

▶ **INTELLIGENT CONTROL SYSTEM**

Our microcomputer network control system is designed to international standards. The modular technology allows the system to be continuously built upon and upgraded. Features include intelligent control, information display, fault diagnosis, monitoring, recording, overhaul and maintenance.

▶ **A RANGE OF PRODUCTS TO MEET DIFFERENT REQUIREMENTS**

Our range of locomotive products can meet different axle arrangements (maximum axle power is 1,600kW and maximum axle weight is 30t).

▶ **MATURE TECHNOLOGY**

Applied technologies meet IEC61375 and UIC556 standards and include: modular system integration, bogie with good dynamic performance, high-strength carbody welding, single-axle independent control converter and network communication technology.

▶ **HIGH RELIABILITY**

An onboard safety protection system facilitates communication between the locomotive and ground traffic control. The safety protection system and ground control communicate through a CMD system, which improves traffic safety, speed and reliability. Onboard safety and reliability is also improved by a fire extinguishing system.

▶ **MINIMAL LCC**

Using LCCA analysis at every stage of development has enabled us to minimize LCC and optimize manufacture, maintenance and fault repair.



WORKING WITH YOU TO  
CONNECT THE WORLD



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**HIGH-POWER AC ELECTRIC FREIGHT LOCOMOTIVE**

The ideal solution for heavy-haul and freight transport



**OVERVIEW**

CRRC's range of high-power electric locomotives feature advanced and mature technologies, which allow our products to be modular and interoperable in order to meet a wide variety of freight transportation requirements. We supply solutions for different operating environments, power supply modes, track gauges, axle arrangements, axle loads and axle powers.



**MAIN FEATURES**

▶ **ENVIRONMENTAL ADAPTABILITY**

Our locomotives can operate in ambient temperatures up to 40 °C, and thanks to our cold-weather design, as low as -40 °C.

▶ **BROAD CAPACITY**

The modularity of our locomotives means that different combinations of axle arrangement, axle load and axle power can be created in order to suit varying capacity and speed requirements, for instance for express freight, regular freight or heavy-load transportation.

▶ **ENERGY SAVING AND ENVIRONMENTAL PROTECTION**

Regenerative braking allows energy to be fed back to the power grid and decreases brake wear.





## KEY TECHNICAL PARAMETERS OF THE LOCOMOTIVE

### ► BK1-1 ELECTRIC FREIGHT LOCOMOTIVE

CRRC's BK1-1 electric freight locomotive is a broad gauge, cold-weather, eight-axle, AC electric freight locomotive developed for the European market. The locomotive was specifically designed to meet the domestic transport requirements of Belarus, and meets all necessary gosudarstvennyy standards (GOST).

Current system	25kV/50Hz
Track gauge	1,520 mm
Axle arrangement	2×(Bo-Bo)
Locomotive weight	2×100t
Axle load	25t
Wheel diameter	1,250 mm
Width	3,000 mm
Distance between bogie centers	10,060 mm
Wheel-base	2,600 mm
Traction power	9,600 kW
Regeneration braking power	9,600 kW
Regenerative running speed	120 km/h
Continuous speed	65km/h
Start tractive effort	760kN
Max.regenerative braking force	480kN

### ► BK1-2 ELECTRIC FREIGHT LOCOMOTIVE

Our BK1-2 electric locomotive is a six-axle, 7,200kW AC electric freight locomotive. It is based on our existing BK1-1 electric freight locomotive and designed to continue to meet Belarusian transportation needs.

Current system	25kV/50Hz
Track gauge	1,520 mm
Axle arrangement	Co-Co
Locomotive weight	150t
Axle load	25t
Wheel diameter	1,250 mm
Carbody width	3,000 mm
Distance between bogie centers	12,320 mm
Wheel-base	2,250+2,000 mm
Traction power	7,200 kW
Regeneration braking power	7,200 kW
Regenerative running speed	120 km/h
Continuous speed	65km/h
Start tractive effort	570kN
Max.regenerative braking force	400kN



### ► NEW HXD29 (1000) EIGHT-AXLE LOCOMOTIVE

Current system	25kV/50Hz
Track gauge	1,435 mm
Axle arrangement	2×(Bo-Bo)
Locomotive weight	2×100t
Axle load	25t
Wheel diameter	1,250 mm
Traction power	9,600 kW
Regeneration braking power	9,600 kW
Regenerative running speed	120 km/h
Continuous speed	62.4km/h
Start tractive effort	760kN
Max.regenerative braking force	510kN



### ► HXD2B LOCOMOTIVE

Current system	25kV/50Hz
Track gauge	1,435 mm
Axle arrangement	Co-Co
Locomotive weight	150t
Axle load	25t
Wheel diameter	1,250 mm
Traction power	9,600 kW
Regeneration braking power	9,600 kW
Regenerative running speed	120 km/h
Continuous speed	76km/h
Start tractive effort	584kN
Max.regenerative braking force	400kN

### ► HXD1F AND HXD2F HEAVY-LOAD ELECTRIC FREIGHT LOCOMOTIVE

CRRC's HXD1F and HXD2F heavy axle-load electric freight locomotives are a new generation product developed to meet the operational needs of the 30-ton axle-load Wa-Ri line in China.

