

Seismic Structural Design Contest 2014

# 풍력발전구조물안녕하십니까?

**W-KEEPER**

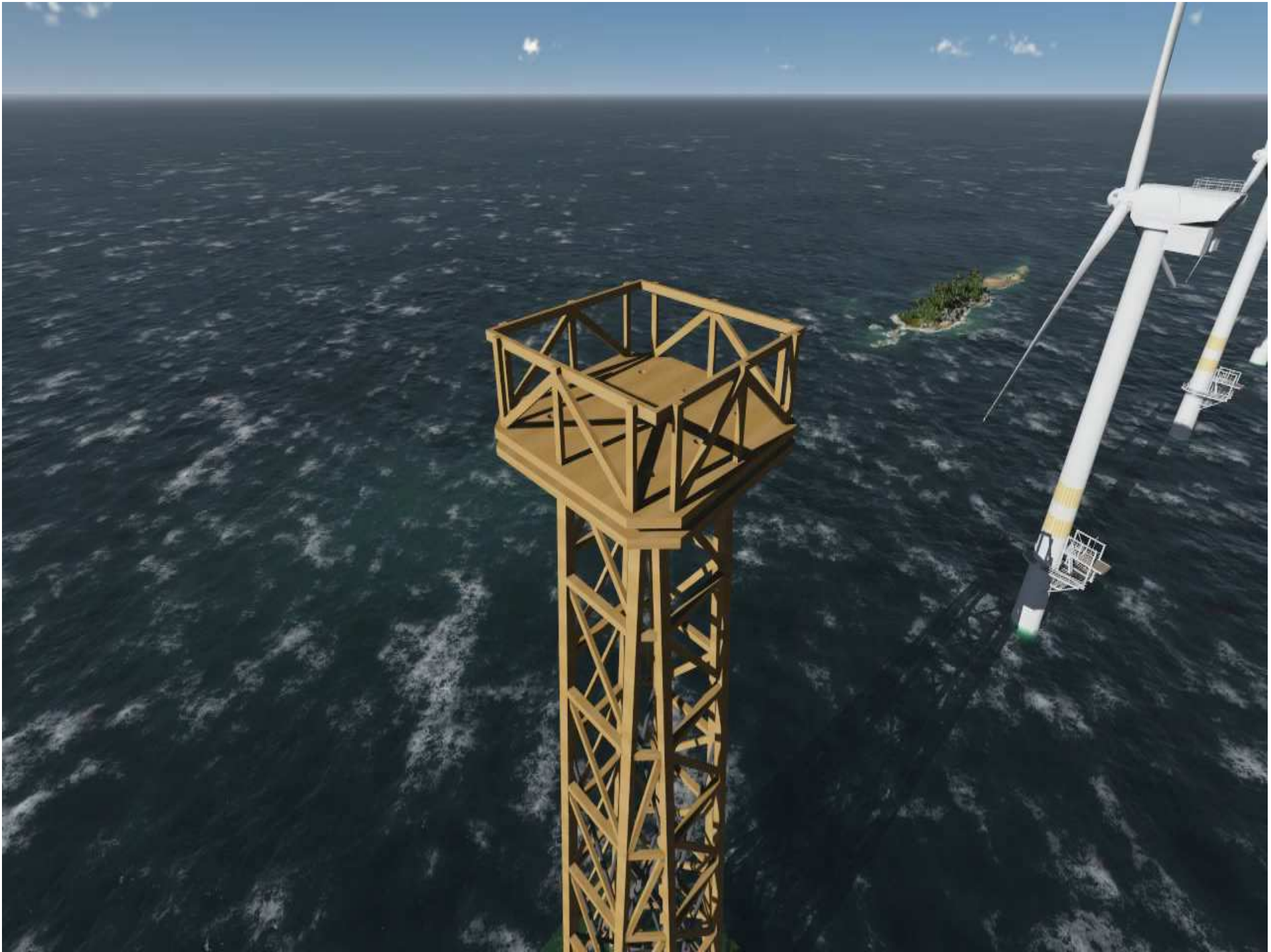
김정규 강소향 장지삼 김성명



**조선대학교**  
CHOSUN UNIVERSITY

건축학부 건축공학전공

Prof. Jae-hyounk CHOI



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## 2. Concept

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- Seismic Isolated System

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- Modeling Process
- Economy Efficiency
- Mock-up

# Members

W-KEEPER  
MI-KEEPER

Members

Background

Concept

Structure

Conclusion

김성경 장지상 지도교수 김정근 강소향  
최재혁 교수님

Wind Power Generator = W-KEEPER  
+ keeper

풍력발전구조물의 구조적 안정을 책임진다!

