

LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : PROSIDING

Judul Karya Ilmiah : Development Experimental Investigations of Truss Bridge Models for Vibration-Based Structural Health Monitoring

Jumlah Penulis : 4 orang (**Sukamta***, Angga Alfiannur, Susilo Adi Widyanto and Han Ay Lie)

Status Pengusul : Penulis pertama dan penulis korespondensi

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Total = (100%)	29,25	29,00	29,125
Nilai Pengusul = 60% x 29,125 = 17,48			

Reviewer 1



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Semarang, 18 Januari 2023

Reviewer 2



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Semarang, November 2022
Reviewer 1



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Semarang, November 2022

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Development Experimental Investigations of Truss Bridge Model for Vibration-Based Structural Health Monitoring

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In recent years the need for Structural Health Monitoring (SHM) has become increasingly important. Given current technological developments, a visual inspection can no longer be a reference due to inaccurate accuracy levels. In this case, there is a need for an early warning in detecting fast and accurate damage compared to visual inspection. This study proposes a vibration-based structural health monitoring analytical framework by introducing a modal analysis approach based on the

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Pan, C.D. , Yu, L.
(2017) *SHMII 2017 - 8th International Conference on Structural Health Monitoring of Intelligent Infrastructure, Proceedings*

Vibration-Based Health Monitoring of an Existing Truss Bridge Using Energy-Based Damping Evaluation

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Proceedings of the 5th International Conference on Sustainable Civil Engineering Structures and Construction Materials

SCESCM 2020

Sheila Belayutham ·
Che Khairil Izam Che Ibrahim ·
Anizahyati Alisibramulisi · Hazrina Mansor ·
Muntasir Billah
Editors

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SCESCM 2020

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 Iman Satyarno, Universitas Gadjah Mada, [Indonesia](#)

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Steel Truss Reinforced Concrete: Shear Design for Earthquake Resistant Buildings

 Prof. Takashi Matsumoto, Hokkaido University, [Japan](#)

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Impacts of Steel LNG Tank Aspect Ratio on Seismic Vulnerability Subjected to Near-Field Earthquakes



N. Sharari, B. Fatahi, A. Hokmabadi, and R. Xu

Abstract Liquefied Natural Gas (LNG) tanks seismic design is critically important considering the high consequences of failure given the hazardous nature of the stored product. The LNG tanks aspect ratio (H/D), as decided at the design stage based on several considerations, can impact its dynamic characteristic and in turn the seismic performance of the tank under the design earthquakes. In this paper, the seismic vulnerability of the inner steel LNG tanks with varying height (H) to diameter (D) aspect ratios is investigated. Dynamic fluid–structure interaction is captured using the added-mass method and tank walls are modelled using general-purpose finite element software ABAQUS considering the material and geometric nonlinearities. Adopting time-history analysis, deformation and stresses developed in the tank subjected to two large near-field earthquakes namely 1994 Northridge and 1995 Kobe earthquakes are assessed. The results demonstrate that the tank aspect ratio (H/D) plays an important role in the modes of failure, where increasing the aspect ratio (tall tanks) initiates the elephant’s foot buckling mode of failure. The selection of optimum aspect ratio can lead to a safe and economic seismic design.

Keywords LNG tank · Nickel steel · Near-field earthquake · Finite element · Seismic response · ABAQUS

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Development of Automated Web-Based Condition Survey System for Heritage Monuments Using Deep Learning



Lukman E. Mansuri and D. A. Patel

Abstract Heritage is the identity of any society, and it should be conserved for the coming generations. Heritage monuments and buildings are seriously threatened by environmental agencies such as moisture, intense solar radiation, prevailing winds, and rain, changing their physical attributes. These environmental agencies cause various defects like spalling, abrasion, cracks, stains, and fungal growth in the heritage monuments. Detection and documentation of these defects are processes of the condition survey, which should be required just before the commencement of repair and maintenance of any structure. Traditionally, these defects are detected and documented by experts on the field using paper-based surveys. However, these methods are time-consuming and require immense expertise and cost. This paper presents the novel approach of condition survey by automated defect detection system to overcome these limitations. The automated defect detection system is developed using the Faster R-CNN (Region-based Convolutional Neural Network) to detect multiple types of defects from the heritage monument photos. Moreover, the web-based interface is developed to run the automated condition survey system. Types and number of defects and the position of defects are the output of the developed condition survey system. The system is demonstrated for the national heritage monument located in Surat city to check the developed system's effectiveness and field application. The proposed system is automatic, fast, and reliable for a condition survey of heritage monuments. This system will be useful for conservation, preservation, and maintenance management of heritage monuments.

Keywords Condition survey · Automatic defect detection · Heritage monuments · Deep learning · Faster R-CNN

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Effect of Palm Oil Bottom Ash (POBA) on Concrete Mechanical Properties of Fresh and Hardened Ultra High Performance Concrete (UHPC)



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Abstract The rapid development of building construction requires innovation in the improvement of the material properties of the concrete as well as in the finding of a solution to reduce the dependence on the raw materials currently used. In the meantime, the biggest environmental problem that typically causes pollution usually comes from waste disposal. One of the wastes that has been discovered is the bottom ash of palm oil (POBA). Bottom ash is a domestic waste that could be found in a disposal site consisting of silica and alumina. Both silica and alumina are additional cement-based materials that provide cementing properties that can enhance concrete strength due to pozzolanic reactions with the presence of water. This research aims to recycle POBA waste by adding it as an additive to ultra-high-performance concrete (UHPC) mixtures. The composition of 5, 10 and 15% of the bottom ash was used to determine the optimum design. Workability and compressive capacity of 100 mm³ UHPC cubes were observed on the mixing day, 3rd, 7th, 14th and 28th days after day of casting. The research results show that the addition of POBA has had an impact on the workability and compressive strength of the UHPC and that the optimum percentage of the POBA composition is 15%.

Keywords Palm oil bottom ash · Ultra high performance concrete · Superplasticizer · Workability · Compressive strength

1 Introduction

The progress of construction industry in the twenty-first century is leading to growth in recent years. In 2006, 7.5 km² of concrete were produced annually where the concrete consumption can be estimated about 1 m³ per capita [1]. As a result, concrete has become the world's second-largest item needed by humans after their critical water needs [2].

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Study on Partial Replacement of Cement with Limonite in Mechanical Strength of Mortar



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Abstract With the increasing population worldwide, main concerns are not limited to accessing sustainable living spaces but also managing waste disposal and greenhouse emissions. The supplementary cementitious materials (SCM) therefore play a vital role in providing an economical solution towards a greener environment, especially in the developing countries. The pozzolanic properties of limonite are studied in this paper to identify its potential to be used as an SCM. This study is aimed at utilizing limonite as a partial replacement of cement in the mortar by 5%, 10%, 15% and 20% of its weight. The pozzolanic properties of the limonite are traced through the results of compressive strength and the physical properties are also investigated in the form of specific gravity, setting time, consistency and fineness. Conventional cement mortar is also included for comparison. The results indicate that up to 10% replacement of cement by limonite allows an increase in the compressive strength of the mortar by 27% at 28 days. However, upon further increasing the percentage replacement, limonite had a significant effect in the mortar specimens. Lastly, this paper suggests that a reliable design guideline can be developed which will promote the use of limonite in wider implementations.

Keywords Limonite · Cement replacement · Mortar · Compressive strength

1 Introduction

Affordable building construction practice in the developing nations is increasing its popularity since the cost of construction materials is on the rise every day. Among

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