

# 非破壞檢測應用在歷史木結構修護之個案探討

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## 摘要

The use of non-destructive testing (NDT) method in evaluating the strength and the degradation state of components in wood structures are widely used in the past years. The Huang Chu-jen Residence and the Guanghsiao Hall are the historical buildings of Yilan County. Because of the requirements of urban development, they are disassembled at their original location and reassembled back in National Center for Traditional Arts in accordance with their original appearance. In this paper, the NDT method used in the process will be presented. All of the disassembled components are required to evaluate their biological degradation by using visual and sampling measuring method. Also, the Stress Wave and Resistograph Method are applied to evaluate the mechanic nature of the components at the same time. The propagation speed of stress wave as well as the resistibility of the material can be used to identify the usability of the components. The components shall be replaced if the damage ratio reaches 30%, otherwise, the components shall be repaired and reused. In Huang Chu-jen Residence, the total evaluated components are about 290, 209 of them shall be replaced, and 77 of them shall be repaired and reused. The replaced ratio is about 72%. In Guanghsiao Hall, the total evaluated

components are about 92, 48 of them shall be replaced, and 34 of them shall be repaired and reused. The replaced ratio is about 52%. The use of NDT technology to identify the damage condition of a wood' s component will be useful for repairing of historical wood building.

關鍵字：Historical Building, Wood Structure, Non-destructive Testing, Stress Wave, Resistograph