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Design for sustainability and resilience – new terms for traditional tasks or an enlargement of the perspectives for engineers

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ABSTRACT

The fulfilment of requirements for the technical and functional quality of building components and construction works, as well as their optimization in terms of construction costs or construction time form part of the traditional design tasks performed by engineers. However, nowadays, they are also confronted with issues concerning the contribution of constructions to sustainable development and a new theme: resilience. But are these tasks really new?

The paper discusses the traditional engineering tasks and approaches that already provide a starting point for assessing the sustainability of building components and structures. For example, structural stability, fire-, sound- and heat-protection, as well as flexibility and adaptability, can be considered as significant starting points in this regard. New tasks arise in the area of sustainable use of resources.

This paper presents approaches to life cycle analysis and the state of international standardization. It shows that life cycle assessment and a full life cycle analysis [1] can support the work of engineers. Finally, the relationship between sustainability and resilience is discussed. Robust, durable structures can support sustainable development. However, the environmental, economic and possibly social consequences (here in terms of benefits and costs) of more resilient structures are to be taken into account.

REFERENCES

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