensional specifications, mm, max:	
- length, mm	2420
- width, mm	790
- height, mm	1060
Weight, kg, max	1800
Protection level	IP 54
Climatic version in accordance with GOST 15150-69	U5



The station is designed for remote stepless start control and stop control of squirrel-cage motors in gas-(methane) and coal dust-hazardous mines and outdoor facilities.

This station has PB Exdial explosion-proof design.

Universal micro processing compact station is built on the base of Siemens SIPLUS S7-200 industrial controller using start-control equipment of Bartec and Siemens companies.



Specifications	
System nominal voltage, V	380
Power frequency, Hz	50
Maximum total load current, A	500
Number of intrinsically safe digital inputs/outputs, pcs.	67/19
Number of intrinsically safe analog inputs/outputs 4...20 mA, pcs.	4/2
Maximum voltage of intrinsically safe control circuits, V	12
Number of intrinsically safe analog inputs for connection of magnetic induction detectors, pcs.	4
Operating regime: - continuous; - intermittent continuous	
Dimensional specifications, mm, max:	
- length, mm	2600
- width, mm	770
- height, mm	940
Weight, kg, max	2300
Protection level	IP 54

Starters are designed for direct start remote control and self-rundown stop of three-phase squirrel-cage motors, which are operated in three-phase AC networks with insulated transformer neutral in gas- (methane) and coal dust-hazardous mines, as well as for protection from short-circuit currents and overload of outgoing power circuits.

Starters have explosion-proof design with explosion protection mode “flame-proof enclosure” with intrinsically safe output circuits.

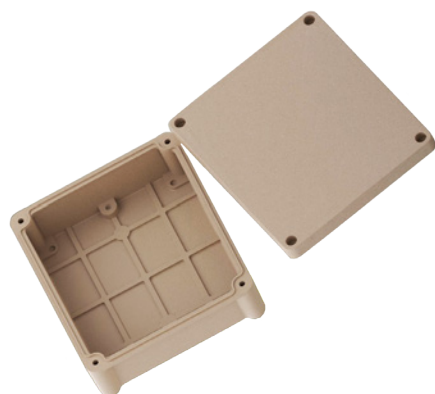


Specifications	
System nominal voltage, V	660/1140
Power frequency, Hz	50
Nominal continuous mode current, A - PVT-250-2	2×125
Transit load current, A	63
Breaking capacity (effective value), kA	3,75
Auxiliary tap-off voltage, V	36
Load capacity of auxiliary tap-off, A	до 5
Intrinsically safe control circuits voltage, V	18
Prestored values of precheck and continuous control of auxiliary tap-off, kOhm	3,3
Dimensional specifications, max:	
- length, mm	2600
- width, mm	770
- height, mm	940
Weight, kg, max	2300
Protection level	IP 54
Climatic version	U5



Junction boxes KSU-10, KSU-25, KSU-50 are designed to protect mounted (embedded) inside devices, terminal clamps or connecting devices, wires and/or cables from external actions and for protection from contact with conducting parts.

Junction boxes KSU (RN2)-10, KSU (RN2)-25, KSU (RN2)-50 are designed for underground application where is allowed using of electrical equipment in RN2 design.



Specifications			
Box type	KSU-10 (KSU (RN2)-10)	KSU-25 (KSU (RN2)-25)	KSU-50 (KSU (RN2)-50)
Nominal voltage of electric circuits in the box, V: - alternating - constant	660 (42) 1000 (60)		
Power frequency, Hz	50 and 60		
Maximum acceptable current of electric circuits in the box, A	100 (10)		
Isolation material	polyester premix		
Working temperature, °C	-60 ... +40 (UHL2*) (-10 ... +35 (UHL5*))		
Dimensional specifications mm, max:			
- length	160	250	500
- width	140	216	250
- height	80	90	110
Protection level			
Weight, kg, max	0,9	1,3	2,8
* climatic version in accordance with GOST 15150-69			

