The Aim

The project group BauProtect will incorporate the gained results into

- Technical guidelines
- Construction measure catalogues
- Topic related individual flyers
- Administrative recommended actions

It is intended to continually update the results of the project group. Provided that the project work allows it and the results are stable, information about individual topics will be published before the consolidated results.

Expert Construction Network

To accompany the project, an expert network "Risk Construction Management" will involve all relevant disciplines and specific institutions (authorities, institutes, universities, industry etc.). It is envisaged that the expert network supports the work of the project group via a forum and incident-related contacts according to the tasks. The cooperation at international level allows the coordination and harmonisation within the European grouping and with partners across the world. To this end, the project group will set up an Internet forum which will be available under the following link:

www.risikomanagement-bau.de

which will not only serve as an internal communication base but furthermore allow to be used by the population.

© Aquasoli.eu Ingenieurbüro,
Traunstein Computer animated flood model under extreme weather conditions

Project Partners

From the start of its work, the project group BauProtect had already won partners. It is envisaged to continue and expand the juxtaposition of competence and experience.

| Universität der Bundeswehr München | Institute for Mechanics and Statics |
RWTH AACHEN UNIVERSITY	Chair for Structural Engineering and Structural Dynamics
Fachhochschule Köln Cologne University of Applied Sciences Institut für Rettungsingenieurwesen und Gefahrenabwehr	Subject area of Rescue Engineering
Fraunhofer EMI	Fraunhofer Institute for Ultrafast Dynamics Freiburg
Harrer Ingenieure	Consultant Engineers Karlsruhe
Schüßler-Plan Ingenieurgesellschaft mbH	Consult GmbH Düsseldorf
Deutscher Wetterdienst Wetter und Klima aus einer Hand	German Weather Service Offenbach

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of Civil Protection and
Disaster Assistance
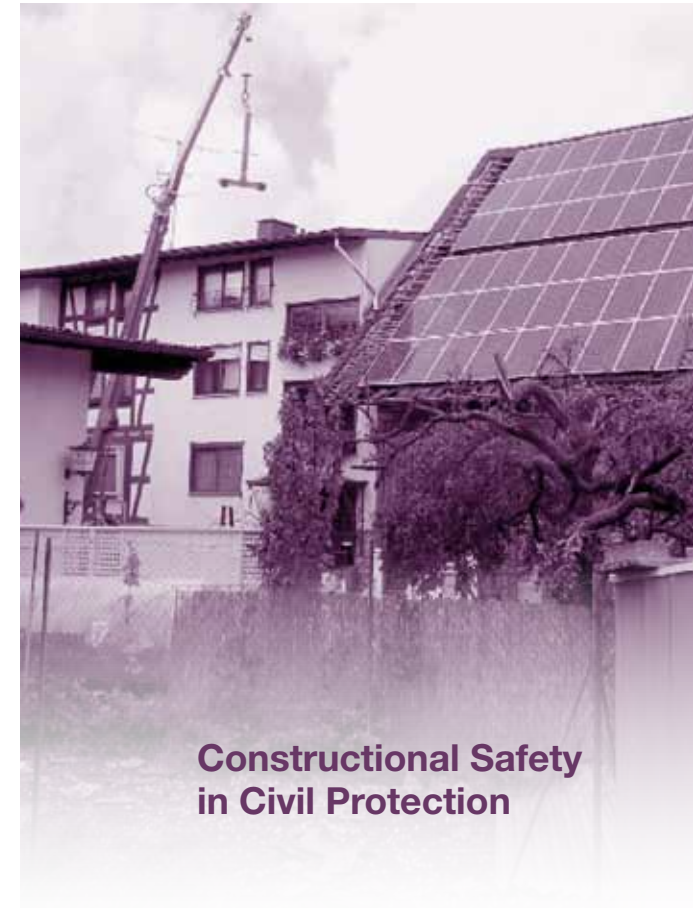
Constructional Safety in Civil Protection

Performance Potentials in Civil Protection

The Project Mandate

Events and developments in the last years have revealed new potential sources of danger concerning the constructional safety of buildings, technical facilities and institutions of Critical Infra-structures.

The increase in extreme weather events, sudden and unexpected dangerous flooding of locations where such incidents were not expected to occur, or sudden tornados across residential areas show that today's constructional safety more and more frequently reaches or even, in many cases, goes beyond its limits; often, excessive stress of building constructions and destructions are the consequence. Moreover, stress caused by industrial accidents, other large-scale incidents or intentional explosions have increasingly become the centre of safety related considerations. The demand in structural / urban planning, technical and systematic protection concepts has grown continuously and requires new, efficient and sustainable solutions.

The Starting Point

The starting point of the project work is the status quo of the existing structures. On the basis of threat and risk analyses, not only the vulnerability of the building structure is to be examined, it has also to be reviewed in cooperation with the economy and the industry, whether the technical set of standards at national and international level must be adapted to the new threat situa-

© M.Leitner,
Collapse of the ice-skating arena in Bad Reichenhall

Impact of a tornado in Lumda (Hessen), July 2010

tion; this is a challenge which will bring the project "Constructional Safety in Civil Protection and for Critical Infrastructures" on a broad and complex level of action. For this purpose the following aspects should be taken into account:

• Building structures
• Surrounding properties
• Allocation of procedures and functions within
  buildings and properties
• Their socio-political particularities
• Criticality
• Its infrastructural significance as well as
• The overall situation with regard to urban development.

The Method

The specific vulnerability of residential houses, industrial plants and production facilities, recreational areas, venues as well as of important cultural buildings and large-scale projects of Critical Infrastructures will be assessed under consideration of the occurrence probability of hazards. Risk analyses will be superimposed on the interfaces between the previous building technology to recognise threshold values. Through structural and technical measures, the decisive safety mechanisms in material, construction, prevention, know-how and planning architecture shall be generated.

The hazards considered here are in particular:

• Extreme precipitation (rain, snow, hail) resulting in extraordinary stress on building structures
• Gale-force storms and tornados which present a sudden danger to all structures
• Longer disruptions to energy supply, water provision and disruptions of information and communication technology
• Release of dangerous biological or chemical, highly toxic agents and their impact on buildings, people and critical functions
• Disastrous flooding and flood situations in populated areas
• Potential earthquake incidents in relevant earthquake regions
• Possible radioactive release
• Detonations near buildings
• Deliberate destruction or the like

After the individual analyses of the threat segments, the interim results will be consolidated and possible solutions for all relevant building and planning sectors developed. The verification of practical viability and the comparison of insights with the national and international set of standards will be done through test buildings in the detailed and real scale.

In reality, building-related checklists will show the building's specific deficiencies and evaluate them by applying risk analysis methods. Through newly developed strengthening measures, an increase in different levels of protection can then be achieved.

© With kind permission of: Joint Research Centre (ELSA, IPSC), test stand for the simulation of earthquake stress