# Background

Members

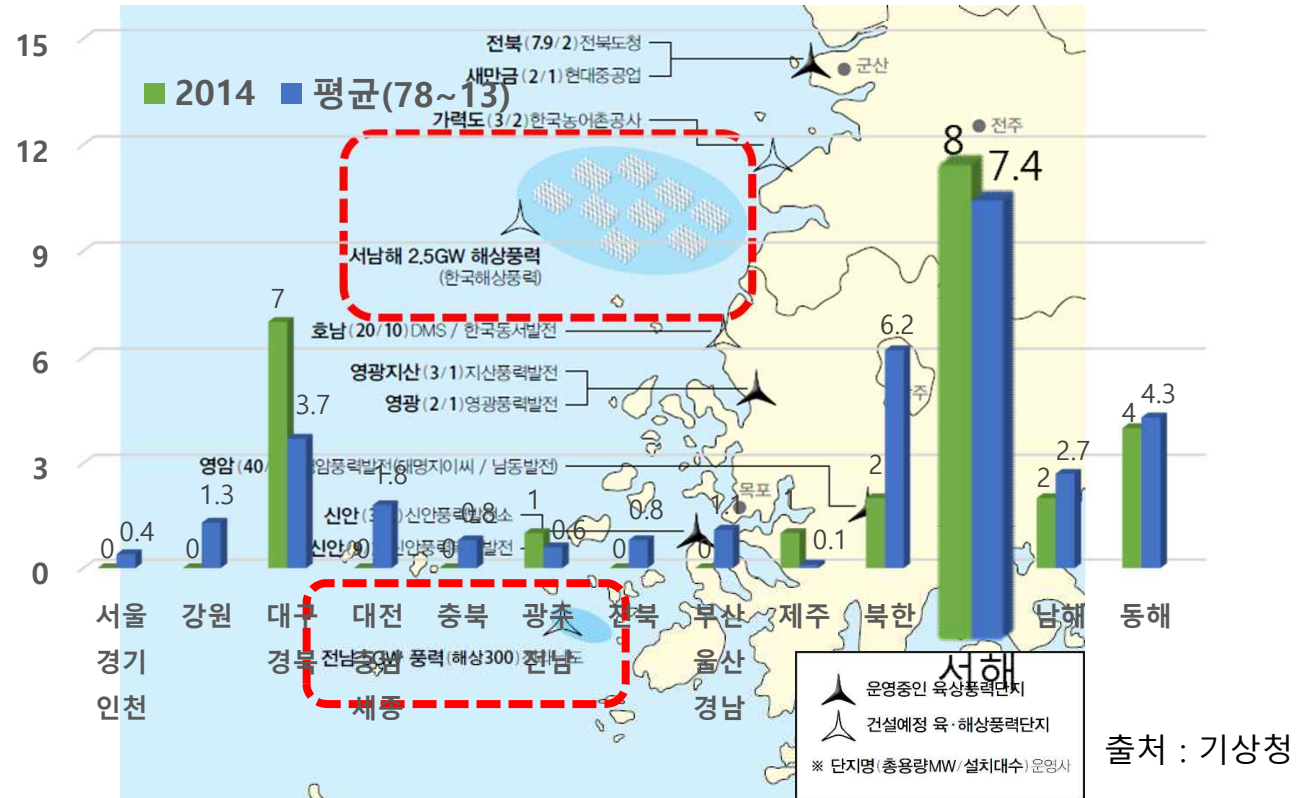
Background

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## 최저4년 풍력발전설치밀도발생지진발생 현황



해상풍력발전시설 설치 **증가!**      서해안 지진발생 빈도 **증가!**  
