中国中车 CRRC

200 kmph Passenger Electric Locomotive & Push Pull Train Introduction CRRC Dalian Co., Ltd.

September 4th of 2018

Delhi India

CONTENTS

PART 2: 200 kmph Passenger Electric Locomotive

The latest product of CRRC Dalian. CRRC Dalian is also one of the companies approved by CHINA RAILWAY to design this type of locomotive.

- Model: HXD3G
- Operation speed: 200 km/h
- Passenger transportation

200 kmph Passenger Electric Locomotive

CHARACTERISTIC

- Streamline type
- Light weight carbody
- The latest IGBT element
- Axle control technology
- CCBII brake control system
- Wheel disc basic brake unit
- Good dynamic performance

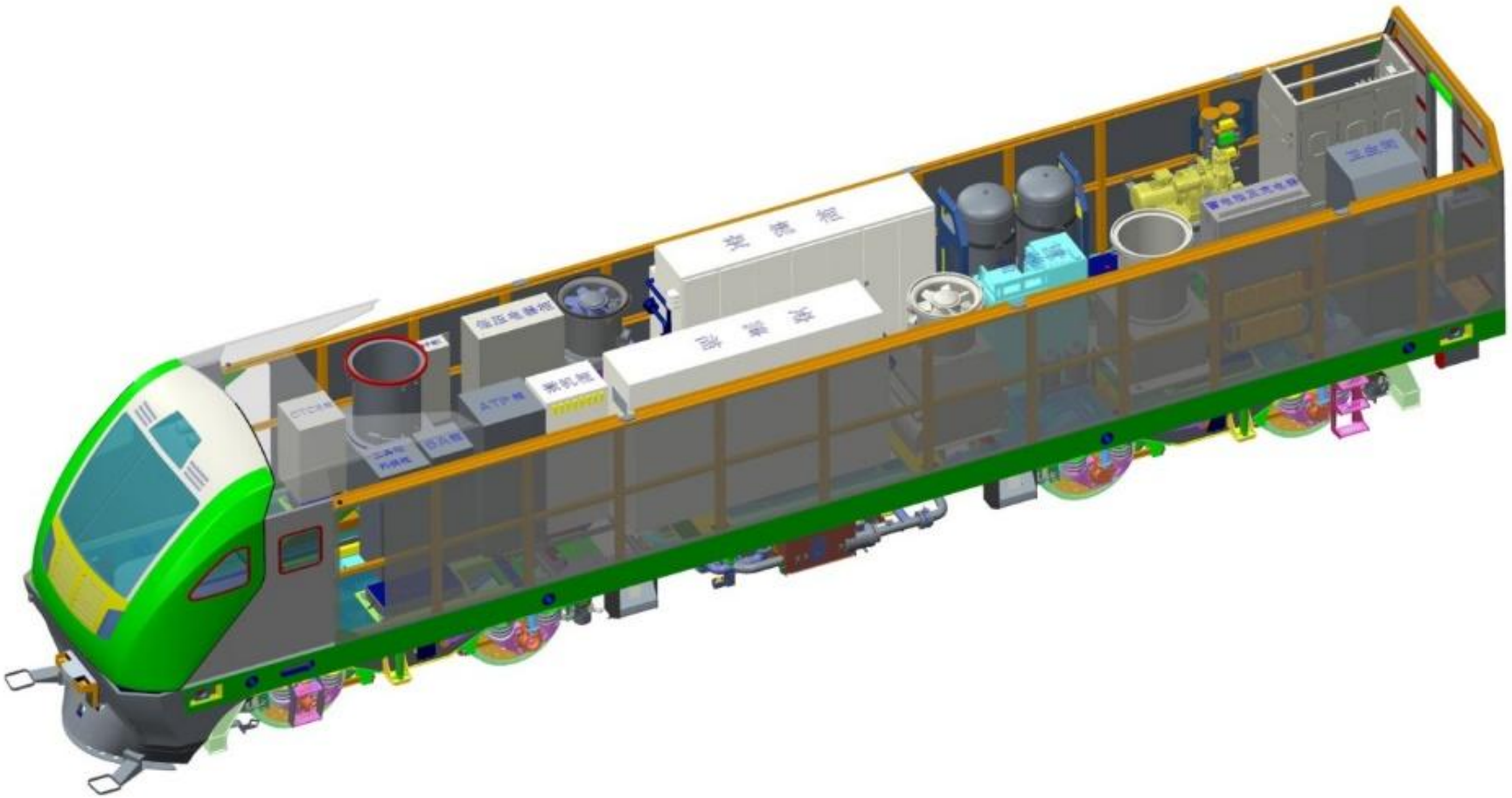
Needs

from customer

Safety
Reliability
Economic

General Layout

The locomotive adopts two unit connection, each unit is equiped with one cab, middle corridor, equipments are arranged diagonally. Door is located between two units for access from one unit to the other.



