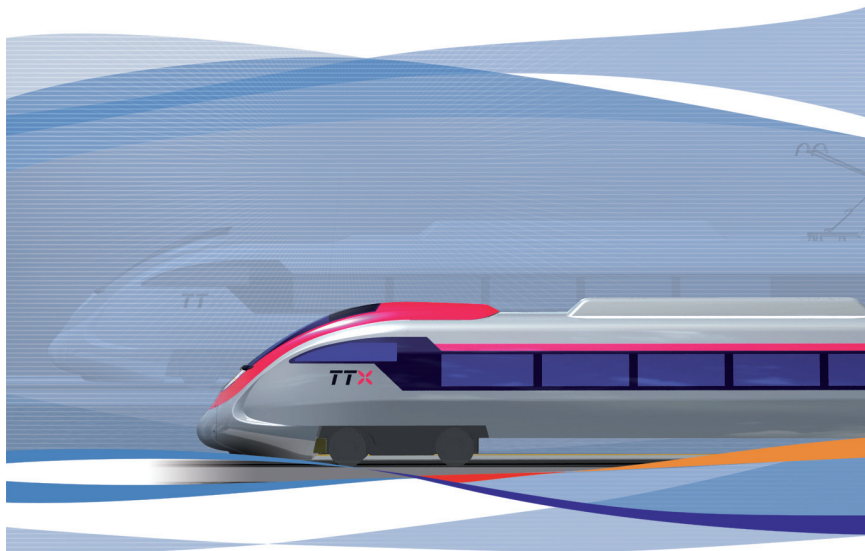


# Korea Railroad Research Institute

*Revolutionises rail vehicle development with CATIA V5*



*“The fact that most global railcar manufacturers use CATIA V5 was a major factor in our decision to implement it. CATIA V5 will play a crucial role in our Korean Tilting Train eXpress (TTX) and new transportation system projects.”*

– JungSeok Kim, Senior Research,  
Korea Railroad Research Institute

## Overview

### ■ The Challenge

*KRRI needed to develop new technology and apply global rail vehicle design trends to its Tilting Train eXpress (TTX) project*

### ■ The Solution

*CATIA V5 was chosen as the core development tool for the TTX project to increase productivity and facilitate collaboration with foreign research institutes already using CATIA V5*

### ■ The Benefit

*With CATIA V5, KRRI has improved communication, implemented concurrent engineering and improved design quality, significantly reducing its total design cycle.*

### KRRI drives shift to domestic rail technology development

Korea Railroad Research Institute (KRRI) was established by the Korean government in 1993 to develop domestic rail transportation and enhance the competitiveness of the country’s rail industry through technology development and policy research. Since its foundation, the institute has played a crucial role in developing creative technology and industry-leading techniques that are forming a strong foundation for domestic rail development and long-term planning.

KRRI is charged with freeing the country from its dependence on foreign technology for its rail systems and is noted for its technical strength in the development of a next-generation Korean high speed train, standard electric rail vehicle, and lightweight trains system.

To reach its goals, KRRI sought to harmonise the technical requirements of ongoing projects with future technology, while strengthening the professional capabilities of its researchers to conduct projects in next-generation rail technology, modernisation of rail systems and rail safety, performance assessment and testing, certification and maintenance.

### CATIA V5 core development tool for Tilting Railcar project

Although rail development in Korea had traditionally been done using CATIA V4, KRRI was charged with going a step beyond existing railroad manufacturing companies. Thus, KRRI chose CATIA V5 to help it secure new technology and apply global rail vehicle development trends to its TTX project.

The project focuses on developing a rail vehicle that tilts inwards on a curved track to reduce its centrifugal force, improving passengers' riding comfort and the train's speed. The tilting train, with a maximum speed of 180 km/h, can maintain high speeds along curved portions of the track to reduce total travel time.

"We thought that since CATIA V5 is Microsoft® Windows®-based, it would allow us to perform design work and office tasks at the same time, contributing to higher productivity compared to CATIA V4," says JungSeok Kim, Senior Researcher at KRRRI. "We also can demonstrate mechanical interference when assembling our products which enables us to reduce errors and time to market."

Kim says CATIA V5 is playing a crucial role not only in the TTX project, which began in 2001 and is slated to be in production by 2007, but also in KRRRI's New Transportation System initiative.

CATIA V5 has been used for the basic design of the TTX, and version V5R12 is currently being employed to complete the detailed design work. Design verification, including modelling of railcar components such as the frame, bogie, front, interior furnishings and seats, as well as interference checks and production fitting, are completed using digital mock-up (DMU).

### CATIA V5 drives rail innovation

With CATIA V5, KRRRI has been able to improve communication related to its 3D designs. Productivity in development has improved thanks to CATIA V5's ability to facilitate meeting minutes, technical specifications, review and reports, according to Shin.

Using CATIA V5 also has allowed KRRRI to implement concurrent engineering, allowing different but related parts of a project to proceed simultaneously, and to improve design quality, significantly reducing the total design cycle.

"Enthusiastic technical support and training from IBM business partner CEIS has allowed us to learn the functions of CATIA V5 quickly and apply the tool to our work immediately," Kim says.

Since it is the first case of CATIA V5 being used in domestic railway development in Korea, Kim says R&D results will be considered as assets and some designs will be patented. In the future, he adds, "We wish to purchase Knowledgeware for use in design changes and future Tilting projects."

Using CATIA V5, KRRRI is leading the technological innovation of Korea's 21st century rail vehicle systems.

For more information, contact your IBM Representative, IBM Business Partner or visit the IBM PLM Web site at: [ibm.com/solutions/plm](http://ibm.com/solutions/plm)



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