**풍력발전시설의 내진설계 필요!!!!**

# Background

Members

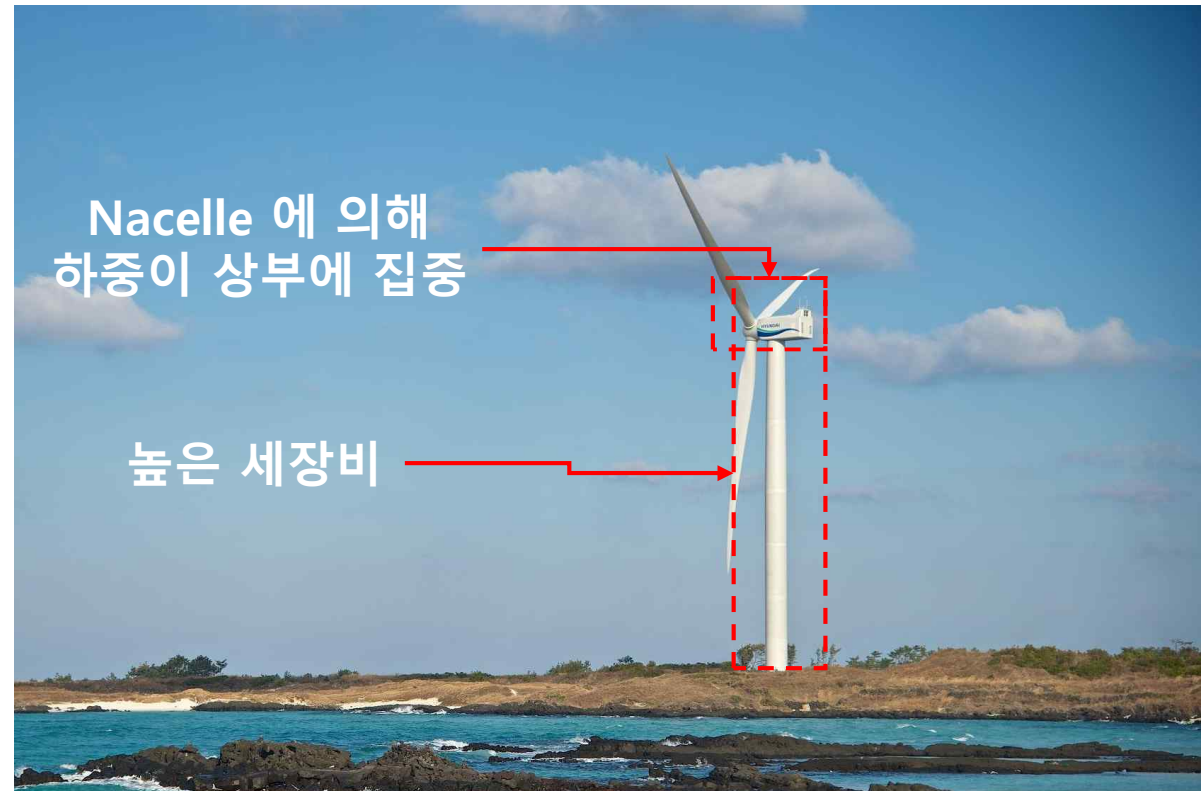
## 풍력발전구조물의 구조적 특성

Background

Concept

Structure

Conclusion



Members

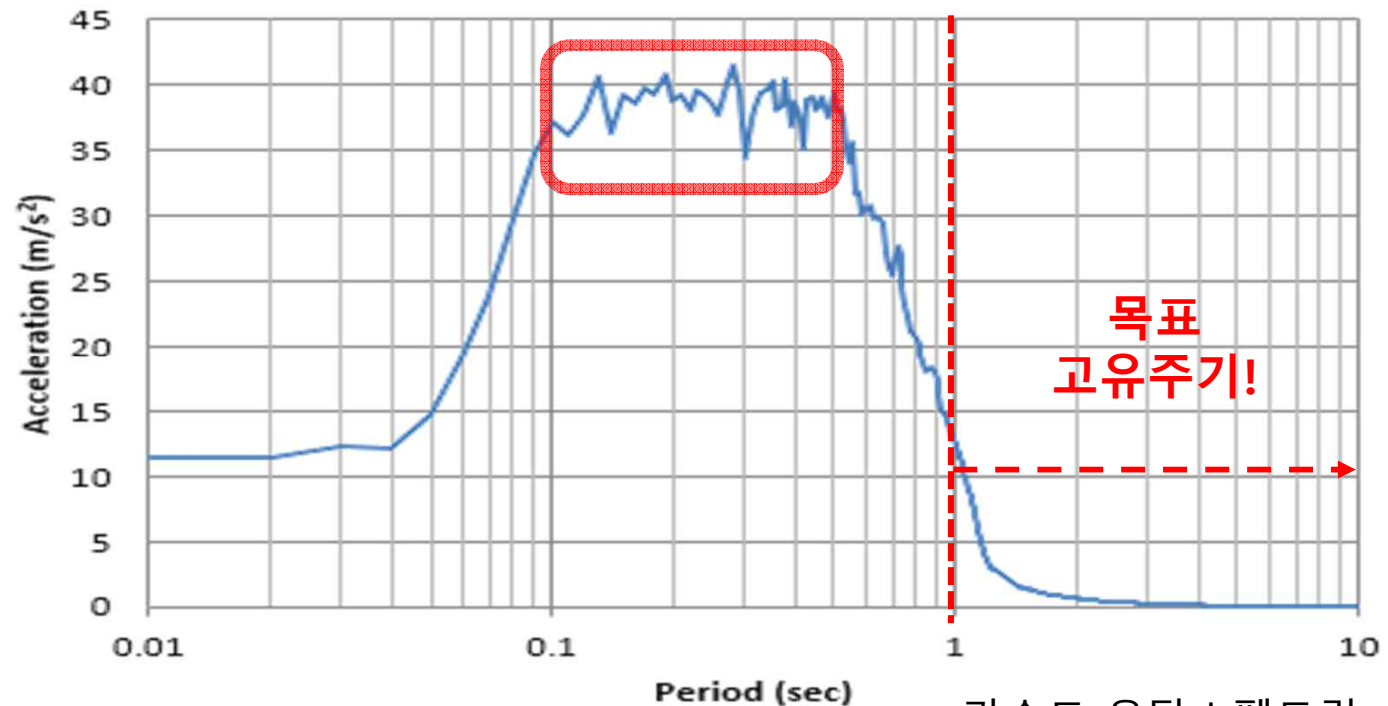
## Seismic Wave

Background

Concept

Structure