Current system	25kV/50Hz
Track gauge	1435 mm
Axle arrangement	2(Bo-Bo)
Locomotive weight	2×120t/2×108t
Axle load	30t/27t
Wheel diameter	1,250 mm
Traction power	9,600 kW
Regeneration braking power	9,600 kW
Regenerative running speed	100 km/h
Continuous speed	50km/h/55km/h
Start tractive effort	910kN/820kN
Max.regenerative braking force	510kN



### ► XD1C LOCOMOTIVE

Axle arrangement	Co-Co
Axle load	25t
Track gauge	1,435 mm
Continuous traction power at wheel rim	7,200kW
Maximum operating speed	120km/h
Start tractive effort (half-worn wheels)	570kN
Continuous speed	65km/h
Continuous tractive force	400kN



### ► SHENHUA 12-AXLE LOCOMOTIVE

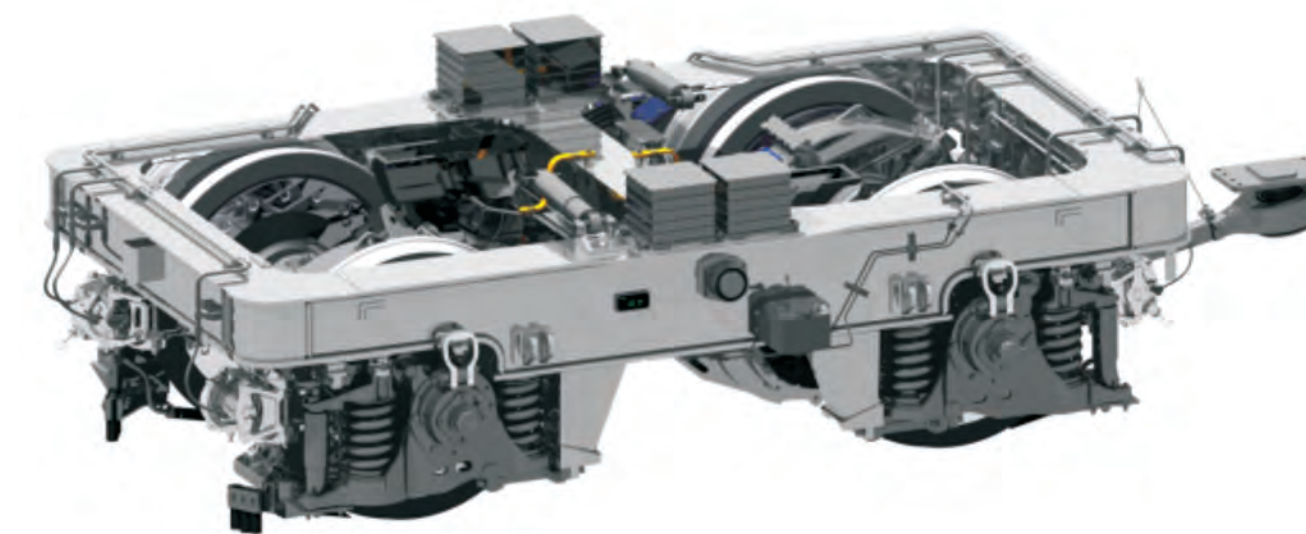
Axle arrangement	3(Bo-Bo)
Axle load	25t
Track gauge	1,435mm
Continuous traction power at wheel rim	14,400kW
Maximum operating speed	120 km/h
Start tractive effort (half-worn wheels)	1,140kN
Continuous speed	65km/h
Continuous tractive force	798kN

## INTERNATIONAL SALES AND APPLICATIONS

Nearly ten thousand of our AC electric freight locomotives are currently in operation in countries including China, South Africa, Belarus and Uzbekistan. They run under different conditions – from different track gauges to power supply modes and climatic environments – and have a total combined mileage that exceeds two billion kilometers.

Twelve of our BK1-1 electric freight locomotives were delivered to Belarus in September 2012. Since then, they have operated safely over a distance of more than 6,600,000 kilometers. As a result, Belarus has placed its second order with CRRC and eighteen of our BK1-2 electric freight locomotives will be delivered before 2017.

## KEY TECHNOLOGY OF PARTS



### BOGIE OF HXD2F HEAVY AXLE-LOAD ELECTRIC FREIGHT LOCOMOTIVE

#### ► MAIN TECHNICAL FEATURES

The bogie is characterized by a welded frame shaped like the Chinese character "日", steel wheels, forged solid axles, a primary soft suspension device and a secondary hard suspension device.

It adopts the motor-gear case integration drive unit technology with a three-pedal bearing gear casegearbox, driving gear two-end bearing supports and a film type elastic coupling.

#### ► MAIN TECHNICAL PARAMETERS

Track gauge	1435 mm
Axle arrangement	Bo
Axle load	30t
Wheel diameter	1,250 mm
Shaft power	1,200 kW
Wheel base	2,600mm
Minimum radius of curve passing	125m
Regenerative running speed	100 km/h
Maximum trial speed	110km/h
Bogie weight	22,500kg