200 kmph Passenger Electric Locomotive

Main technical parameters :

Axle arrangement	2(Bo-Bo)
Electric transmission	AC-DC-AC
Axle load	19.5t
Electric brake method	Regeneration brake
Maximum test speed	241km/h
Operation speed	200km/h
Wheel rim power (continuous)	11200kW
Starting traction effort(Dry rail)	≥480kN
Train power supply	DC600V/4×200kW
Air compressor emission	2400L/min×2

200 kmph Passenger Electric Locomotive

Traction performance :

HXD3G locomotive can haul 24 units vehicles(156t+1320t), traction performance is as follows:

Slope	0‰	6‰	12‰	18‰	25‰
Starting capacity	Can start	Can start	Can start	Can start	Can start
Average speed	Higher than 200km/h	199km/h	159km/h	127km/h	100km/h

HXD3G locomotive can haul **24** units vehicles on **25‰** gradient, and can be started on the gradient. Its speed can reach **100km/h**.

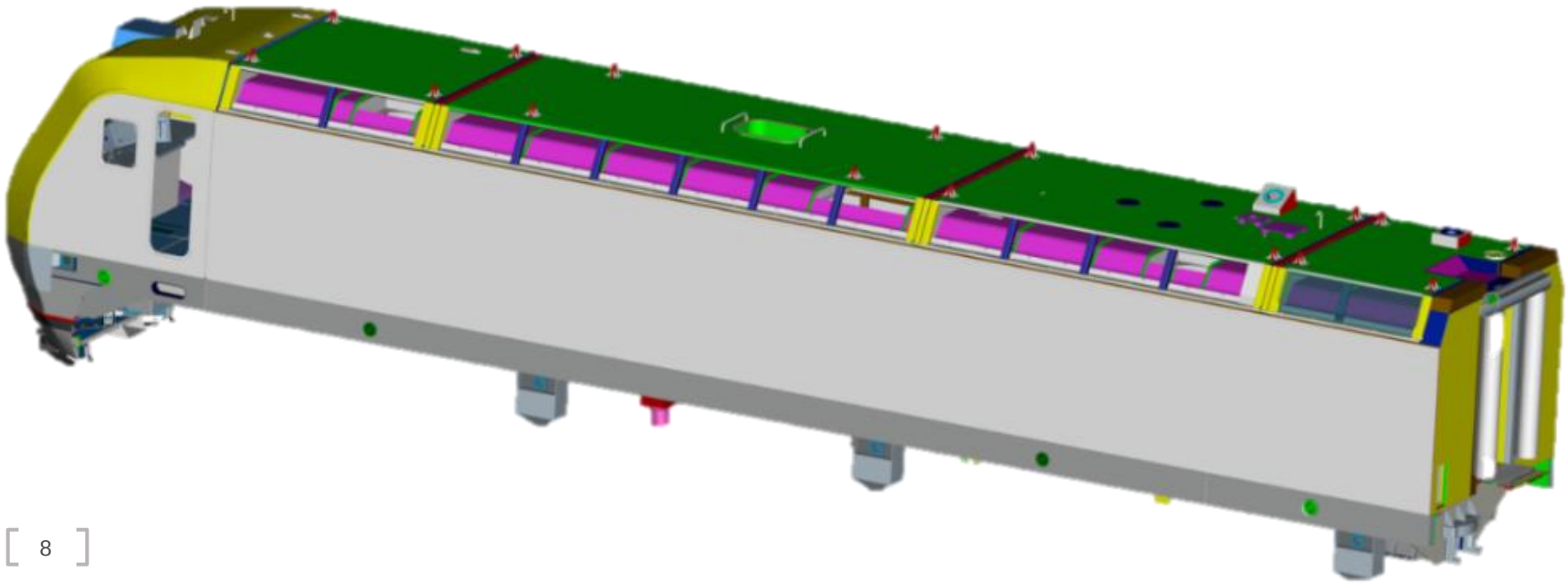
Carbody:

Carbody adopts frame welding structure which can carry the overall load.

The roof is removable.

Carbody load carrying capacity can meet the requirement of EN12663-1:2010.

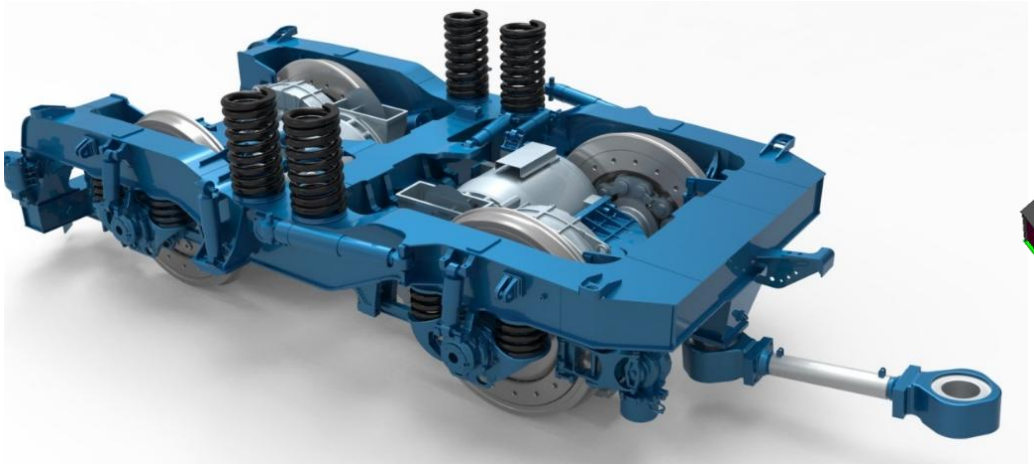
Carbody welding structure can meet the requirement of EN 15085-2007.

