The 2023 World Congress on
Advances in Structural Engineering and Mechanics (ASEM23)
GECE, Seoul, Korea, August 16-18, 2023

Automated inspection method for building elements of temporary structures based on the 3D shape obtained using a laser profiler

Jonghwa Hong[1] and *Sung-Han Sim[2]

[1] *Department of Global Smart City, Sungkyunkwan University, Suwon 16419, Korea*
[2] *School of Civil, Architectural Engineering and Landscape Architecture, Sungkyunkwan University, Suwon 16419, Korea*
*ssim@skku.edu

ABSTRACT

As building elements of temporary structures in the construction sites are generally reused, inspection of the elements before being used is essential to ensure safety during the construction. This study proposes an automated inspection method for the building elements of temporary structures based on their measured 3D shapes. A laser profiler is employed to obtain the 3D shape of each element, which can have damage characteristics such as dent, thread damage, and damaged pin holes. Prior information regarding the element and associated 3D shape data are used to detect any changes in shapes that can be considered as damage. The proposed method is validated using elements of temporary structures with damages.

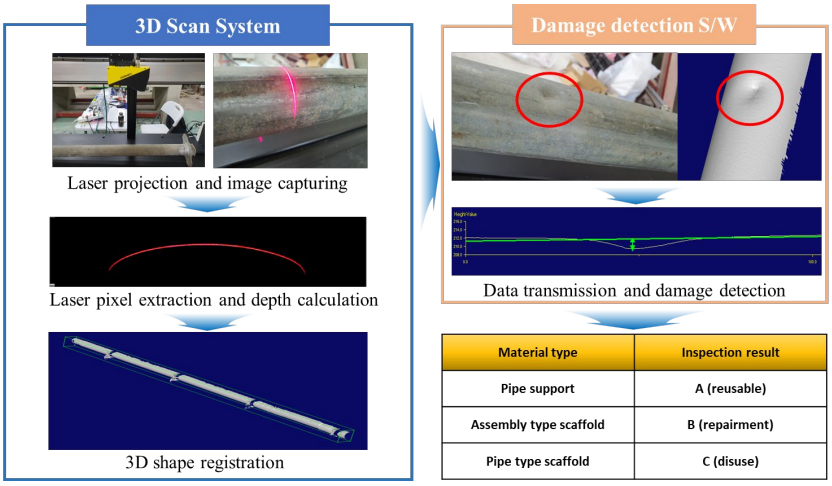

Fig. 1 Procedure of the proposed inspection scheme

ACKNOWLEDGEMENT

This work is supported by the Korea Agency for Infrastructure Technology Advancement (KAIA) grant funded by the Ministry of Land, Infrastructure and Transport (Grant RS-2020-KA156488).

[1] Graduate student
[2] Professor