Foreword by Caspar Groot

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In the field of Civil Engineering, important reasons for testing are the need for data regarding (performance) characterization, functioning of systems and the evaluation of durability. Basic testing areas are physical, mechanical and chemical testing. Apart from materials choice, design, on-site work procedures and maintenance are especially environmental factors which play a role regarding functioning and durability of civil engineering systems, such as moisture and salt supply, temperature variation, exposure to fire, dynamic loads and soil settlements.

In "Advances on Testing and Experimentation in Civil Engineering—Materials, Structures and Buildings", the modern developments in this wide field of testing are treated in 17 chapters.

A main observation with regard to this collection of novel test techniques is that it shows the enormous influence of the developments in micro-electronics and computers over the past decades. Mini-sensors, transport of measuring data to data loggers or directly to computers and the processing of data through adequate programs changed the testing world of Civil Engineering from point measurements to a continuous assessment of properties, enabling the monitoring, the functioning and the state of materials, structures and buildings.

Examples of presented novel testing methods, using the mentioned modern technical developments range from Remote Inspection, detecting concrete damage using a drone to a Structural Health Monitoring system for civil engineering structures, from NDT measuring of real time deformation to sophisticated accelerated weathering testing, from acoustic testing to a modelling tool for lighting systems.

Less striking at first sight but certainly important are as well the influence of specific social developments on testing. Examples, stemming from the current emphasis on the reuse of materials, the prevention of the occurrence and application of hazardous substances, such as regarding pollutants, that may end up in the environment, are treated in this book.

In conclusion it may be stated that, as a result of the significant progress in testing techniques (in hard and soft ware), it has become more effective, useful and attractive to control the quality of production processes, the functioning of systems and the monitoring of durability in Civil Engineering.

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