

International Invention and Innovative Competition (InIIC Series 2/2020)

28 AUGUST 2020 – 30 OCTOBER 2020

Kategori	: Kejayaan Pelajar	Sub-Kategori	: Pertandingan
Peringkat	: Luar Negara	Bahagian	: Siswazah
Pelapor	: Ts. Dr. Norliyati Mohd Amin		
Tempat	: Virtual		
Penganjur	: MNNF		
Penglibatan/Kerjasama	: 2- orang staf , 1- orang pelajar		
	1. Izzul Syazwan Ishak – Ketua		
	2. Ts. Dr. Norliyati Mohd Amin		
	3. Prof. Dr. Norhayati Abd Hamid		

Keterangan Program : Pertandingan Inovasi dan Invention di peringkat antarabangsa

Pencapaian : Gold award untuk kategori “High institution students (science,engineering & technology)”

Water Storage as a Passive Damper to Reduce Earthquake Impact toward High-rise Structure

UNIVERSITI TEKNOLOGI MARA (UiTM) SHAH ALAM
 Advisor : Ts. Dr. Norliyati Mohd Amin
 Leader : Izzul Syazwan bin Ishak
 Member : Prof Dr Norhayati Abd. Hamid

1 INTRODUCTION

- Malaysia is located in stable Sunda Shelf
- However, the earthquake from neighbouring country can be felt
- For Example, the earthquake on 22 January 2003 that affect Penang and Kuala Lumpur
- In June 2015, Ranau Sabah was struck by 6.0 magnitude

3 OBJECTIVES

- To provide economical and practical damper for low seismic region
- To find best water tanks positions as passive damper

NOVELTY

The position of multiple water tanks as passive damper is not well describe

5 COMMERCIALIZATION

- COST - the price for setup and maintenance is cheap
- PROFIT - the investor will benefit as increasing in building value in term of safety
- SUSTAINABILITY - increase the Green Building Index
- EASY - use existing water tanks as passive damper instead of just as water storage
- AWARENESS - lesson learned from pass earthquake event as precaution measurement

Passive Control System

- Work without requiring any external power source
- Low installation and maintenance cost
- An example of passive control system is Tuned Liquid Damper (TLD)
- TLD can be a water tank
- TLD is easy to tune

2 PROBLEM STATEMENT

The "Bowl of Jelly" phenomenon as happened to Mexico City in 1984 should be considered more seriously

- The phenomena have shown that an earthquake could have a significant effect at a longer distance due to a long period component of shear waves.
- Buildings in Malaysia are not designed for earthquake code

4 BENEFITS TO USER

- The fewer mechanical problem as no moving parts is present
- Low installation and RMO (running, maintenance, operation) cost
- Increase asset value as the safety of building increase
- Sustainability by using existing water tanks as a damper

BENEFITS TO SOCIETY

- Green technology
- Increase building safety
- Increase comfortability of the occupant
- Reduce climate change
- Save tax money for damper at the government building

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RECOGNITION

1. Paper Publish in International Journal of Engineering and Advanced Technology (IJEAT)

AWARD Certificate

This is to certify that

IZZUL SYAZWAN BIN ISHAK
TS. DR. NORLIYATI MOHD AMIN
PROF. DR. NORHAYATI ABD HAMID

have achieved a
GOLD AWARD

in
INTERNATIONAL INVENTION & INNOVATIVE COMPETITION (InIIC Series 2/2020)

with a title:
"WATER STORAGE AS A PASSIVE DAMPER TO REDUCE EARTHQUAKE IMPACT TOWARD HIGH-RISE STRUCTURE"

in category:
HIGHER INSTITUTION STUDENTS (SCIENCE, ENGINEERING & TECHNOLOGY)

on
30 October 2020

Md Nadzri Salleh
 Director, MNNF Network