

**ANALYSIS AND ASSESSMENT OF EXISTING STRUCTURAL HEALTH MONITORING SYSTEMS (SHMS) OF CABLE-STAYED BRIDGE IN VIETNAM**

**ANALIZA I OCENA ISTNIEJĄCYCH SYSTEMÓW MONITOROWANIA STANU STRUKTURALNEGO (SHMS) MOSTU WANTOWEGO W WIETNAMIE**

*Structure and Environment* No. 3/2019, vol. 11, p. 190

DOI: 10.30540/sac-2019-014

**Abstract**

Since 2000 when the My Thuan Bridge, the first cable-stayed bridge in Vietnam, was put into operation, and now Vietnam has more than 20 types of cable-stayed bridges constructed throughout the country in the last two decades, which is a significant accomplishment for a developing country like Vietnam. Therefore, the SHM system is gradually being designed and installed for cable stayed bridges to ensure economic exploitation and safety. Due to the limited of financing sources, these systems are very limited, and their quality have a lot to be desired. Also, due to the lack of appropriate classification personnel with experience in the SHM system, these systems encountered a lot of problems. In this article author will deeply analyze the mistakes and problems of these SHM systems, which already exist in Vietnam, to find solutions for the future. Therefore, this will open up new prospects, new challenges and possibilities for the development of these systems in Vietnam in the near future.

**Streszczenie**

W 2000 roku oddano do użytku most My Thuan, pierwszy most wantowy w Wietnamie, a teraz Wietnam ma ponad 20 rodzajów mostów wantowych zbudowanych w całym kraju w ciągu ostatnich dwóch dekad, co jest znaczącym osiągnięciem dla kraju rozwijającego się, takiego jak Wietnam. W związku z tym system SHM jest stopniowo projektowany i instalowany dla mostów kablowych, aby zapewnić ekonomiczną eksploatację i bezpieczeństwo. Ze względu na ograniczone źródła finansowania systemy te są bardzo ograniczone, a ich jakość pozostawia wiele do życzenia. Ponadto z powodu braku odpowiedniego wykwalifikowanego personelu z doświadczeniem w systemie SHM systemy te napotkały wiele problemów. W tym artykule autor dogłębnie przeanalizuje błędy i problemy systemów SHM, które już istnieją w Wietnamie, aby znaleźć rozwiązania na przyszłość. Otworzy to nowe perspektywy, nowe wyzwania i możliwości rozwoju tych systemów w Wietnamie w najbliższej przyszłości.

**REFERENCES**

- [1] Huong B. H., 2014. *Bố trí thiết bị quan trắc cho cầu dây văng Rạch Miễu – Tạp chí Cầu – Hầm*, TEDI/Bộ GTVT.
- [2] Friswell, M.I. and Mottershead, J.E. (1995), *Finite Element Model Updating in Structural Dynamics*, Kluwer Academic Publishers. ISBN 978-94-015-8508-8.
- [3] Nam H., 2018. *Hệ quan trắc công trình cầu Cần Thơ - Tạp chí Giao thông vận tải*, ISSN: 2354-0818
- [4] Andersen J. E., Vesterinen A., 2006. *Structural Health Monitoring Systems - First Edition*. COWI – Futurtec - COWI ISBN-87-91044-04-9.
- [5] Matsuno K. & Taki N., 2014 – *Construction of the Nhat Tan (Japan Vietnam Friendship Bridge) Superstructure*. Bridge and Foundation Engineering Vol.48: 02–12.
- [6] Chinh L. M., 2014. BRIMOS – SHM system for cable-stayed Can Tho Bridge, *Inżynieria I Budownictwo – ISSN 0021-0315*. Poland. No 7/2014.:397-400.
- [7] Chinh L. M., 2014. Long term structural health monitoring system for cable stayed bridge in Vietnam. *Tạp chí Khoa học kỹ thuật thủy lợi và Môi trường - ISSN: 1859-3941*. No. 44 (3/2014)
- [8] Chinh L. M., G. Swit, 2015. Application of the acoustic emission method of identification and location of destructive processes to the monitoring of the technical state of pre-stressed concrete bridges. *Hội nghị khoa học Công nghệ Giao thông vận tải lần thứ III*, năm 2015.
- [9] Chinh L. M., Swit G., Adamczak A., Krampikowska A.. 2016. *Nhat Tan Bridge – The biggest cable-stayed bridge in Vietnam*. Symposium WMCAUS 2016. Czech. Procedia Engineering 161 (2016): 666 – 673.
- [10] Chinh L. M., Swit G.. 2016. *A Prototype System for Acoustic Emission-Based Structural Health Monitoring of Mỹ Thuận Bridge*. Prognostics & System Health Management Conference—Chengdu (PHM-2016 Chengdu, China).