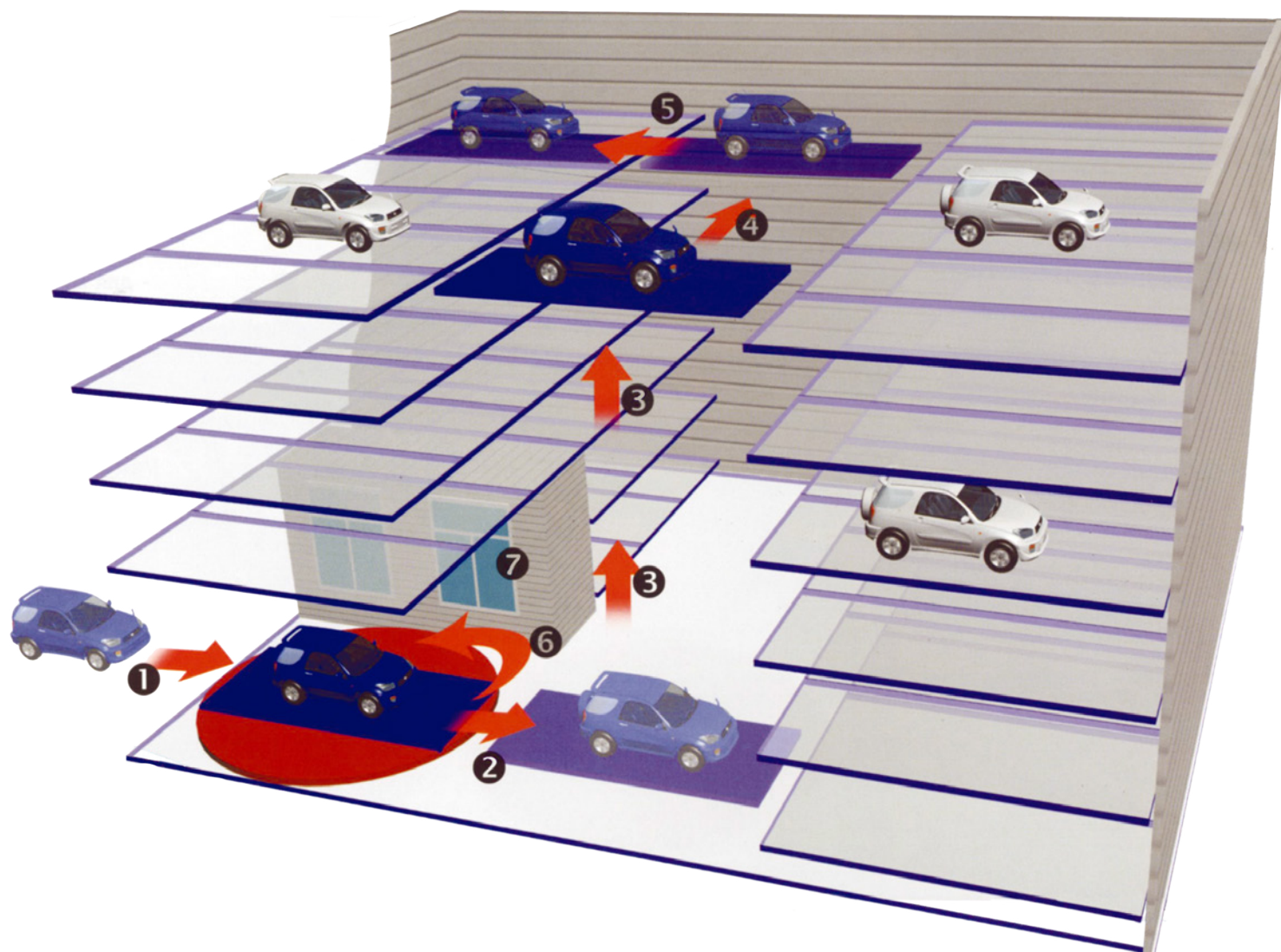
## BUSHING INSULATORS

Insulators IP-M12-1140 and IP-M20-1140 are designed for isolation and fixing of conducting parts, as well as for transmission of electrical energy between chambers of explosion-proof enclosures of explosion-proof equipment with the AC voltage up to 1140 V and the frequency of 50 Hz.



