СТМ
SINARA TRANSPORT MACHINES

Ural Locomotives

WE ARE CREATING THE NEW–

CREATING THE FUTURE!

ELECTRIC LOCOMOTIVE BUILDING

LLC URAL LOCOMOTIVES (VERKHNYAYA PYSHMA, SVERDLOVSK REGION)

- LLC Ural Locomotives is a joint venture of Sinara Group and Siemens AG, established in 2010 for partnership in rolling-stock manufacturing.
The company manufactures DC main-line electric locomotives 2ES6, 2ES10, AC main-line electric locomotives 2ES7 and state-of-the-art electric trains “Lastochka” for OJSC Russian Railways, state railway administrations of CIS counties and private operators.
- Annual output – 150 modern two-unit main-line electric locomotives and 250 rail cars for EMU’s.
- Personnel – 3,270 people.
- Production development investments – 16 billion rubles.
- The plant is certified per standard ISO 9001:2000 of the International Quality Management System and International Railway Industry Standard (IRIS).
- Promising products: DC two-unit main-line electric locomotive 2ES10 with asynchronous tractive motors, AC two-unit main-line electric locomotive 2ES7, passenger electric train “Lastochka”.
- The company's share in the RF market of DC main-line electric locomotives is over 90% (the share in the RF market of general main-line electric locomotives is 40%).

2ES6

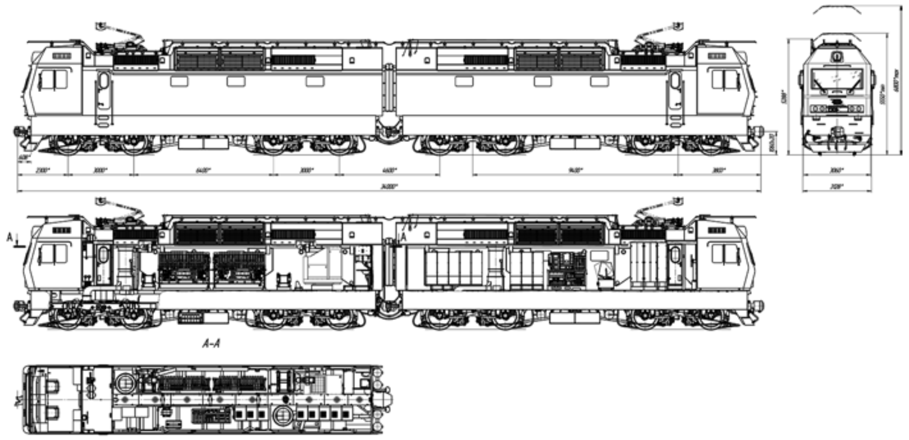
DC ELECTRIC FREIGHT LOCOMOTIVE

DESCRIPTION

Electric freight two-unit locomotive 2ES6 is intended for freight train haulage on 1,520-mm gage 3 kV DC railways.
It is capable of handling 8,000 t trains on level sections of the track (up to 6‰) and 5,000 t trains on mountainous sections (up to 10‰).

ADVANTAGES

- The electric locomotive is capable of multiple-unit working and single sections can work in autonomous mode.
- Its design incorporates the first successful application of independent excitation of tractive motors, which improved the process of tractive power realization.
- The microprocessor control and diagnostic system (MCDS), operating all locomotive equipment, enables improvement of general design reliability and avoidance of human errors.
- MCDS incorporates automatic operation functions with a capability of control transfer to operators of remote stationary control centres, diagnostics, data transfer via process radio channels, registration of parameters, GPS/GLONASS positioning.
- The BLOCK system ensures safe railway operation.
- Working conditions of locomotive crews have been improved.



SPECIFICATIONS

Parameters	Values
Type	Freight
Kind of current	Direct
Tractive motor suspension	overhung-axle
Rated voltage on current collector, kV	3
Rail gage, mm	1,520
Wheel arrangement	2 (2o-2o)
Design speed, km/h	120
Static axle load, kN	249
Adhesive weight with 0.7 sand capacity, t	200±2
Locomotive length over coupler pulling faces, mm, not more than	34,000
One-hour rating on traction-motor shafts, kW	6,440
One-hour rating tractive power, kN	464
Continuous rating on traction-motor shafts, kW	6,000
Continuous rating tractive power, kN	418
Regenerative brake rating on traction-motor shafts, kW	6,400
Electric dynamic brake rating, kW	5,500
New wheel tread diameter, mm	1,250
Continuous rating efficiency, %	92
Service life, years	40