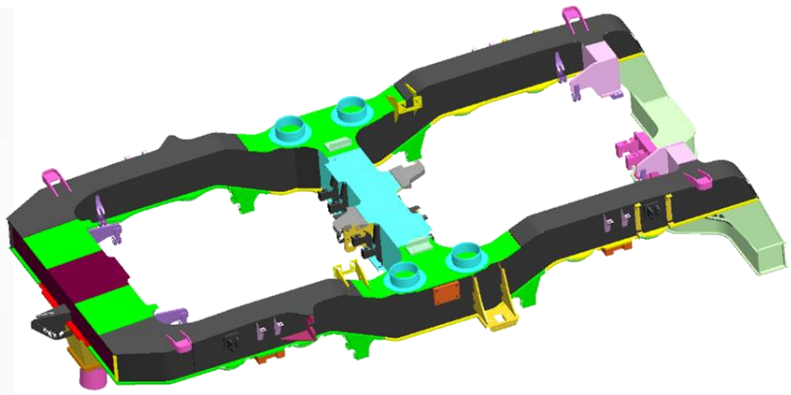


200 kmph Passenger Electric Locomotive

Bogie:

1. Light weight two axle bogie
2. Low level push-pull traction rod
3. Flexible full suspension drive unit
4. Diagonally arranged traction motors
5. Casting aluminium gearbox
6. Hollow shaft wheelset assembly



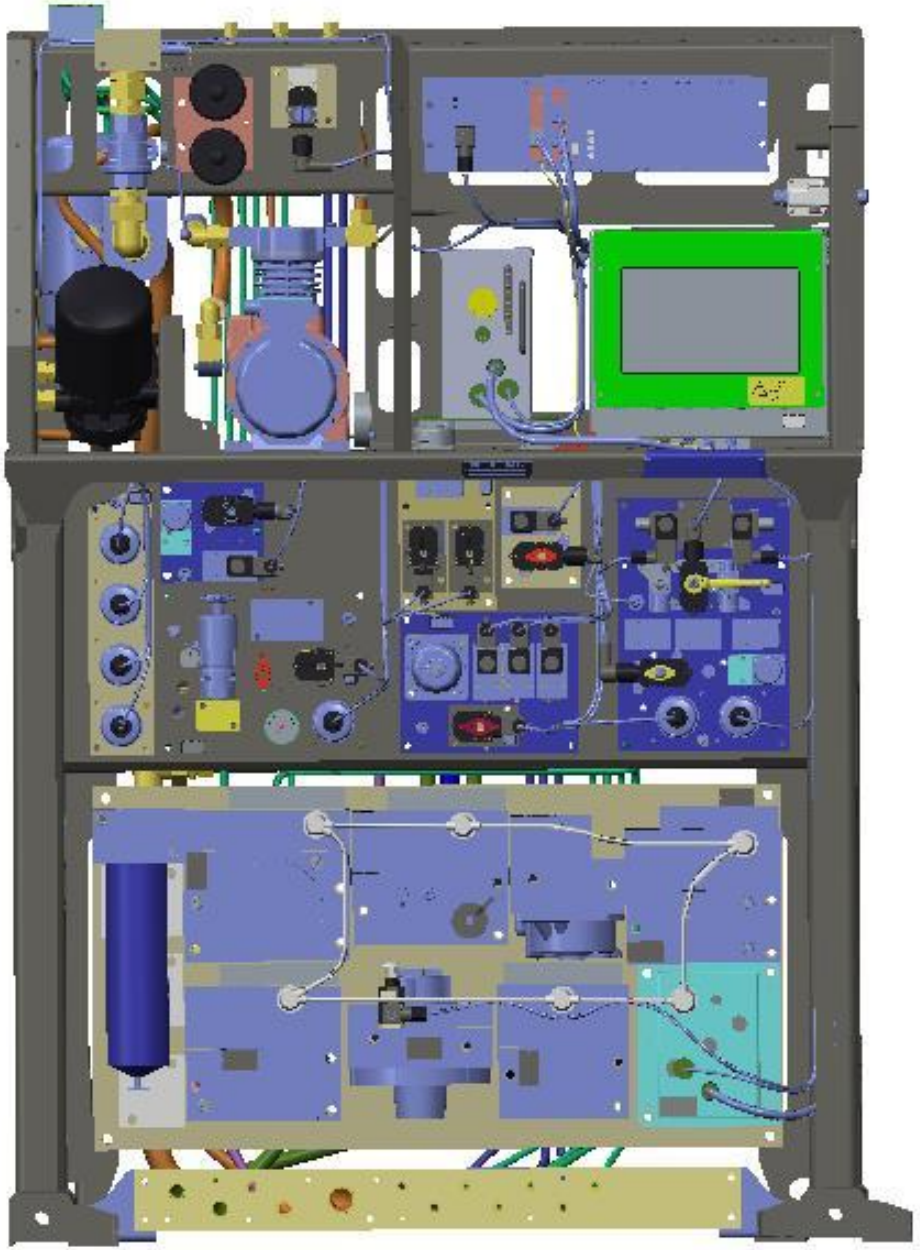


Welding structure can meet the requirement of EN 15085-2007.

