

Control of seismic response of structures: Closure

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ABSTRACT: An overview is given of the technical papers and special theme session at the 10WCEE that dealt with the control of the seismic response of structures. Also given is a resume of recent conferences and workshops that dealt with various aspects of intelligent "structures."

1 INTRODUCTION

Since the convening of the Ninth World Conference on Earthquake Engineering (9WCEE) in Tokyo/Kyoto, there has been a growing world-wide interest in the subject of "smart" civil structures that are capable of adapting their characteristics in order to minimize their response under arbitrary dynamic environments.

Several national and bilateral workshops have been convened in the recent past to deal with various aspects of intelligent structures and materials. Among such workshops that were specifically concerned with civil structures are:

1. Taiwan: "International Workshop on Intelligent Structures," (Chong et al., 1990).
2. USA: "U.S. National Workshop on Structural Control Research," (Housner and Masri, 1990).
3. Italy: "International Workshop on Intelligent Systems," (Wen, 1991).
4. Hong Kong: "International Workshop on Technology for Infrastructure Development," (Chen and Beck, 1991)
5. Japan: "National Symposium/Workshop on Structural Response Control," (Kobori, 1992).
6. UK: "First European Conference on Smart Structures and Materials," (Culshaw et al., 1992).
7. Italy: "U.S.-Italy -Japan Workshop on Structural Control and Intelligent Systems," (Housner et al., 1992).

In addition, several countries have established, or are in the process of establishing, formal organizations to coordinate their respective national activities in the field of structural control. These activities are a clear indicator of the breadth of interest in this promising and challenging field. This growing world-wide interest in the general field of structural control is reflected in the major increase of papers submitted to the 10WCEE.

2 10WCEE STRUCTURAL CONTROL SESSIONS

To accommodate the large number of submitted abstracts dealing with the subject of passive as well as active response control, the 10WCEE Steering Committee organized the following sessions:

1. Session Mo4-E (Topic 7): Control Systems of Seismic Isolation - I; (6 papers)
2. Session Tu1-E (Topic 7): Control Systems of Seismic Isolation - II; (6 papers)
3. Poster Session P3: Seismic Isolation; (27 posters)
4. Session Tu4-E (Topic 7): Isolation Methods and Devices; (7 papers)
5. Session We2-E (Topic 7): Experimental and Analytical Studies on Seismic Isolation - I; (6 papers)
6. Session We3-E (Topic 7): Experimental and Analytical Studies on Seismic Isolation - II; (4 papers)
7. Special Theme Session (Friday): Control of Seismic Response of Structures; presentations and panel discussion.

While the majority of papers in the sessions listed above were concerned with passive methods for seismic response control (particularly isolation techniques), a significant fraction was devoted to active control approaches. The Special Theme Session on control of seismic response dealt exclusively with active control techniques. Participating speakers addressed a very wide spectrum of technical issues and problem areas in which significant progress has been accomplished since the previous World Conference.

3 CONCLUSIONS

Even though a considerable amount of progress has been achieved in the field of seismic response control using various passive and active approaches, there are still many diverse research topics related to the control and monitoring of structural systems that need study and await resolution before the promise of the smart structures and materials technology is fully realized in the context of seismic response control of civil infrastructure systems.

Progress in this field will be speeded by multi-national efforts involving world-wide collaborative research projects, exchange of personnel, jointly organized tests, and exchange of data and technical information.

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