Conclusion



0.1~0.5초 주기 사이에 최대 응답 가속도가

가장 높은 단주기 지진파로 해석됨

# Concept

W-KEEPER  
MI-KEEPER

Members

Idea

Background

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Structure

Conclusion



상부 하중의 완충 작용



# Concept

Members

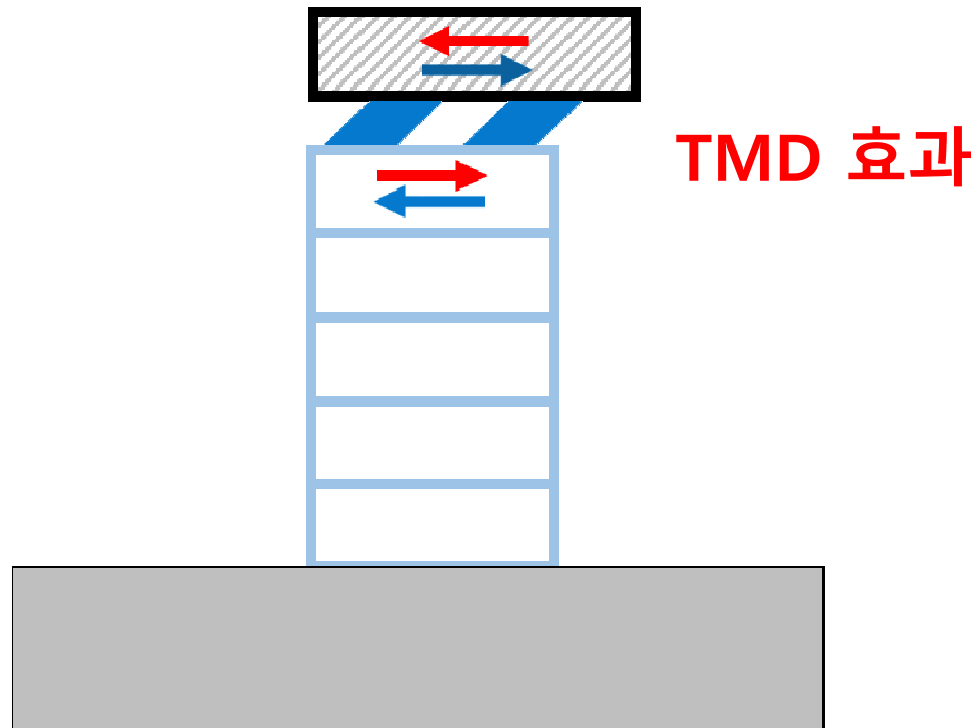
**I**solator

Background

Concept

Structure

Conclusion



최상층 면진시스템 활용

하중으로 인한 구조물의 영향을 줄임

# Structure

W-KEEPER  
MI-KEEPER

Members

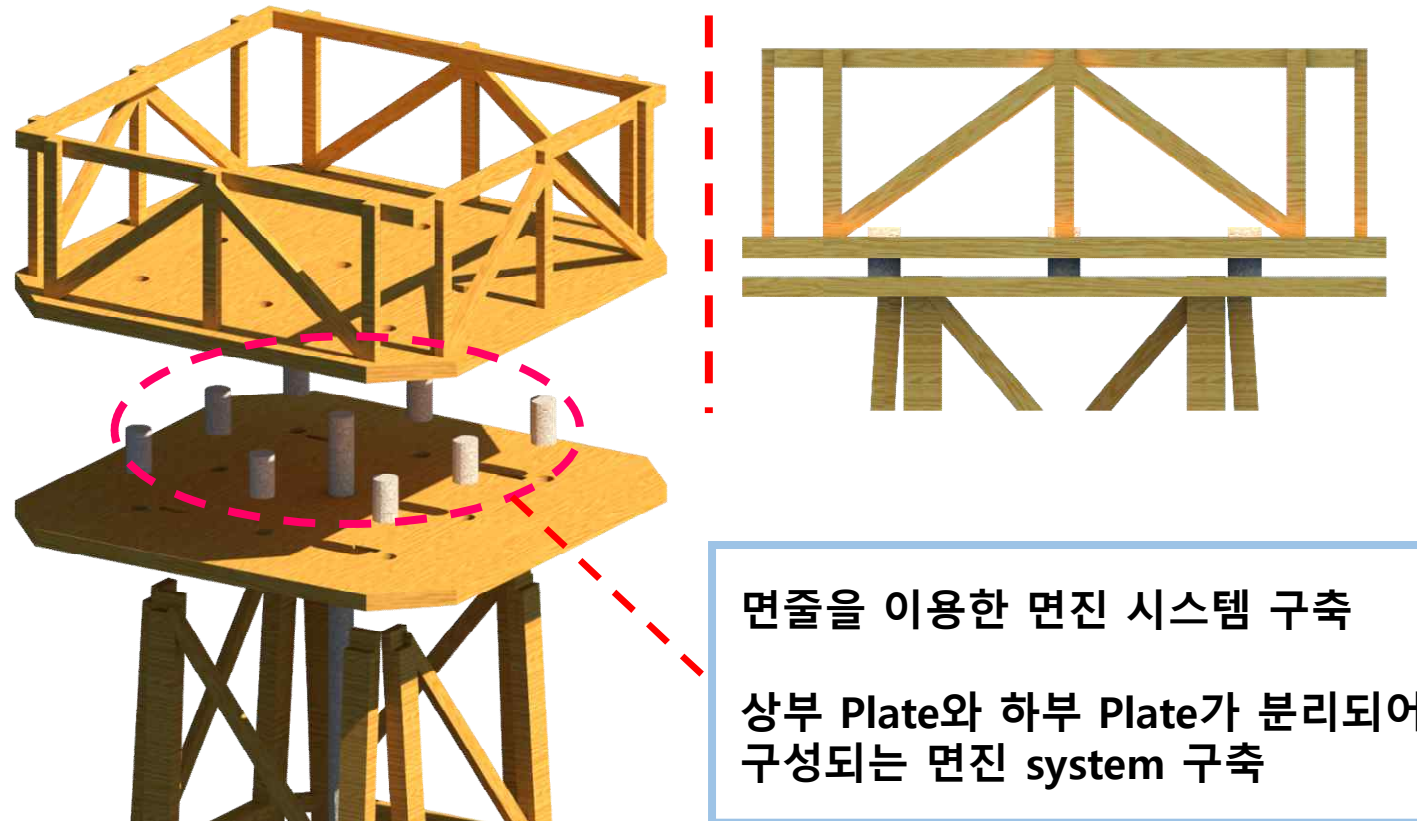
