

Solar systems of Schweizer:

Fact sheet on loads reductions – MSP-FR-EW and MSP-FR-S.

Introduction

In structural design, it is allowed to apply load reductions depending on the operating life, the impact of the damage and the type of load assessment (e.g. calculation, wind tunnel measurements). In this way, material expenditure and costs can be optimized in an economically focused way. It is very important that these reductions are only applied in appropriately acceptable situations.

The decision whether and to what extent a load reduction should be taken into account in the planning of a PV system is basically the responsibility of the system owner or the authorized representative. In case of doubts, consult the local building authority or a structural engineer.

Load reduction according to operating life

The load values used in the structural design correspond to loads that are statistically determined to be reached or exceeded once during the operating life. For building structures, a lifetime of 50 years is assumed during planning. For photovoltaic systems, a shorter lifetime can be applied, since nowadays such a long lifetime is not demanded.

Planning by Schweizer: Unless otherwise specified by the customer, Schweizer chooses an operating life of 50 years in their planning.

Load reduction according to reliability class

General structural design does not define any load reduction due to reliability classes. However, in the case of PV systems, it may be justified to classify the project in the CC1 consequence class ("low consequences for human life and small or negligible economic, social or environmental consequences").

Snow loads have a low risk of damage in most cases. However, the risk of damage due to wind loads must be considered in a project-specific context, since as consequential damage to people, property (e.g. cars) or the building itself are possible.

Planning by Schweizer:

Switzerland: As wind loads in Switzerland tend to be rated high according to SIA, Schweizer applies the reliability class RC1 for projects in Switzerland, unless other information is available.

Europe: Unless otherwise specified by the client, Schweizer applies reliability class RC2 (standard) for planning.

Load reduction based on load assessment

The characteristic wind loads for the PV mounting system MSP-FR have been obtained in the wind tunnel. Therefore, the "CEN/TR 16999" guideline provides a valid reduction of the safety factor from 1.5 to 1.35. However, the German Solar Industry Association (BSW) considers this reduction, based on DIN EN 1990/NA:2010-12, as not acceptable. For legal reasons, we recommend that these different approaches are considered and applied.

Planning by Schweizer:

Switzerland: For projects in Switzerland, Schweizer applies 1.35 for MSP-FR-S and 1.5 for MSP-FR-EW, unless otherwise specified.

Europe: Unless otherwise specified by the client, Schweizer applies 1.5.

The combination of several reduction factors shall only be applied in well justified cases.