200 kmph Passenger Electric Locomotive

Brake system:

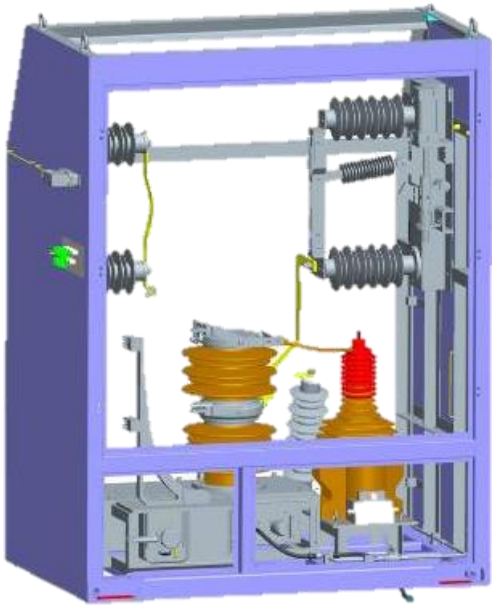
CCB II
KNORR



sor

High voltage part:

Main circuit breaker is vacuum type; surge arresters are arranged before and after the main circuit breaker.



Main circuit breaker

Surge arrestors

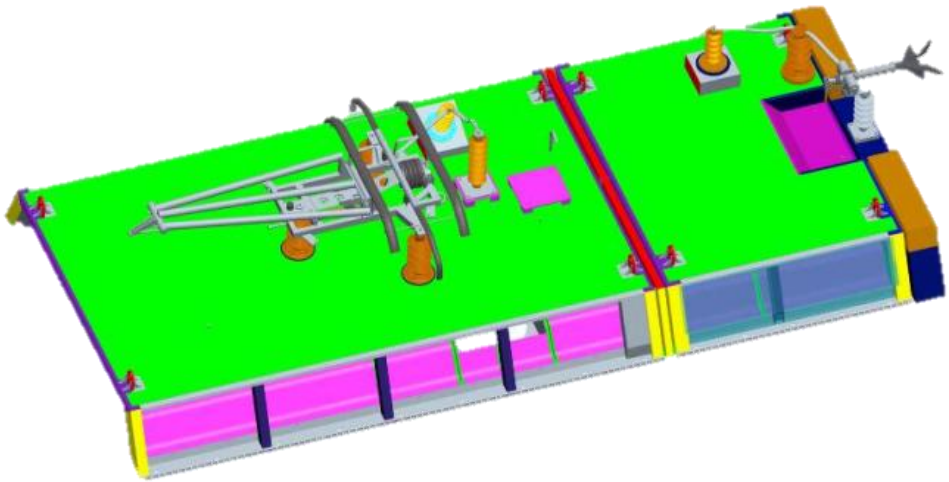
Voltage & current inductor

Grounding & isolation switch

High voltage part:

Only pantograph and roof surge arresters are arranged on the roof.

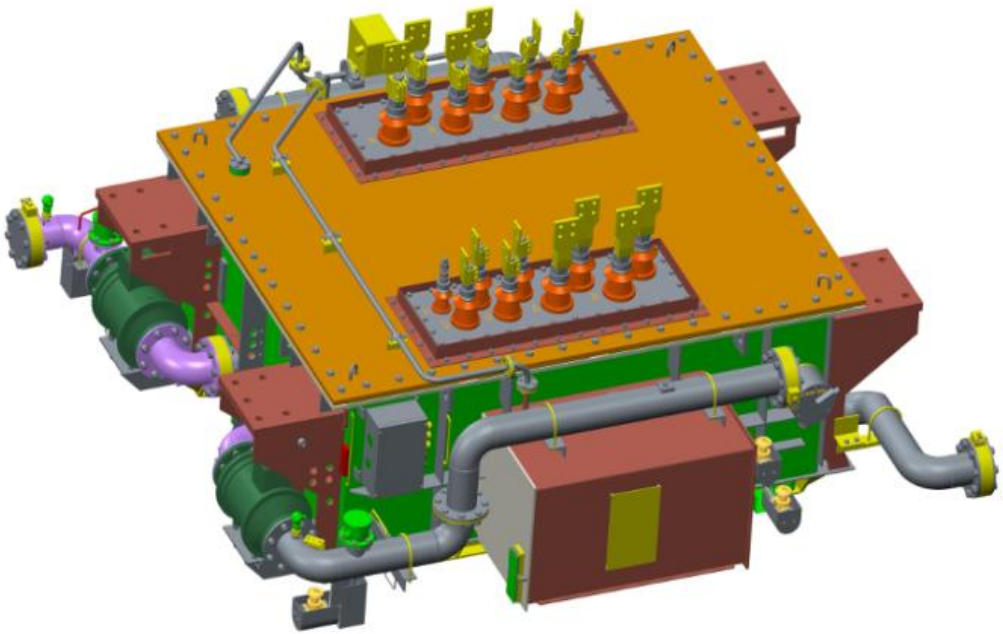
The assembly area of 25kV electric components are painted with insulation coating.



Structure advantage:

- Effectively avoid the failure of high voltage components
- Reduce the daily maintenance
- Increase the locomotive reliability
- Reduce operation cost.

200 kmph Passenger Electric Locomotive



Traction Transformer:

One traction transformer per unit. Being located underneath the underframe.