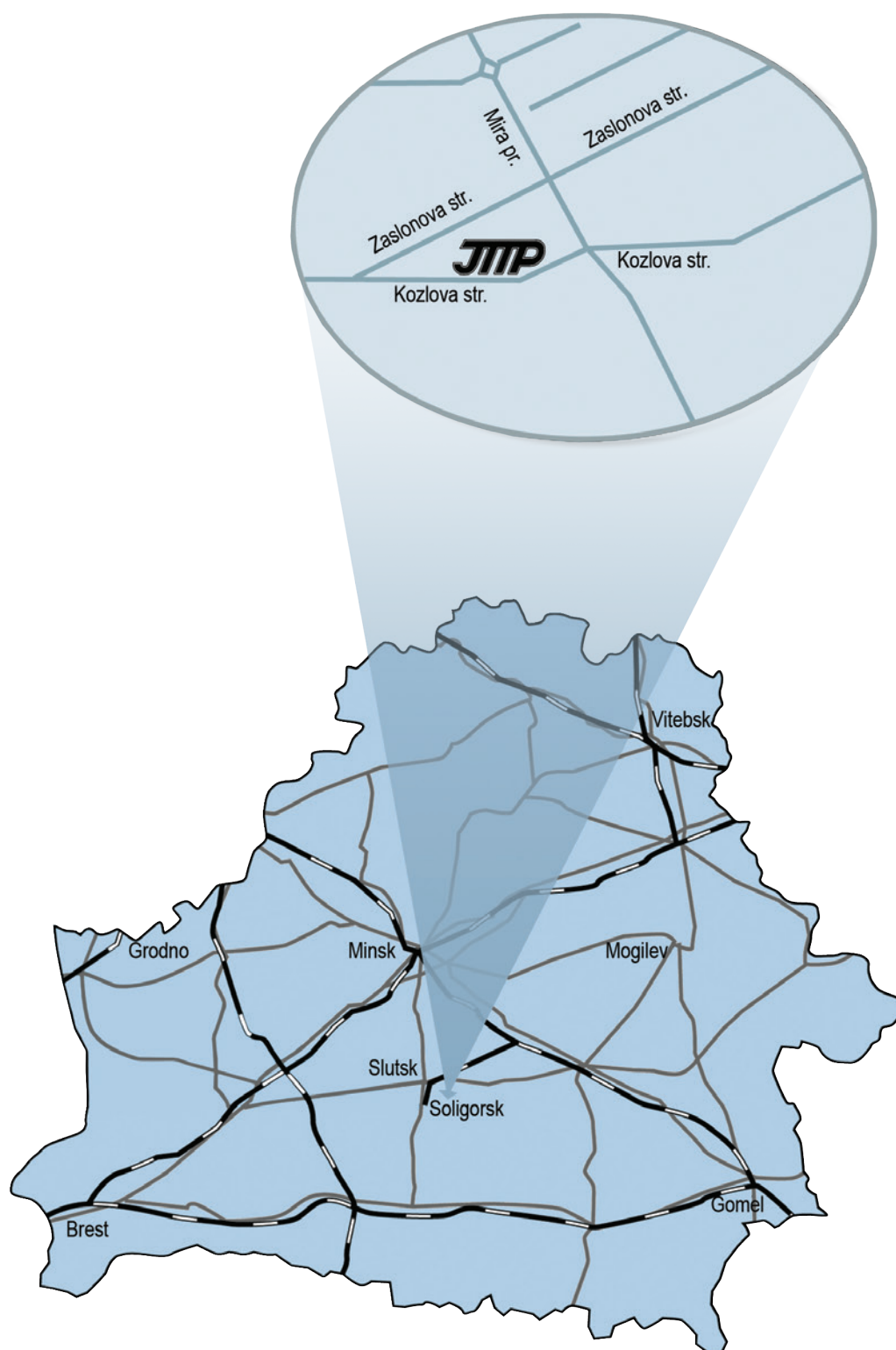
Specifications		
Insulator type	IP-M12-1140	IP-M20-1140
Nominal working voltage, V	1140	
Power frequency, Hz	50	
Nominal current, A	320	63
Insulation resistance in normal climatic conditions, MOhm, min	8	
Rotational torque, N*m, min	25	85
Leakage path, mm, min	32	
Insulation material	polyester premix	
Dimensional specifications, mm, max:		
- length	131	126
- diameter (max)	45	54
Working temperature, °C	-20 ... +40	
Placement category according to GOST 15150-69	5,1	
Weight, kg, max	0,35	0,73

