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# 한국형 어린이 통학버스



## 우리나라 어린이 통학버스 법제도 진단 및 개선방안

이양호\* · 정민익\*\*

### The Diagnosis and Improvement of Law System Regarding the Children's School Bus in South Korea

Yang Ho Lee\*, Min Eui Jeong\*\*

**Key Words** : Children's school bus(어린이 통학차), Law system(법제도)

#### ABSTRACT

This research classified the law systems relevant to children's school buses according to object, such as operating subject, institution, vehicle safety, driving and operation safety, eco-friendly and other safety matters. Besides, as a means of solution, the law systems were diagnosed. Therefore, improvement plans were suggested by this study as an alternative, derived from the problems and major issues of current legal system.

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\* 경기대학교/조교수

\*\* 더브릿지전략컨설팅(주)/대표이사

E-mail : soam29@kyonggi.ac.kr

## 어린이통학버스 차체개발을 위한 컨셉모델 구축 및 구조해석

김원철\* · 마세현\* · 홍현호\* · 조현준\* · 류기현\*

### Concept Model Build and Structure Analysis of Children School Bus Body Development

Woncheol Kim\*, Sehyun Ma\*, Hyunho Hong\*, Hyunjoon Cho\*, Kihyeon Ryu\*

**Key Words** : School Bus(통학버스), Body(차체), Displacement(변위), Stiffness(강성), Finite element analysis(유한요소해석)

#### ABSTRACT

This paper is a study on the structural analysis method for establishing an initial concept model when designing a body platform considering the physical characteristics and safety of children in the absence of a chassis platform for school buses for children in Korea. In the existing body stiffness analysis method, a 3D solid model is designed and static stiffness analysis such as torsional and bending stiffness is performed based on the data. When the target stiffness is given, the work of partially changing the member is repeated to satisfy the stiffness and reflected in the design. As a result, it took a considerable amount of review time to quickly build an initial concept model. Therefore, the method proposed in this paper to solve this problem utilizes 1D beam elements to give the cross-sectional dimensions of the members, quickly performs finite element analysis, calculates the displacement, and obtains the stiffness coefficient. The results obtained in this way were found to be very similar to the analysis results obtained by the existing analysis method. Therefore, it is considered that the body stiffness analysis using the method proposed in this study will be helpful in establishing a rapid initial concept model when developing a derivative vehicle.

#### 후기

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\* 한국쓰리축/기술연구소  
E-mail : wckim@k3axle.com

## 한국의 유럽내 미래 모빌리티 전략적 파트너로서 헝가리 협력방안과 의미

이양호\* · 권경덕\*\*

### The Cooperation Plans of Hungary and Meaning as the Future Mobility Strategic Partner of South Korea in Europe

Yang Ho Lee\*, Kyoung Doug Kwon\*\*

**Key Words** : Hungar(헝가리), Future mobility(미래모빌리티), Strategic partne(전략적 파트너), Europe(유럽)

#### ABSTRACT

This research explores the necessity of cooperation with Hungary as a strategic partner regarding future mobility in Europe. Besides, for the competitiveness reinforcement of future mobility in South Korean firms, cooperation plans and denotation are suggested.

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\* 경기대학교/조교수

\*\* 한국개발연구원/정책자문실장

E-mail : soam29@kyonggi.ac.kr

## 어린이 통학버스 안전성 보강기술 개발: 어린이 전용좌석 고정장치 설계와 구조해석

유성식\* · 김재민\*\* · 최규권\*\*\* · 하성용\*\*\*\* · 이흥식\*\*\*\*\*

### Enhancing Safety for Children in School Bus Transportation: Design and Structural Analysis of Anchoring Devices for Child-Only Seats

Sung Sic Yoo\*, Jae Min Kim\*\*, Kyu Kwon Choi\*\*\*, Sung Young Ha\*\*\*\*, Heung-Shik Lee\*\*\*\*\*

**Key Words** : School bus(통학버스), Structure analysis(구조해석), Child-only seat(어린이 전용좌석), Seat belt anchorage test(시트벨트 앵커리지 테스트)

#### ABSTRACT

In this study, in order to reinforce the safety of a school bus for children, the connection between the child seat and the vehicle floor is designed and the stability is evaluated through structural analysis. Inadequate fastening strength between the vehicle's flooring and seats can lead to harm to both passengers and the bus itself during unexpected stops or accidents. To ensure children's safety, all buses are subject to safety design criteria, which are determined through rigorous seat belt anchorage tests. If replacing existing seats with child seats equipped with 3-point belts, this standard mandates a higher level of safety than the previous norm. By conducting a comprehensive structural analysis, we identify the most suitable seat fastening position and method for installing a 3-point belt-based child seat, using Hyundai Motor's County 29-seater model. Based on our findings, we propose an optimized design.

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\* 중부대학교/연구교수

\*\* 중부대학교/연구교수

\*\*\* 중부대학교/박사과정

\*\*\*\* 중부대학교/교수

\*\*\*\*\* 중부대학교/교수

E-mail : jsheung@joongbu.ac.kr