## Seismic Isolated System

Background

Concept

Structure

Conclusion



Members

## Detail

Background

Concept

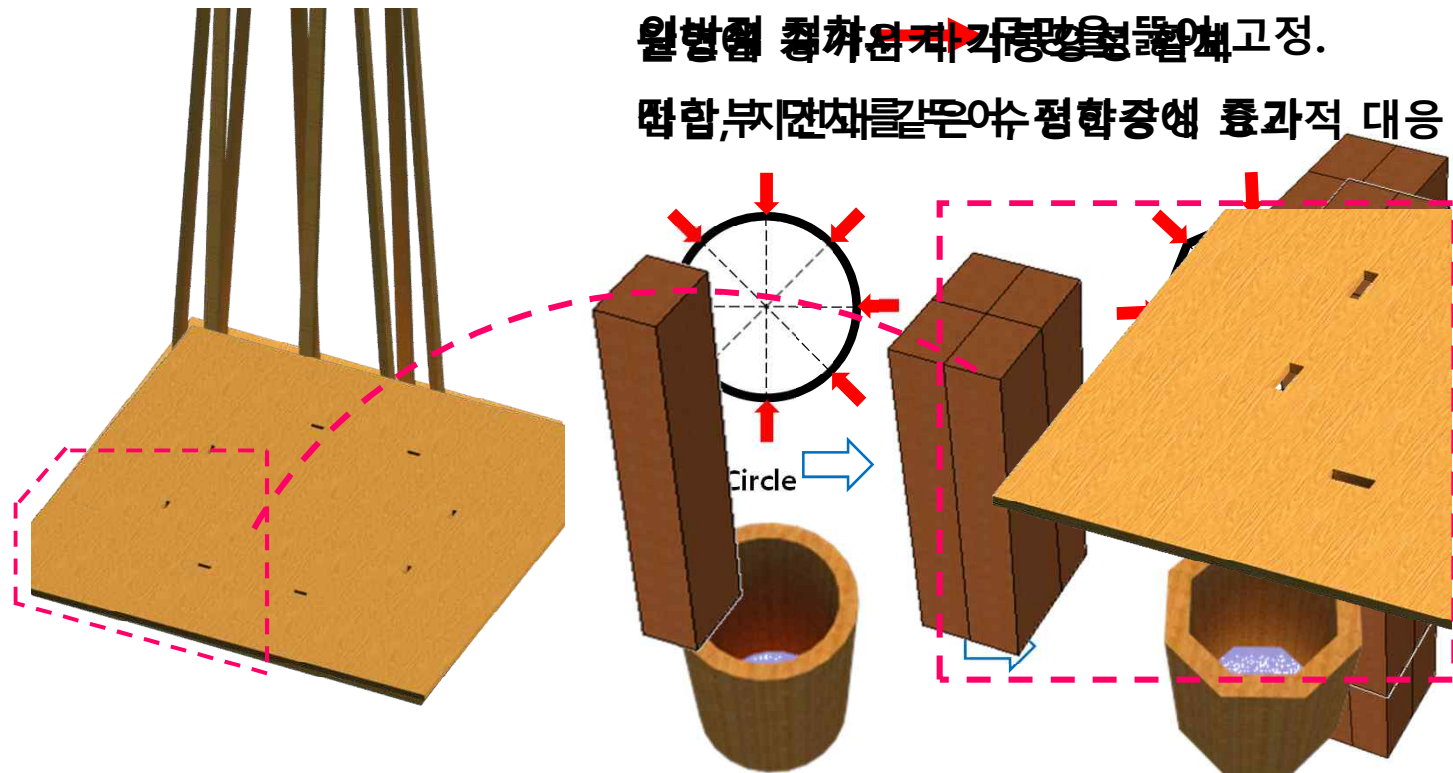
Structure

Conclusion

### Shogun Column

월발형 첩차원까지 각방을 넣어서 고정.