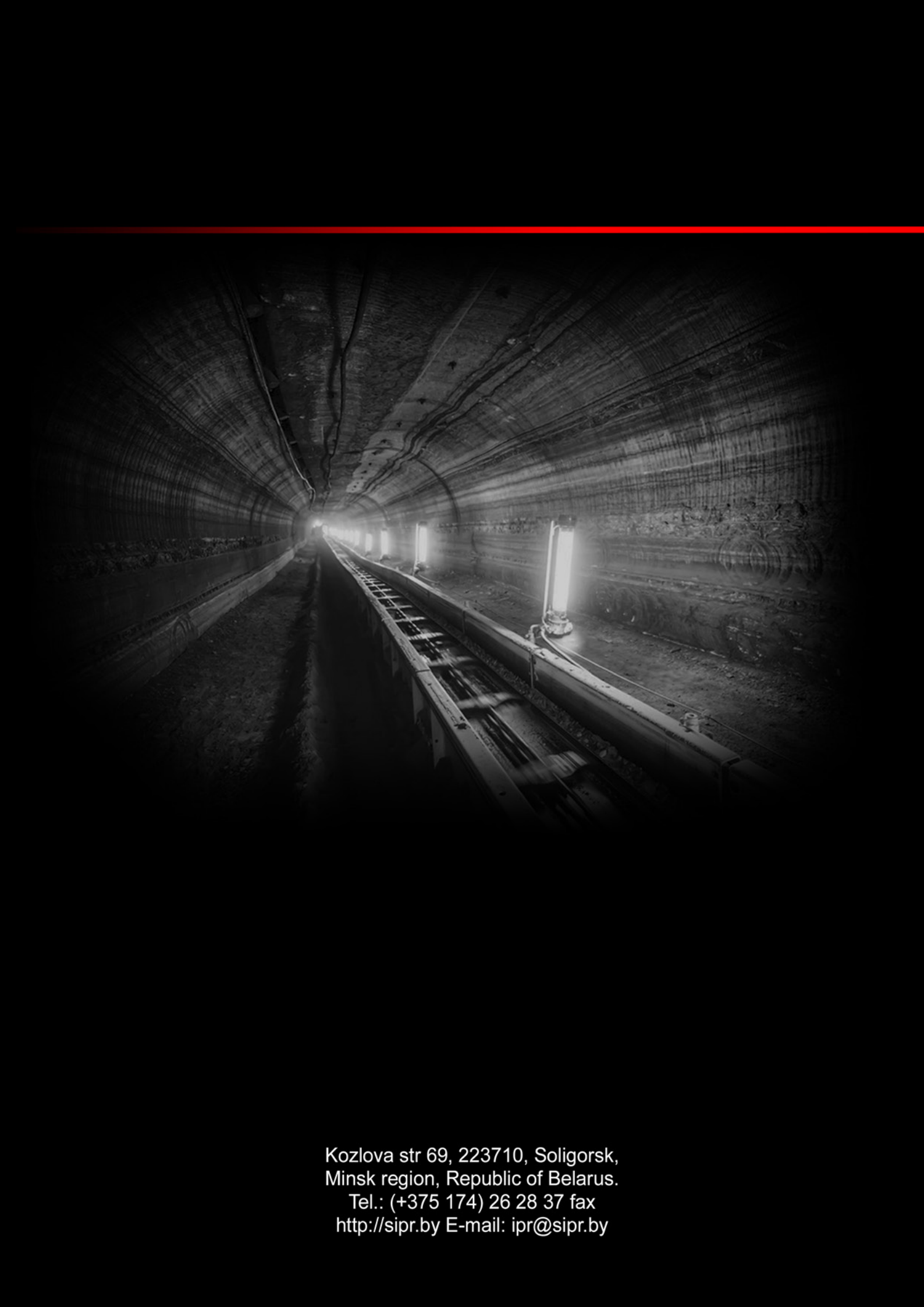
Automated car-park is multi-level automobile parking, operated in manual or automatic mode. This parking is designed for light vehicles, where size control, weight of the parked cars, correct automobile placing on the pallet and putting the pallet in the storage sell are provided.



Specifications	
Lifting speed, m/s	0,5
Platform rotation angle, deg.	360
Max dimensional specifications of the parked cars:	
- length, m	5,05
- width, m	2,17 (on the mirrors) 2,25)
- height, m	2
Maximum car weight, kg	2300
Winch sound power level, dBA	79

- ① - driving on the pallet and exit of people
- ② - driving on the elevator shaft
- ③ - vertical positioning
- ④ - horizontal positioning
- ⑤ - putting the pallet in the storage sell
- ⑥ - rotating platform
- ⑦ - operator's place





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