



## ELSA European Laboratory for Structural Assessment

### The Joint Research Centre

(JRC) is the European Union's scientific and technical research laboratory and an integral part of the [European Commission](#) of which is a Directorate General. The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national. JRC work is split between institutional research in support of Commission policymaking, direct support for specific [Directorates-General](#) (DGs) and competitive activities in strategic relationships with the scientific and business communities. JRC guideline is that of 'adding value' where appropriate, rather than competing directly with establishments in the EU Member States.

In the framework of the Thematic Network SAMCO, JRC is engaged through its

### Institute for the Protection and Security of the Citizen (IPSC)

having the mission of providing research-based, systems-oriented support to EU policies so as to protect the citizen against economic and technological risk. The Institute also maintains and develops expertise in information, communication, space and engineering technologies in support of its mission.

### The "European Laboratory for Structural Assessment" (ELSA)

a unit within IPSC has the mission of performing research in areas of



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▲ External View of the Laboratory

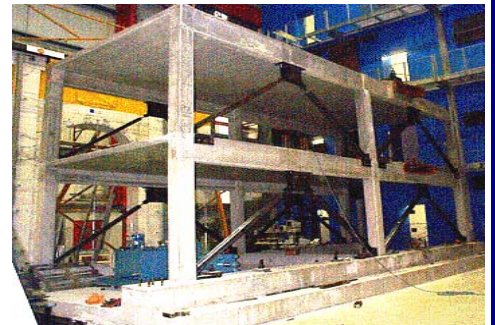
structural mechanics where structural safety is the key. Most of the research work consists of experimental testing assisted by numerical simulation in two areas of main concern for the European citizen: civil construction and transport.

### The main objectives are

- To contribute to European norms on earthquake resistance of structures through large-scale tests, numerical modelling and numerical simulation;
- To contribute to transport safety through precision crash tests, validation of behaviour models and development of advanced numerical tools in transient dynamics.
- To contribute to the "European Research Area" by promoting European research networks in structural mechanics, more specifically in earthquake engineering and transient dynamics;
- To support the competitiveness of European industry through validation tests of advanced materials and new technologies in civil and automotive engineering.

### The research performed at ELSA

is focused on the consequences of natural and man-made hazards on structures. These structures are buildings, bridges, means of transport, and also cultural heritage monuments. The two main facilities of ELSA, the Reaction Wall (RW) and the



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▲ Model of building at ELSA



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▲ Model of cable-stayed-bridge in ELSA



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▲ Large dynamic test facilities

### Large Dynamic Test Facility (LDTF)

are unique by their dimensions and characteristics for Europe. The LDTF consists of a large Hopkinson bar permitting very high strain-rate precision tests to be performed on samples, components and part of vehicles. The dimension of the two arms (100m each) of the facility allows impact tests without disturbances due to wave reflection, thus yielding clean and meaningful results.

The main aim is to support the European Commission in the definition of rules and standards in the area of automotive crashworthiness and, more generally, in areas such as safety in transport and industrial installations. Computational mechanics plays a fundamental role in the context of this activity.

### The Reaction Wall (RW)

Is the kernel of the European Laboratory for Structural Assessment.

The vertical wall and the horizontal floors are designed to resist to the high forces (typically several MN) that are necessary to deform and seriously damage the full-scale test models of structures. The facility allows static and cyclic tests on large structures and components but is mainly operated according to the so-called pseudo-dynamic (PSD) test technique. The PSD enables the simulation of earthquake loading of full-scale buildings.

In order to obtain the maximum benefit from it and make full use of the existing expertise within the Member-states, the facility is exploited within the framework of European Union wide integrated research programmes. To this end the

### European Association of Structural Mechanics Laboratories

was set up at the instigation of the ELSA Unit of the ISPC. The association has more than twenty-five members and is helping to define the test programmes undertaken to assess the response of civil engineering structures under severe loads (such as generated by earthquakes).

The research programmes involve both the study of the non-linear dynamic behaviour of structures and the development of appropriate testing methods.

In the framework of SAMCO, JRC will be the focus of the Centre of Knowledge of the Thematic Network through the relevant Database accessible via Internet. The latter will make available to the scientific community the most significant data in the field of structural assessment, monitoring and control.

