

Eurailspeed

Round table 3

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Korea Railroad Research Institute

Korean High-Speed Train : HSR-350x





Project Overview

□ Needs

- Development of Core Technologies in High-Speed Rail Systems
- Demands for New High Speed Railway Lines

□ Objective

- Development of High Speed Railway System with the Maximum Speed of 350 km/h

□ Project Details

- Managed by the MOCT (Ministry of Construction & Transportation)
 - Project Management and System Engineering by KRRI (Korea Railroad Research Institute)
 - Rolling Stock Manufactured by Rotem and Sub-vendors in Korea
 - Many research institutes and universities involved
 - Total Budget: Approx. US\$200 million (Government & Industries)
-

Project Outline

	Period	Major Works
Phase 1	Dec.1996 ~ Oct.2002	<ul style="list-style-type: none">▪ System Design▪ Component & System Development,▪ Manufacturing
Phase 2	Nov. 2002 ~ Oct. 2007	<ul style="list-style-type: none">▪ Trial running▪ System stabilization▪ Reliability Management

□ Concept of the train system

- Speed-up
- Aerodynamic Design of the Nose Shape
- Weight Reduction
- Innovative Propulsion Systems
- Environment Friendly Design
- Advanced Train Control and Self-Diagnosis Systems
- Compatibility with KTX Systems
- Standardization of the Components

Comparison of High-Speed Trains

	Korea		Japan		France	Germany	
	HSR-350x	KTX	E3	700 series	AGV	ICE-3	ICT
Speed	350km/h	300km/h	275km/h	300 km/h	350km/h	330km/h	230km/h
Car Body	AL	Steel	AL	AL	AL	AL	AL
Power Switching Devices	IGCT	Thyristor	GTO	IGBT	IGBT	IGBT	GTO
Motor	Induction	Synchronous	Induction	Induction	Induction	Induction	Induction
Brakes	Eddy Current added	Friction /Electrical	Friction /Electrical	Friction /Electrical	Friction /Electrical	Eddy Current added	Friction /Electrical
Operation	-	2004	1997	1999	-	1999	2002

Test Train HSR-350x Configuration

ITEM	FIGURES
Train Length (m)	145
Maximum weight per axle (ton)	17
Total Tare Weight (7cars, ton)	310
Maximum Running Speed (km/h)	350



- 2 Power Cars + 2 Motorized Cars + 3 Passenger Cars
- Data acquisition modules are installed in 3 cars



Major Items of HSR-350x



Cab-Cubicle



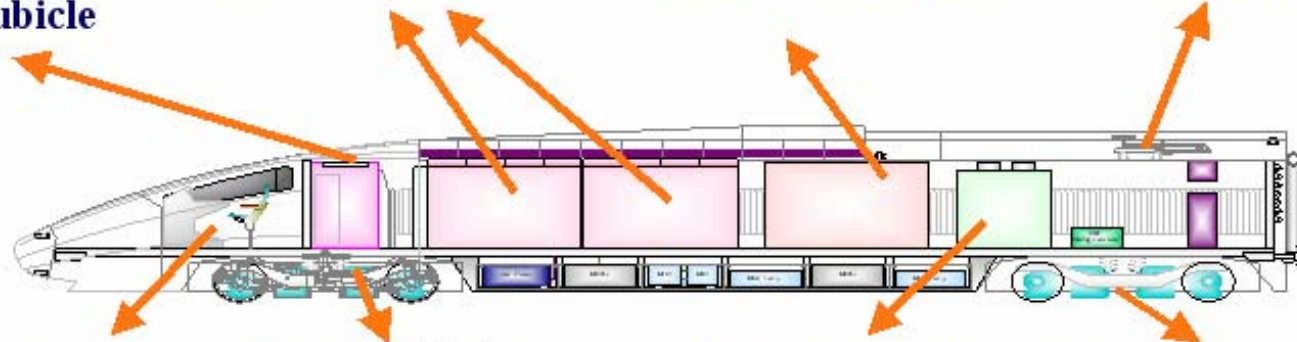
Inver/Converter



Main Transformer



Pantograph



Driver's Desk

Traction Motor

Auxiliary Block

Eddy Current Brake



Data Measurement and Performance Evaluation

- Total 420 channels to examine
 - Running Performance
 - Braking Performance
 - Powering Performance
 - Pantograph Performance