Transformer adopts A level insulation and mineral oil, which complies with IEC60296;

Oil recycling cooling and forced air ventilation;

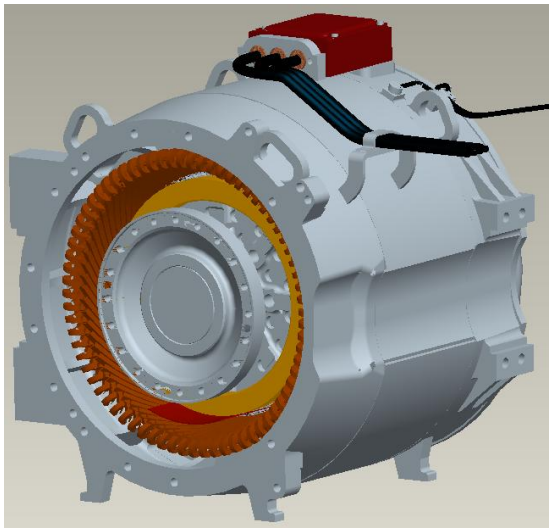
The design and manufacture of transformer complies with IEC60310.

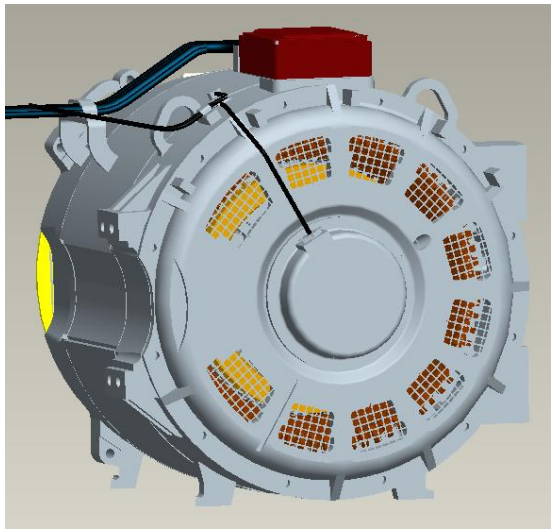
200 kmph Passenger Electric Locomotive

Traction motor:

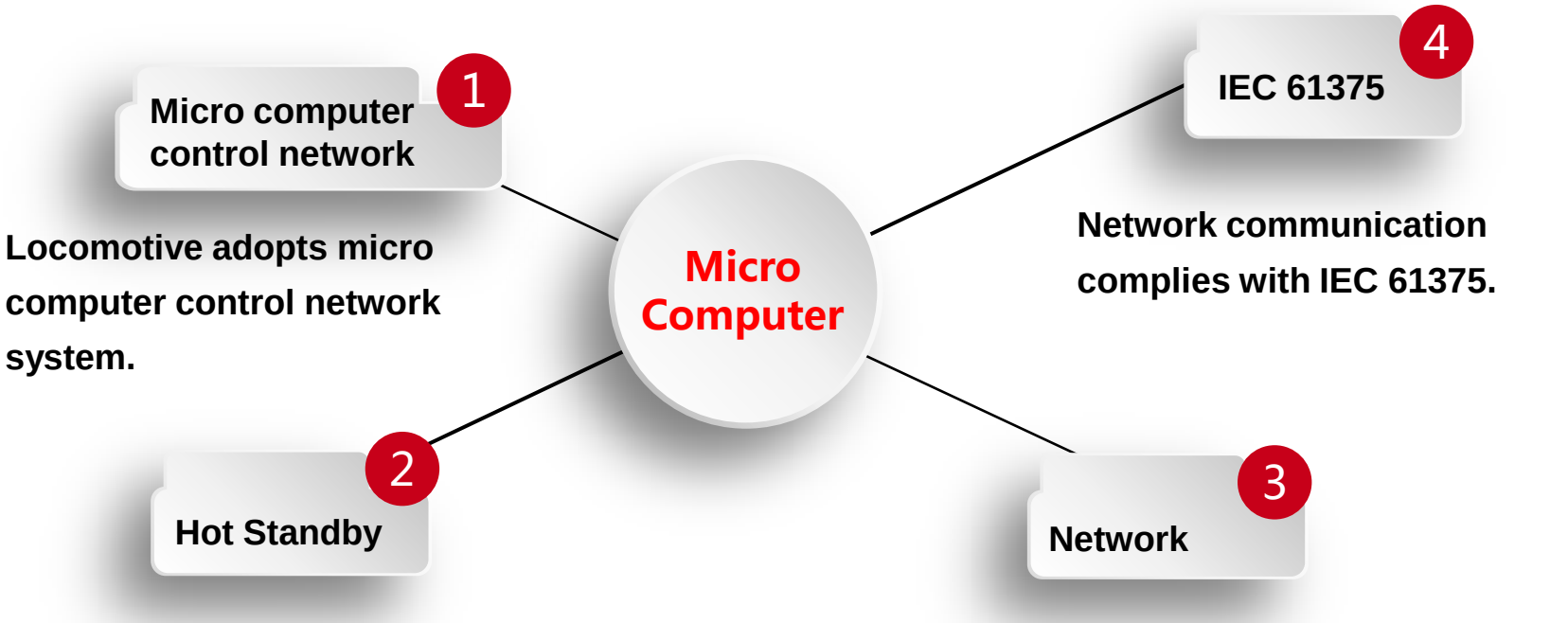
Locomotive adopts three phase squirrel type asynchronous traction motor which complies with IEC 60349-2:2010.