2ES10

DC ELECTRIC FREIGHT LOCOMOTIVE

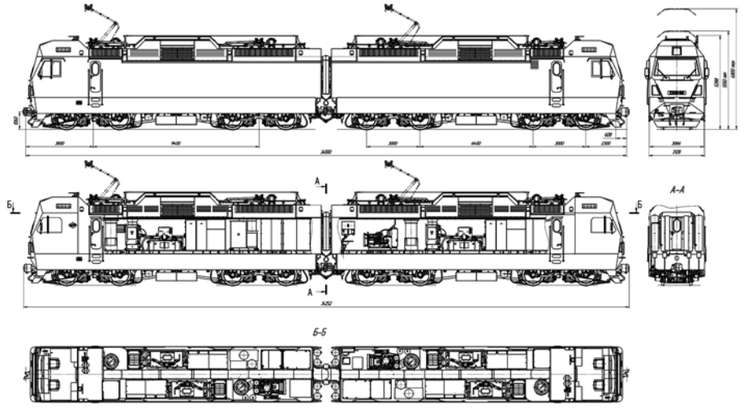
DESCRIPTION

Electric freight two-unit locomotive 2ES10 with asynchronous tractive motor is intended for freight train haulage on 1,520-mm gage 3 kV DC railways. It is capable of handling 9,000 t trains on level sections of the track (up to 6‰) and 6,300 t trains on mountainous sections (up to 10‰).

ADVANTAGES

- To increase the haulage capacity of freight electric locomotives 2ES10 a booster section has been designed to handle extra heavy trains on very complicated sections of railway tracks.
- The electric locomotive is capable of multiple-unit working and single sections can work in autonomous mode.
- The integrated asynchronous tractive drive by SIEMENS with axle torque control based on traction converters with IGBT solid-state modules enables high tractive force realization.
- MCDS incorporates automatic operation functions with a capability of control transfer to operators of remote stationary control centres, diagnostics, data transfer via process radio channels, registration of parameters, GPS/GLONASS positioning.
- The BLOCK system ensures safe railway operation.
- The modular cab of new design with improved ergonomic and hygienic parameters.
- High serviceability due to modular arrangement of equipment.
- Runs between repairs have been increased fivefold (as compared with collector-driven locomotives).
- Rated power consumption for train haulage has been reduced by 8–10% (as compared with collector-driven locomotives).

СЕРТИФИКАТ СООТВЕТСТВИЯ



SPECIFICATIONS

Parameters	2ES10	2ES10 with a booster section
Type	Freight	Freight
Kind of current	Direct	Direct
Tractive motor suspension	overhung-axle	overhung-axle
Rated voltage on current collector, kV	3	3
Rail gage, mm	1,520	1,520
Wheel arrangement	2 (2o-2o)	3 (2o-2o)
Design speed, km/h	120	120
Static axle load, kN	249	249
Adhesive weight with 0.7 sand capacity, t	200±2	300±3
Maximum power on traction-motor shafts, kW	8,800	13,200
Maximum starting traction, kN	784	1,176
Continuous rating on traction-motor shafts, kW	8,400	12,600
Continuous rating tractive power at 55 km/h, kN	538	807
Continuous rating tractive power at 80 km/h, kN	370	555
Maximum tractive power at 120 km/h, kN	236	354
Regenerative brake rating on traction-motor shafts, kW	8,400	12,600
Electric dynamic brake rating, kW	5,600	8,400
New wheel tread diameter, mm	1,250	1,250
Continuous rating efficiency, %	89	89
Service life, years	40	40

2ES7

AC ELECTRIC FREIGHT LOCOMOTIVE

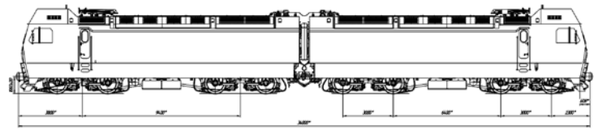
DESCRIPTION

Electric freight two-unit locomotive 2ES7 with asynchronous tractive motors is intended for freight train haulage on 1,520-mm gage 25 kV AC railways. It is capable of handling 9,000 t trains on level sections of the track (up to 6‰) and 6,300 t trains on mountainous sections (up to 10‰).

ADVANTAGES

- The electric locomotive is capable of multiple-unit working and single sections can work in autonomous mode.
- The integrated asynchronous tractive drive by SIEMENS with axle torque control based on traction converters with IGBT solid-state modules enables high tractive force realization.
- MCDS incorporates automatic operation functions with a capability of control transfer to operators of remote stationary control centres, diagnostics, data transfer via process radio channels, registration of parameters, GPS/GLONASS positioning.
- The BLOCK system ensures safe railway operation.
- The modular cab of new design with improved ergonomic and hygienic parameters.
- High serviceability due to modular arrangement of equipment.
- Runs between repairs have been increased fivefold (as compared with collector-driven locomotives).
- Rated power consumption for train haulage has been reduced by 15–20% (as compared with collector-driven locomotives).

