



A Short Term Advanced Course on Analysis and Design of Protective Structures for Extreme Loads (ADPSEL-2020)



14-16 October 2020

Organised by
CSIR-Structural Engineering Research Centre (An ISO certified organisation),
CSIR Campus, Taramani, Chennai 600 113.

Online
Advanced
Course

About the Organization

CSIR-Structural Engineering Research Centre, Chennai, is one of the national laboratories under the Council of Scientific & Industrial Research (CSIR), India. CSIR-SERC has built-up excellent facilities and expertise for the analysis, design and testing of structures and structural components. Services of CSIR-SERC are being extensively used by the Central and State governments and public and private sector undertakings. Scientists of CSIR-SERC serve on many national and international committees and the Centre is recognized at the national and international levels as a leading research institution in the field of Structural engineering. CSIR-SERC has been certified as ISO 9001:2008 quality institution.

Background

Protective structures are intended to protect their contents against effects of extreme loads such as impact, explosion, earthquake, fire accidents. From a structural point of view, designers should properly account these extreme loads and ensure appropriate safety levels to people. In fact, protective structures are expected to optimally perform their function under severe loads, even when associated with mostly different threats. A key role is given to design optimization and mitigation of input forces/effects. Such a result can be achieved by both reducing the magnitude of applied loads on structures, that is, via active, passive, and semi-active additional devices, and by enhancing the structural resistance and capacity, that is, via efficient materials and structural components.

In most cases, protective structures are very expensive. In some cases, optimization may lead to improved designs, resulting in substantial savings. Some features of protective structures are common to the various types of systems. Generally, a nonlinear dynamic analysis is involved, the number of design variables may be large, and different types of variables are included; such as topological, geometrical and cross-sectional variables. In many cases, the system is composed of several coupled subsystems. Despite these similarities, the analysis and design approaches may significantly differ for the various types of systems or subsystems under consideration.

Objectives

The aim of this course is to provide an opportunity for students, consultants and practising engineers belonging to the public and private sector institutions, and other engineering professionals to get an overview on the current trends and recent advancements in terms of design and analysis, including experiments and modelling, on protective structures.

Course Contents

- Introduction to the protective structures
- Description of extreme loads - Blast / Impact / Crash / Cyclone
- Analysis for the critical design loadings
- Nonlinear finite element simulation of the responses
- Design Philosophy and Current practices
- Introduction to application of new materials in design
- Conventional and non-conventional methods for the Design
- Brief description of case-studies carried out at CSIR-SERC

Faculty

Faculty for the course would comprise mainly scientists from CSIR-SERC and a few experts from reputed academic institutions /industry.

Duration

October 14-16, 2020; Time 10:00 a.m. to 4.30 p.m.

Registration and Fee

Rs. 1500/- per participant inclusive of GST for Indian delegates and US\$40/- for foreign delegates. Course material in pdf format and e-certificate of participation will be provided to all the registered participants. Online registration for the course can be completed by using the link (<http://forms.serc.res.in/view.php?id=33087>). Please select the intended course, fill all the particulars and pay the registration fee using SBI collect link in the form.

Requirements for the online mode:

Desktop/Laptop/Smartphone with good internet speed and sufficient data pack. A web link will be sent to the registered participants for joining the course.

For further details, please contact:

Dr. (Ms.) N. Anandavalli & Dr. Amar Prakash.
Course coordinators (ADPSEL-2020)
CSIR-Structural Engineering Research Centre
CSIR Campus, TTTI (Post), Taramani,
Chennai - 600113, India
Tel.: (91) (44) 22549197/9179/9196 Fax: (91) (44) 2541508
Mobile Nos. 98416 91062, 94446 73618
E-mail: anandi@serc.res.in; amar@serc.res.in, <https://serc.res.in>