Traction motor adopts single insulation bearing, thin plate coupling output structure.



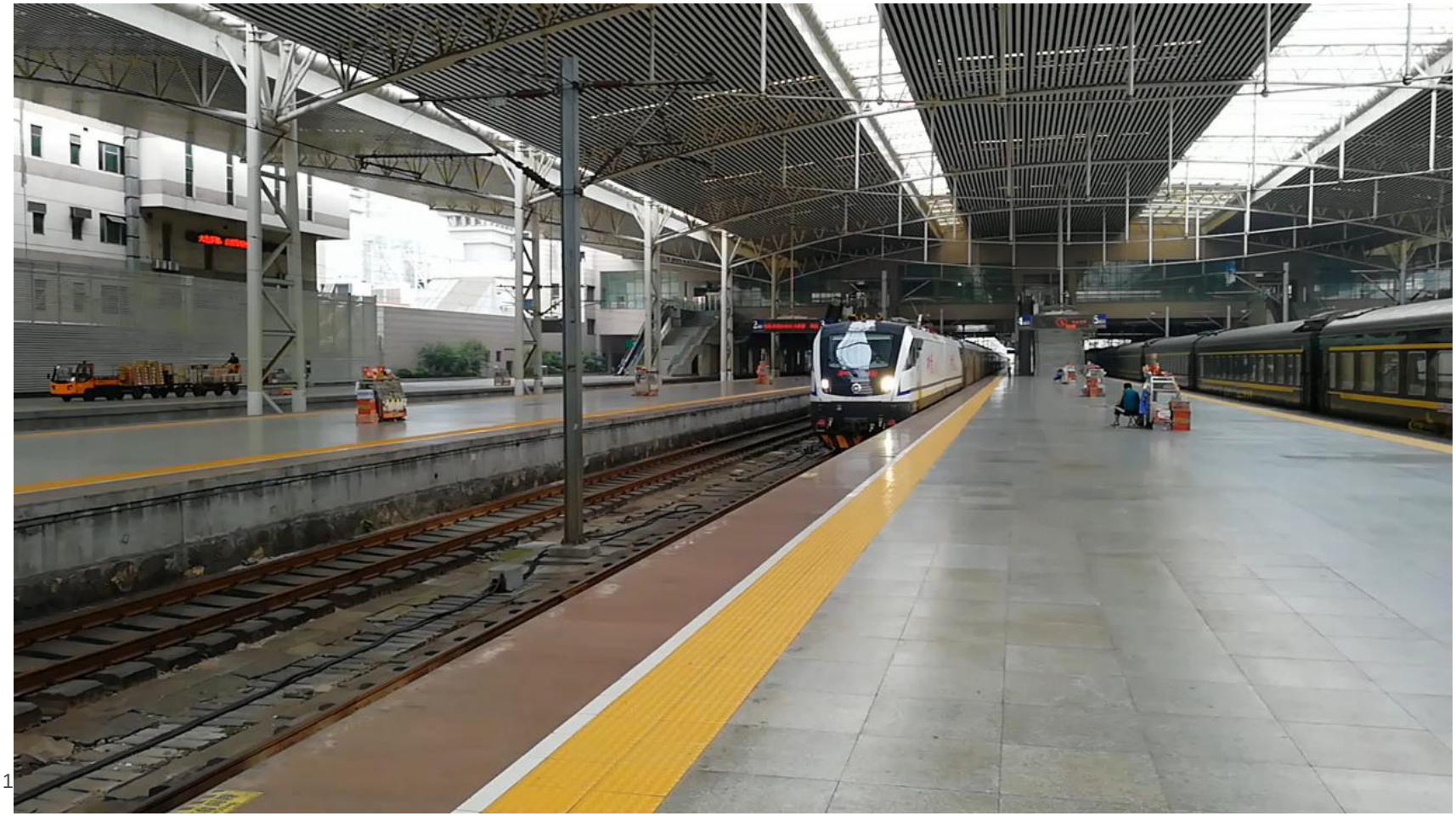


Micro computer network system



200 kmph Passenger Electric Locomotive

Two prototypes have finished one-year trial-run and the single locomotive has run over 400,000 km according to the requirements of Chinese Railway.



PART 3: 160 kmph Push Pull Train

This 160km/h Push Pull Train is developed for China Railway and is of centralized power traction mode.

160 kmph Push Pull Train

160km/h push pull train is mainly composed of the power car and the trail car.

The power car is based on HXD3G locomotive, whose high voltage system, traction system, brake system and bogies are identical with those of HXD3G locomotive. Only the outline and arrangement in the mechanical room is adjusted.