СЕРТИФИКАТ СООТВЕТСТВИЯ



SPECIFICATIONS

Parameters	Values
Type	Freight
Kind of current	Alternating
Tractive motor suspension	overhung-axle
Rated voltage on current collector, kV	25
Rail gage, mm	1,520
Wheel arrangement	2 (2o-2o)
Design speed, km/h	120
Static axle load, kN	249
Adhesive weight with 0.7 sand capacity, t	200±2
Maximum power on traction-motor shafts, kW	8,800
Maximum starting traction, kN	784
Continuous rating on traction-motor shafts, kW	8,400
Continuous rating tractive power at 55 km/h, kN	538
Continuous rating tractive power at 80 km/h, kN	370
Maximum tractive power at 120 km/h, kN	247
Regenerative brake rating on traction-motor shafts, kW	8,400
Power factor at loads equal to 25% of continuous raing	> 0.95
New wheel tread diameter, mm	1,250
Continuous rating efficiency, %	88
Service life, years	40

ES2G

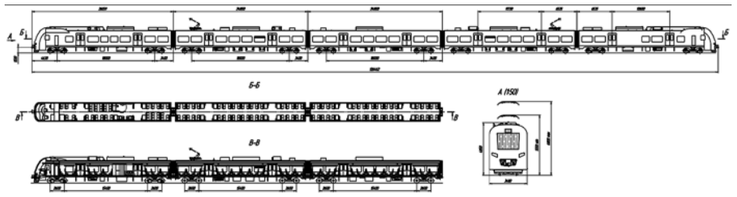
HIGH-SPEED ELECTRIC TRAIN "LASTOCHKA"

DESCRIPTION

Electric train ES2G “Lastochka” with asynchronous tractive motors is designed for passenger transportation on 1,520-mm gage railways. Electric train “Lastochka” is a solution for municipal, suburban and regional services.

ADVANTAGES

- The electric train has been designed and manufactured according to the latest ergonomic and safety standards.
- The electric train is equipped with a smart train control system, an automatic operation system, a video surveillance system.
- All passenger compartments are provided with heat-insulated panoramic windows. Vast multifunctional zones in the passenger compartment provide enough space for wheel-chairs and oversized baggage.
- The electric train is equipped with modern WC units with special equipment for disabled people.
- Heavy-duty and reliable climatic equipment creates comfortable environment.
- The passive safety system protects the passengers and personnel in unlikely emergency situations.
- Inter-car gangway doors are made as two-folding fire-protective doors. They have appropriate frames, fire-resistant glazing and suitable sealing.
- A light-weight construction of car bodies made of extruded aluminum shapes and the air-suspended underframe ensure energy efficiency and high level of comfort at any speed.
- Due to application of the latest engineering solutions, particularly the asynchronous tractive drive, the labor intensity for maintenance is lower and repair intervals are longer.
- Flexibility of the internal arrangement enables optimal adaptation of the electric train to various operating conditions.



MODIFICATIONS UNDER DEVELOPMENT:

- Electric train of ES2G “Standard” type is intended for passenger transportation at heavy passenger traffic routes with a turnaround length of 60 km.
- Electric train of ES2G “Premium” enhanced comfort type is intended for passenger transportation in suburban areas with a turnaround length of 200 km.
- Twin-system electric train of EM type is intended for passenger transportation on intercity routes with a turnaround length of 700 km.

SPECIFICATIONS

Parameters	Values		
	ES2G “Standard”	ES2G “Premium”	EM
Kind of current	Direct	Direct	Direct/ alternating
Voltage, kV	3	3	3/25 (50 Hz)
Design speed, km/h	160	160	160
Turnaround length, km	60	200	700
Basic number of cars	5	5	10
Wheel input power of an electric train with basic number of cars, kW	2,932	2,932	5,865
Tractive power of an electric train with basic number of cars, kN	280	280	560
Maximum longitudinal profile grade, ‰	30	30	30
Maximum axle load, kN	200	200	200
Train length with basic number of cars, m, not more than	130	130	255
Car width, mm	3,480	3,480	3,480
Passenger capacity of a train with basic number of cars	1,390	328	710
Number of seats	368	326	708
Standing room capacity	1,000	-	-
Number of hinged seats	18	-	-
Number of wheelchair accommodations	4	2	2
Working air temperature range, °C	-40 to +40	-40 to +40	-40 to +40
Service life, years	40	40	40

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