



Operational Service Lifetime of PV modules, inverters, components and systems

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Operational service life

Operational service life
of PV modules, PCEs or PV systems **not defined** yet

some suggestions or common practices based on peer-reviewed scientific literature and manufacturer warranty



Prescribed value



some standards from building construction and building energy efficiency



Estimate



Operational service life:

- Durability: equipment's response to the stresses imposed by operational use, maintenance and other activities throughout its specified life-cycle

- OsL depends on:
 - Durability
 - Degradation rate of PV product
 - In-use conditions
 - Climatic profile
 - Installation characteristics (e.g. BIPV or not)
 - In-use workload
 - ...

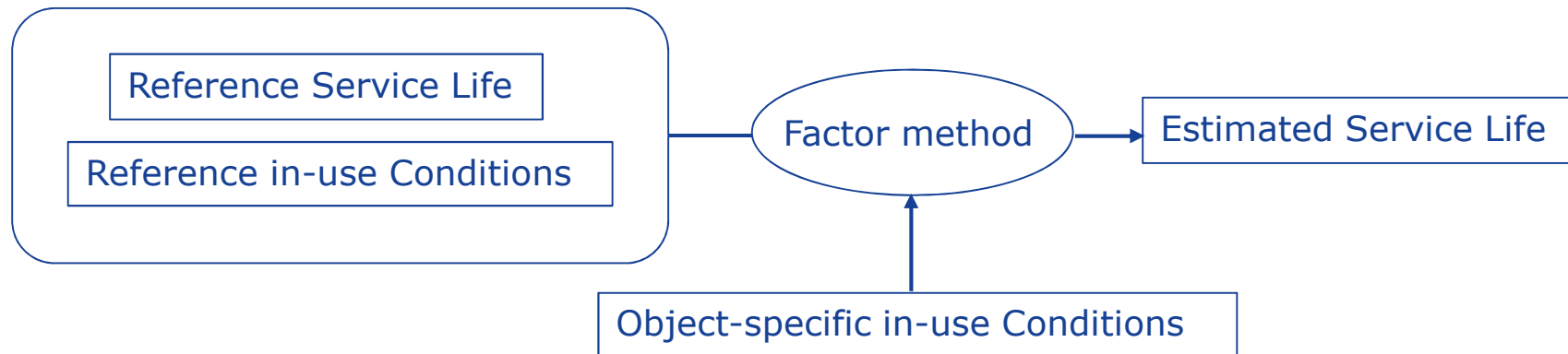
Possible approaches:

1. Prescribed values

- **Modules**: 25 (or 30) years
- **Inverters and other electronic components** : 10 years
- **Cabling**: 30 years
- **Systems**: depending on the maintenance of the system, it can in principle be indefinite. Possible reasonable value is the one given for modules, with inclusion of replacement of the inverter 1 or 2 times in the lifetime of the system (at least for small installations and to be considered in LCA).

Possible approaches:

2. Estimate method similar to what used in the building sector



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2. Estimate method similar to what used in the building sector

- Not verified yet for PV
- Requires a collective reference database of verified field data under:
 - ❖ several climatic conditions
 - ❖ several in-use conditions
- Application of factor method based on estimated local conditions and their weight to influence degradation
 - ❖ Requires wide knowledge of the degradation paths of PV modules
 - ❖ Requires detailed knowledge of the local and in-use conditions under which the PV modules will be installed

Suggestions to the PV preparatory study

- Prescribed values approach
- Need for stakeholders active contribution in the creation of a collective wide database if the estimate method is preferred in the long term