빔합부지간채를같은어췌정합중예 통과적 대응



Members

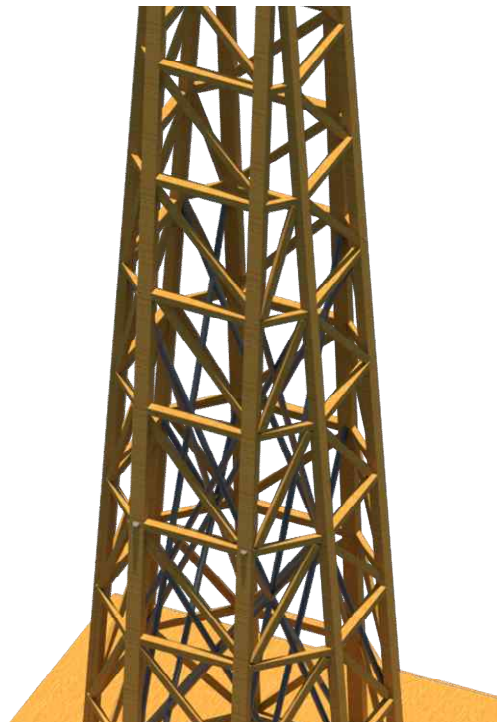
## Detail

Background

Concept

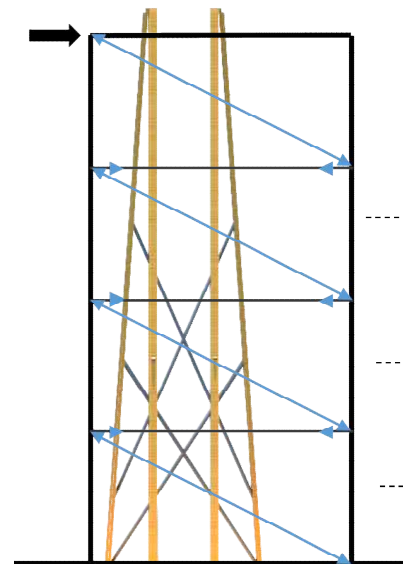
Structure

Conclusion



## Reason

대형 인장재 사용, 변형되지 않도록 하기 위함  
인장재를 통한 부재의 일체화



- 가새의 반복적 사용
- 횡력과 수직력에 유리
- 바람, 지진등의 수평 하중에 유리

# Conclusion

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MI-KEEPER

Members

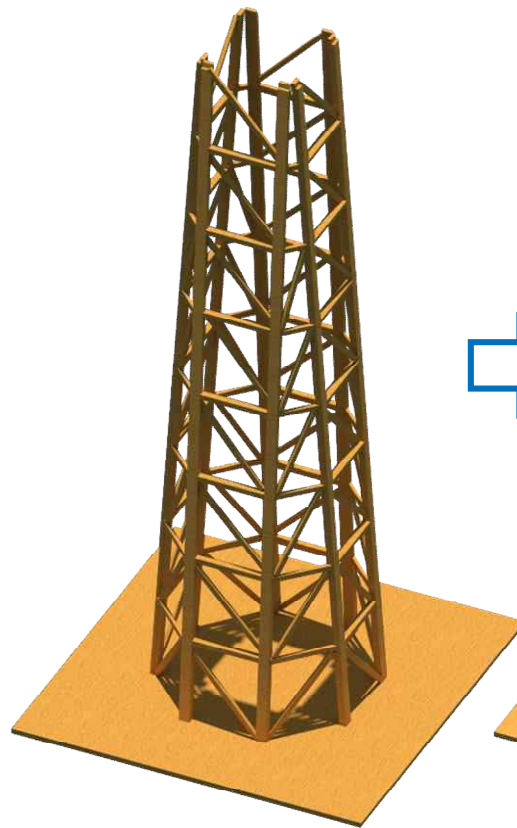
## Process

Background

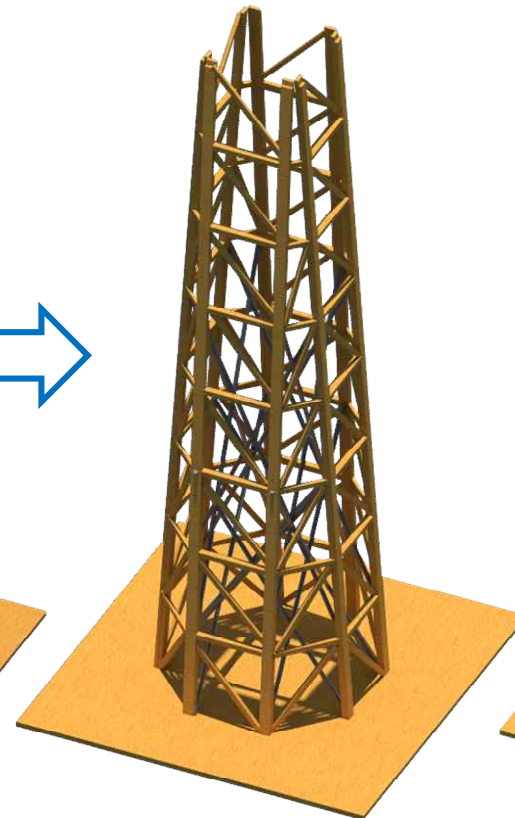
Concept

Structure

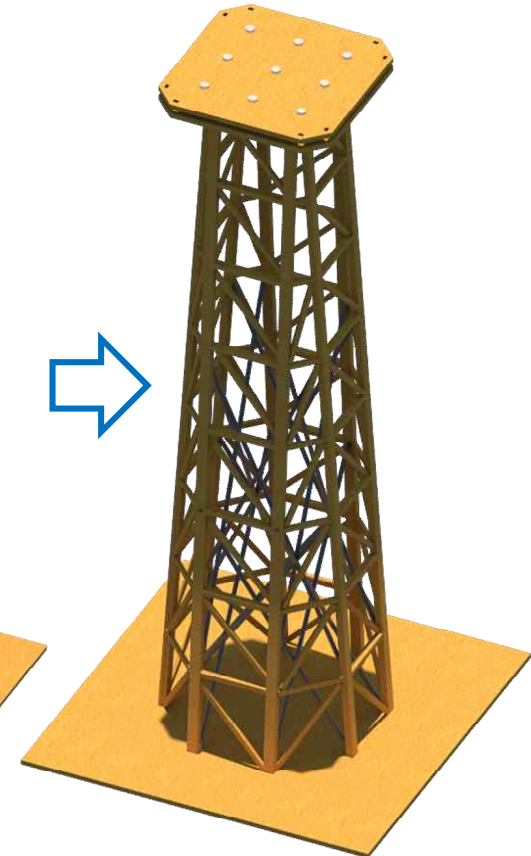
Conclusion



Column + Brace



Tension



Isolator

# Conclusion

Members

## Economy Efficiency

Background