Axle arrangement	Bo-Bo
Axle load	19.5t
Wheel rim traction power (continuous)	5600kW
Wheel rim traction power (short period)	6400kW
Operating speed	160km/h
Design speed	210km/h
Starting traction effort (dry rail)	240N
Continuous traction effort	212kN
Max. regenerating brake force	153kN

160 kmph Push Pull Train

Configuration：

Short configuration： 1Mc+7T+1Tc

Long configuration ： 1Mc+18T+1Mc

Flexible configuration ： 1Mc+9T~18T+1Mc

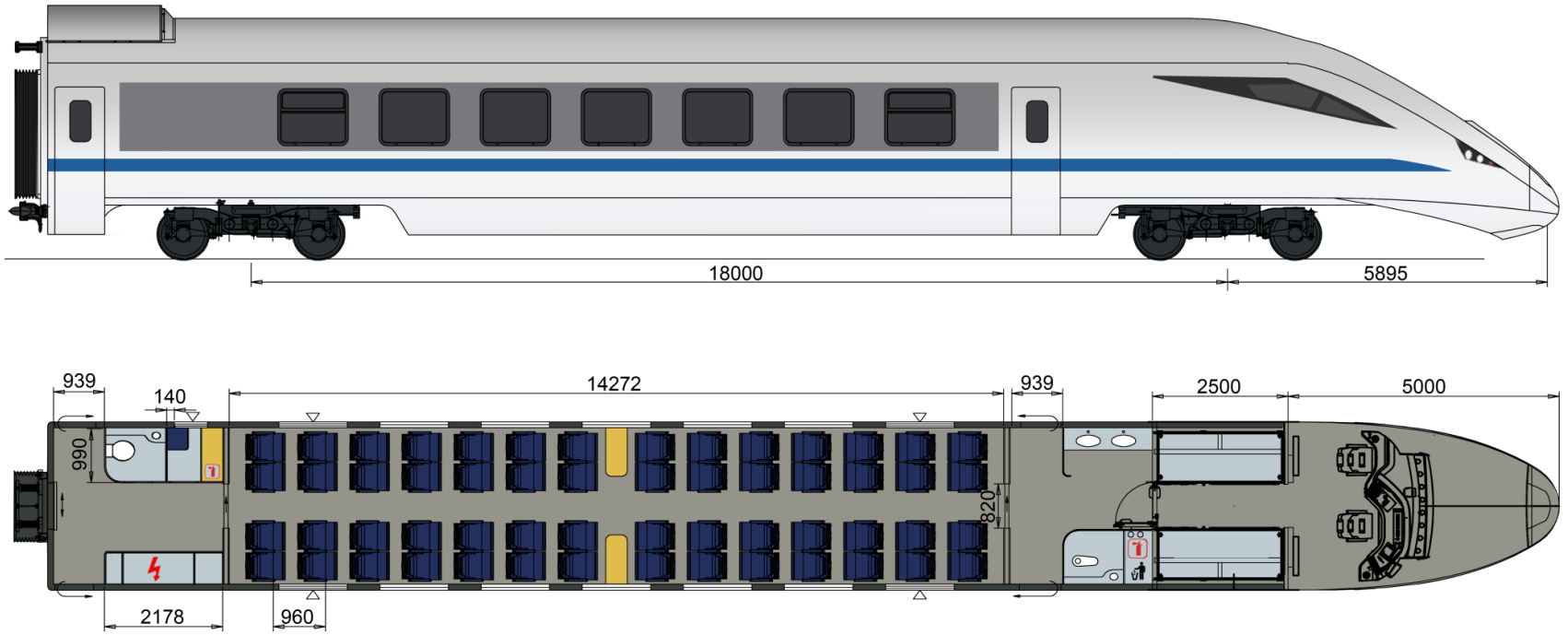
160 kmph Push Pull Train

3D drawing of the power car cab：

160 kmph Push Pull Train

The trail car is composed of the control car, first class seat car, second class seat car and the dining car, etc.

