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**A New Luxury Train
for the World**

Built for Your Future



New Korean High Speed Train **KTX-II**



Development Overview

**Completion of Development
with Independent Technology**

- Supplying High Quality High Speed Trains
- Introducing High Speed Trains to the Global Market

KTX-II Project Scheme

- Project Management
- Design Verification
- Quality Assurance
- RAMS
- PSMS

Commercialization

- Design Manufacturing Capability
- Project Implementation Capability
- Establishment of Reliability

**HSR-350x
KTX Project**

KTX-II (Korea Train express-II)

A New Technology for a New Train

Hyundai Rotem proudly introduces the new Korean high speed train KTX-II, which is completed with our own independent technology. The KTX-II train presents new levels of safety, driving features, convenience, quietness and reliability. It is a luxury high speed train, which adapts cutting edge technology for high efficiency and convenience. Using human engineering technology, it is designed to provide optimized convenience to our passengers.

Project Summary

- **Q'ty** 190cars(10cars / 1trainset)
- **Speed** 300km/h
- **Delivery** -1 Phase(60cars) : by June, 2009
-2 Phase(40cars) : by June, 2010
-3 Phase(90cars) : by Dec, 2010
- **Service Line** Honam-Jeolla Line, Gyeongjeon Line

Route Map





Interior

A New and Improved Style of High Tech Design

Passengers will be captivated by the stylish exterior and the comfortable interior, when coming aboard the new KTX-II, which is carefully designed to consider the passengers in each space with various convenient features and improved comfort.



Style

Scientific Design Combined with Luxurious Style

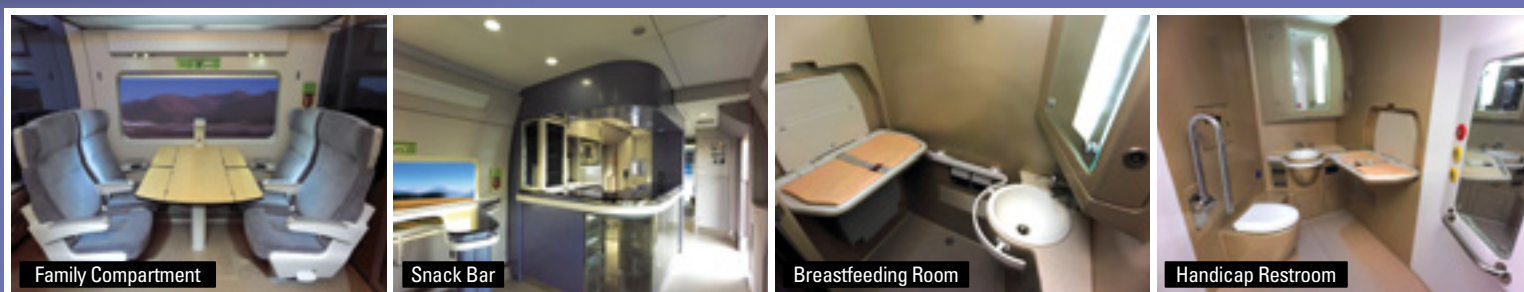
The streamline design of the KTX-II, which is inspired by the pliable and speedy form of a trout, shows off a beautiful and refined exterior while embodying improved scientific features. The light aluminum carbody presents a pleasant and comfortable environment for the passengers throughout the ride.

Special Features

- Streamline nose shape to reduce running resistance
- State-of-the-art Facilities (Radio Device, Passenger Room, Seats, Toilets etc.)
- Easy operation and maintenance with Traction Control & Diagnostic System
- Automatic Coupler System
- Power Bogie & Articulated Bogie System with running stability at 400km/h
- Reduced pressure wave in tunnels by 2dB(A): Less than 71dB(A) in Passenger Space and 81dB(A) in Driver's Cab

Styling

- Improved design with regards to aerodynamics and human engineering
- Curved line design of the forehead taking after the form of a trout
- Single streamline design to reduce air resistance and noise in high speed
- Design of crashworthiness and airtightness



Passenger Space

- Seating Arrangement: First Class: 2X1 / Economy Class: 2X2
- Passenger Information: 4 LCD Monitors(19")
- Body Side Walls and Ceiling Panel: Nomex Honeycomb Panel
- Reduced pressure wave in tunnels by 2dB(A): Less

