

The German based Gesellschaft für Umweltsimulation e.V. (Society for Environmental Engineering) was founded in 1969. It is the organization of persons, institutions and companies who work in the field of environmental engineering.

GUS supports the development of environmental engineering on a nonprofit basis, e.g. by information exchanges. It arranges contacts with environmental laboratories, between users and manufacturers of equipment for environmental simulation and the measuring technology connected therewith.

Members and their representatives work on an honorary basis. GUS is financed by contributions and donations.

Members of GUS hold seminars and participate in professional committees.

Interested Parties

Technicians, engineers and scientists with tasks in the field of environmental engineering, particularly in the following branches:

- electric technology and electronics
- automobile manufacturers
- construction

- defence technology
- aviation and space technology
- transportation and packaging technology
- material research
- environmental research and technology
- life cycle assessment

International Co-operation

GUS is a founding member of the Confederation of European Environmental Engineering Societies (CEEES), where societies from Austria, Belgium, Czech Republic, Finland, France, Great Britain, Italy, Portugal, Sweden, Switzerland, The Netherlands and Germany are working together.

The GUS is member society in the European Federation of Clean Air and Environmental Protection Associations (EFCA) and in the »Studiengesellschaft für den kombinierten Verkehr e.V.«

There is also close cooperation to organisations outside Europe for example to the Institute of Environmental Sciences and Technology (IEST) in the USA.

Membership

Individuals or institutions can become members. Membership fee at present is EUR 35,- p.a. for individuals (double membership GUS/VDI reduction 25%).

Companies and institutions are requested to contribute according to their own judgement. GUS is recognized by the tax authorities as an organisation beneficial to the community.

Magazine

The GUS Magazine is »Der Versuchs- und Forschungsingenieur« (VFI). Members can publish professional contributions and receive copies free of charge.

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Confederation of European
Environmental Engineering
Societies CEEES



Gesellschaft für Umweltsimulation e.V.

Environmental Engineering

Technical products are, during their entire life-span, subjected to a multitude of influences from their environment, thus affecting their functional ability, their durability and their quality and reliability.

It is, therefore, technically and economically essential to design and manufacture products in such a way as to withstand the imposed loads and reliably fulfill their tasks.

Methods of environmental engineering examine the interactions between object and its environment. With a view to possible synergisms, system-technological considerations and thinking in the entirety are indispensable.

Environmental engineering deals in principle with questions of

- functional ability
- durability
- compatibility.

Environmental Engineering in its working methods combines ecology and economy, protection of the environment and product quality, as it applies technical knowledge to ecological problem areas. A longer life-span of products serves the consumer as

well as the conservation of resources, it results in a reduction of waste and a more economical approach to energy efficiency and sustainable development.

Methods of environmental simulation are, to an increasing extent, also used on non-technical products, e.g. examination of the recent forest decline, damage to ancient monuments and simulation of substance emission into the environment.

Environmental Factors

Environmental factors are all forms of physical, chemical or other influences on the object under examination, stemming mainly from the direct or indirect surrounding during production, shipping and operation.

From the point of view of the object under investigation it is initially irrelevant whether the environmental influences are of natural origin, e.g. earthquake, or of a technical nature, e.g. vibration and shock during transport.

Procedure

Environmental engineering is an interdisciplinary engineering or scientific field, working on a very wide scale. Its methods of operation comprise the following steps:

- Determining environmental factors
- Simulating environmental effects under controllable conditions
- Assessing the interaction between environment and object

Environmental engineering attempts to achieve on optimizing principle. Environmental tests are tailored in order to guarantee that a product is sufficiently tested, but not over-tested. Economic considerations play a large part in environmental simulations. Expenditure for technical products in order to obtain environmental qualifications is normally offset by better quality and greater reliability.

Environmental Laboratories

Environmental Engineering requires testing facilities such as climatic test chambers, shaker systems, shock tables, EMC-facilities, fumigation chambers, or radiation simulators and laboratories for identification of effects, such as scanning electron microscopy, IR-spectroscopy or similar methods.

Environmental laboratories can be found in industrial companies, institutes and governmental testing agencies. In general, these are also accessible to external users against payment.

Environmental Factors		
Natural		Man-Made
Natural Climate	▶ Temperature ◀	Indoor Climate
Tropical Climate	▶ Humidity ◀	Sauna and Pools
High and Low Pressure	▶ Atmospheric Pressure ◀	Transport Flights
Oceanic Climate	▶ Salt Mist ◀	De-icing Salts
Ozone	▶ Gases ◀	Industrial Atmosphere
Precipitation	▶ Water ◀	Car Washer
Sand and Dust	▶ Particles ◀	Particle Emissions
Earthquakes	▶ Vibration, Shock ◀	Transports
Solar Radiation	▶ Radiation ◀	Illumination
Wind	▶ Sound ◀	Noise
Fungi, Mildew, Algae	▶ Chemical and Biodegradation ◀	Chemicals, „Acid Rain“
Terrestrial Magnetic Field	▶ Electromagnetic Field Strength ◀	Broadcast Stations, X-ray Beam Sources
Radon	▶ Radioactivity ◀	Nuclear Power Stations