Data acquisition module



Wheel-Rail monitoring

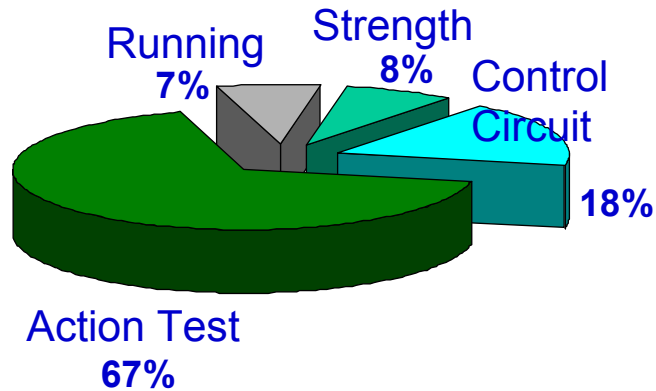


Pantograph monitoring

Factory Tests and Test Running

□ Factory Acceptance Tests

- Total 4,386 items tested



□ Test running of the high-speed and conventional lines

- Shadow running between commercial trains (KTX) with maximum speed of 300km/h
- Total 209 test runs (as of June 2005)
- Cumulative mileage of 93,000km

Speed up tests of HSR-350x

- ❑ The 5th country in the world developing high-speed rail system
- ❑ Safety of the train-set and infrastructures are examined at each step of speed up test.
- ❑ Reached 352.4km/h on December, 2004.



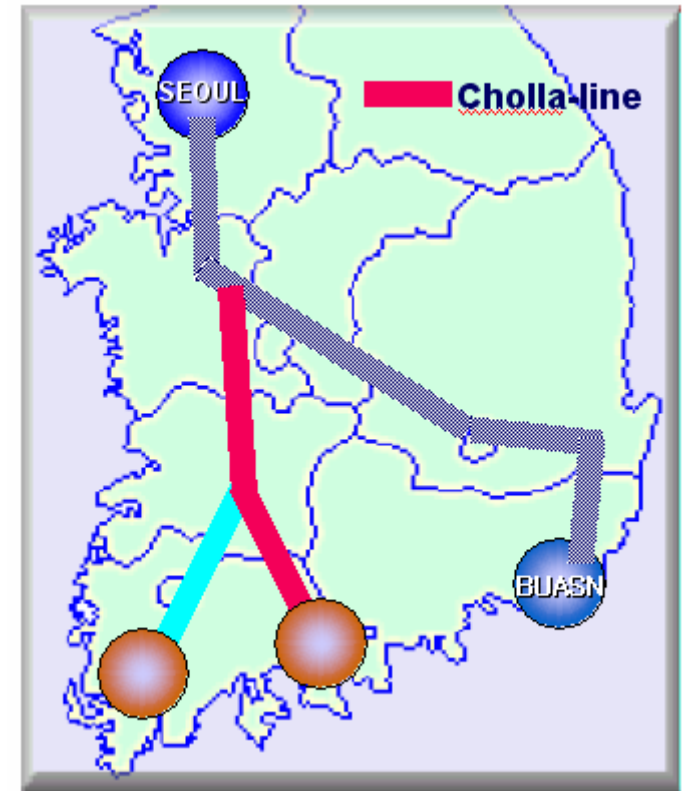
Preparation for Practical use

□ Coming into Market

- Additional demands in Korea (Cholla-line in 2007)
- Continual growth in world market

□ New Project for Practical use

- Period : 2005.09 ~ 2007.12
- To develop two 10-car train-sets for the preparation of the commercial operation
- Managed by Ministry of Construction and Transportation





THANKS!