Control car（the first class seat）



160 kmph Push Pull Train

The effect drawing of trail car interior：

160 kmph Push Pull Train

The effect drawing of trail car interior：

160 kmph Push Pull Train

The effect drawing of trail car interior：

160 kmph Push Pull Train

The effect drawing of trail car interior：

160 kmph Push Pull Train

Micro computer network system：

WTB Network complies with IEC 61375-1-2007

MVB+ETH double net hot-standby

Motor car

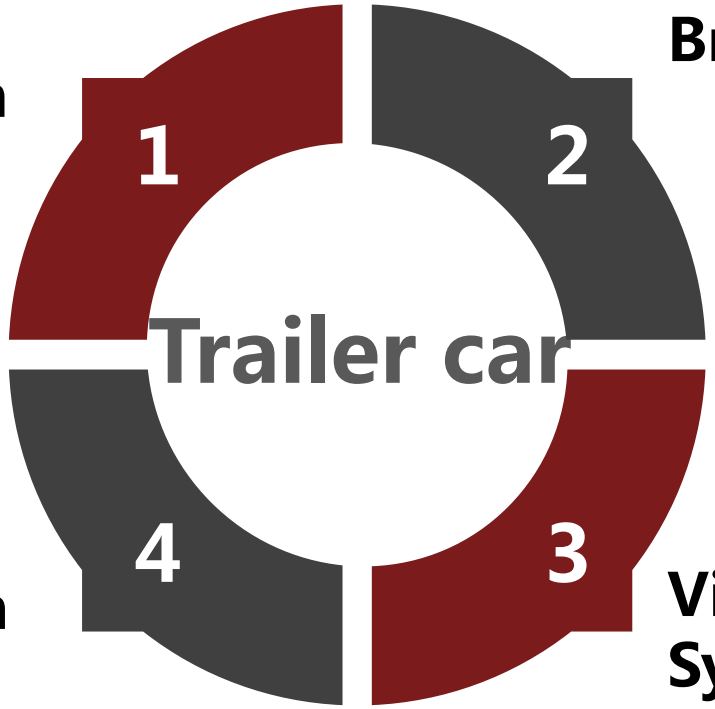
Lonworks network

Trailer car

160 kmph Push Pull Train

Information Display System

Broadcasting System



Wi-Fi System

Video Monitoring System

160 kmph Push Pull Train

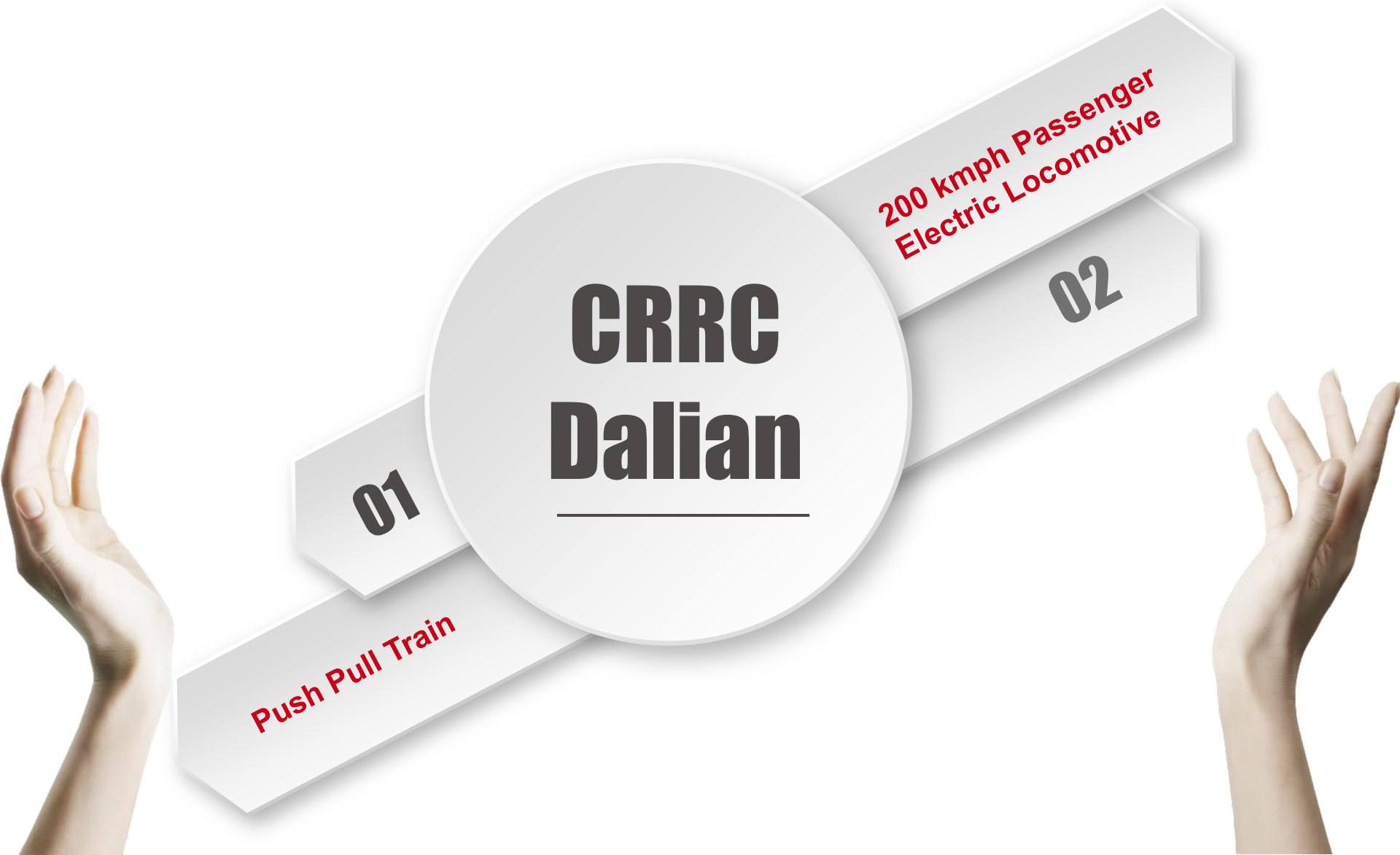
160 kmph Push Pull Train

Traction performance parameter：		
Configuration way	**1Mc+7T+1Tc**	**1Mc+18T+1Mc**
Configuration weight	585 t	1260 t
0-40km/h average acceleration	0.371 m/s^2	0.3417 m/s^2
160km/h residual acceleration	0.1586 m/s^2	0.1429 m/s^2
200km/h residual acceleration	0.0969 m/s^2	0.0844 m/s^2
12‰ balancing speed	190km/h	180km/h
25‰ balancing speed	123km/h	115km/h
30‰ balancing speed	106km/h	100km/h

160 kmph Push Pull Train

	Push Pull Train	VS	Normal Train
Configuration Flexiblility	★★★★★		★☆☆☆☆
Maintenance	★★★★★		★★★☆☆
Comfort of Passanger	★★★★★		★★☆☆☆
Economic	★★★★★		★★★☆☆

Summary


CRRC
Dalian
01
Push Pull Train
02
200 kmph Passenger
Electric Locomotive

中国中车 CRRC

Thanks for listening !

liujichendloco@163.com
http://www.crrcgc.cc/dlen