Concept

Structure

Conclusion

재료명	단위	규격	단위수량 [개]	단가 [백만원/개]	합계 [백만원]
기초판	개	400mm×400mm×6mm	1	-	기본제공
MDF Strip	개	6mm×4mm×600mm	90	10	900
MDF Plate	개	200mm×200mm×6mm	2	100	200
면줄	식	600mm	30	10	300
A4지	장	A4	1	10	10
접착제	개	20g	3	200	600
총 합계					2110

1. 면줄에 의한 인장력 보강.
2. Strip을 사용한 기둥 보강.
3. Plate 추가 사용을 이용한 면진 장치 구축.

# Conclusion

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MI-KEEPER

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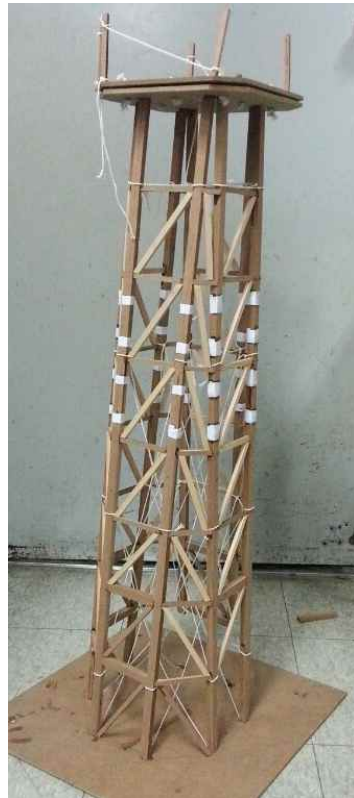
## Mock-up

Background

Concept

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Conclusion





Thank you  
Do you have any Questions?