### For more information:

<http://elsa.jrc.it>  
<http://www.jrc.it>

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▲ LDTF



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▲ Car crash test in LDTF



## Calendar Of Events – Year 2002

### JUNE

■ **10-12.** SEM Annual Conference on Experimental and Applied Mechanics, *Milwaukee, WI.*  
URL: <http://www.sem.org>

■ **18-21.** Vibration Measurements by Laser Techniques, *Ancona, Italy.*  
URL: <http://www.sem.org>

### JULY

■ **8-11.** 9<sup>th</sup> International Congress on Sound and Vibration, *Orlando, FL.*

■ **14-17.** IABMAS 2002: Conference on Bridge Maintenance, Safety and Management, *Barcelona, Spain.*  
URL: <http://www.cimne.upc.es/congress/iabmas02/>

### JULY/AUGUST

■ **31-2.** CSCE International Conference on Short & Medium Span Bridges, *Vancouver, BC, Canada.*  
URL: <http://www.ridgeconference.com>

### SEPTEMBER

■ **2-5.** Fifth European Conference on Structural Dynamics - eurodyn 2002, *Munich, Germany.*  
URL: <http://www.eurodyn2002.de>

■ **19-20.** Eurosteel – 3rd European Conference on Steel Structures, *Coimbra, Portugal.*  
URL: <http://www.dec.uc.pt>

■ **11-13.** IABSE Symposium- Towards a Better Built Environment, *Melbourne, Australia.*  
URL: <http://www.iabse.ethz.ch/conferences>

### SEPTEMBER / OCTOBER

■ **30-1.** SAMCO Workshop – Structural Assessment Monitoring and Control *Brussels, Belgium.*  
URL: <http://www.samco.org/workshop>

### OCTOBER

■ **6-10.** International Conference on Concrete in Marine Environments, *Hanoi, Vietnam.*  
URL: <http://www.iabse.ethz.ch/conferences/calenddrevents/Hanoi/Plhanoi.pdf>

■ **9-12.** SEWC Congress on Structural Engineers World Congress, *Yokohama, Japan.*  
URL: [http://www.sewc2002.gr.jp/english/e\\_right.html](http://www.sewc2002.gr.jp/english/e_right.html)

■ **13-18** fib Congress - Concrete Structures in the 21st Century; *Osaka, Japan.*  
URL: <http://www.fib2002.com>

### NOVEMBER

■ **20-22.** International Conference on Design and Dynamic Behaviour of Footbridges, *Paris, France.*  
URL: [http://otua.org/footbridge/Default\\_eng.htm](http://otua.org/footbridge/Default_eng.htm)

### DECEMBER

■ **17-20.** International Conference on Structural Composites for Infrastructure, *Aswan, Egypt.*  
URL: [http://www.geocities.com/acm\\_egypt\\_2002](http://www.geocities.com/acm_egypt_2002)

### SAMCO an EU funded Project

The SAMCO Network is funded by the European Commission (EU) within the "Fifth European Framework Programme" (FP5), which covers Research, Technological Development (RTD) and Demonstration activities.

FP5 has a multi-theme structure, consisting of Specific Programmes. These Specific Programmes are further divided into Horizontal Programmes and Thematic Programmes. One of these Thematic Programmes is the "Competitive and Sustainable Growth" Programme, under which SAMCO is running.

SAMCO is running under the exact term: CTG2-2000-33069

Shared-cost RTD and Demonstration project, Concerted Action/Thematic Network  
Duration: 48 months

### For more information

European Commission  
<http://europa.eu.int>

Fifth European Framework Programme  
<http://www.cordis.lu/fp5>

Competitive and Sustainable Growth Programme (GROWTH 2000)  
<http://www.cordis.lu/growth/>

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### SAMCO News

SAMCO News Is a digital newsletter accompanying the SAMCO Network. It is funded by the European Commission in the frame of the GROWTH project SAMCO CTG2-2000-33069.

It is an information and communication platform for the participants of SAMCO. It is issued periodically every second month.

SAMCO News is available at  
<http://www.samco.org/newsletter>