Convenience Facilities

- Family Compartment, Snack Bar, Handicap Restroom
- Wireless Internet Service, DMB
- Seats: 360° rotation features, improved comfort with armrest and backrest

Train Operation

- Supervisory Control Unit (SCU) & Automatic Train Control (ATC) by Train Communication Network (TCN)
- VCU connected to SCU through Wire Train Bus (WTB)
- Sub-systems to VCU through Multifunction Vehicle Bus (MVB)
- Traction Control Unit (TCU) in motor block controls Traction & Electric Braking

Motor Block

- As a major device to enhance train performance, the inverter uses the VVVF control technique using IGBT elements, greatly improving reliability and control performance
- Converter input voltage: AC 1,400V
- Inverter unit voltage: AC0-2,183V
- Main circuit unit: Voltage-source VVVF inverter with IGBT
- Cooling system: Fan cooled

Driver's Cab

- Equipment has been arranged with consideration of the driver's convenience and easy operation. The driver's visibility is enhanced by UIC 651. The driver's desk layout has been simplified and upgraded. Real time monitoring of driving information is possible.

Auxiliary Power Supply

- The auxiliary power supply equipment is composed of 10.MW PWM converter to produce the DC 670V. This equipment supplies 52kVA VVVF inverter for cooling fan, air compressor, 450kVA CVCF inverter for supplying the regulated power to the passenger service system, air conditioning unit and battery charger.
- Output voltage: 670V AC
- Cooling system: fan cooled
- Power device: IGBT

Technology

The Pride of Korean Railway Technology

Hyundai Rotem, first participated in the national project for the Gyeongbu line High Speed Train. Based on the success in developing the KTX, Hyundai Rotem takes a step further to develop the KTX-II with independent technology. The new Korean-made high speed train will become the pride of Korean railway technology throughout the world.

Brake System

- Brake Control Unit (BCU): Computer controlled, intelligent, distributed and electrically controlled air brake unit Optimized and anti-skid controlled BCU linked with Brake Blending Control Unit (BBCU) for total blending control
- Disk brake: three ventilated type of discs installed per axle of trailer bogie
- Thread brake: installed power bogie

Traction Motor

- Smaller and lightweight
- Easy maintenance
- Type: 3-phase Squirrel Cage Induction Motor
- Rated output: 1,100kW
- Rated voltage: 2,183V
- Rated current: 360A

Main Transformer

- High capacity, small-sized design and weight reduction
- Capacity: 6,200kVA (for PC)
- Primary voltage: 25kV/60Hz
- Secondary voltage: 1,400VAC
- Ternary voltage: 383VAC

Bogie

- Bogies are capable of carrying all necessary equipment for safety, comfort and efficient running of the trainset. The bogie frame meets all strength requirements related to accelerations and load based on the contractor environment. The suspensions of bogies are applied to axle box wing type or radial arm type for primary and coil spring or air spring for secondary and anti-roll bar. Verification analysis and tests were performed as follows:
- Fatigue Strength Analysis & Test of Bogie Frame according to UIC
- Dynamic Characteristics Analysis & Running Test Stability Test



Facilities

Principal Data	Train Formation	PC + T1 + T2 + T3 + T4 + T5 + T6 + T7 + T8 + PC (10cars / 1trainset)
Length (10cars)	201m	
Weight (10cars)	Less than 434ton	
Seats (10cars)	363 seats (1st Class: 30seat, Economy Class: 333seats)	
Power	25kV, 60Hz	
Carbody Material	PC: Mild Steel, T: Aluminum alloy	
Speed	Design: 330km/h, Revenue Service: 300km/h	
Tractive Effort	210kN	
Acceleration	0.45m/s ²	
Deceleration	Full service from 1.06m/s ² (Emergency rates 1.10m/s ²)	
Major Systems	Bogie	Articulated unit connecting trailer cars
	Propulsion System	1,100kW per asynchronous motor, Motor control device IGBT
	Speed Control System	VVVF Control
	Brake System	Train total blending system (electric + pneumatic brake)

* PC: Power car, T: Trailer Car