Cascale

HIGG FEM 2025

FEM 2025 Water and Waste Calculations

Version fem2025-v0.0.32 · 11 September 2026

Detailed guidance on water and waste calculations in FEM.

Higg Index guidance · cascale.org · b2a3151b6+

Contents

Water Data

Data about production and domestic water use is collected in the Water section of FEM separated by facility type.

Domestic water use is either reported as a part of production use, in the case that a facility cannot separate the water usage, or separately.

You can determine whether a facility is reporting water values split between domestic and production or combined by looking at the ref_id `wattrackdomprodsep` an answer of `No` means the facility is reporting combined (row 3 in the table below) and `Yes` means separated (rows 1 and 2 in the table below). Because a facility will never report using both methods they may safely be summed without risk of double counting.

Raw water use is reported in the follow ref_ids:

Scope	Usage	Unit of Measure
Domestic	wattrackdom[1]quant	wattrackdom[1]unit
Production	wattrack[1]prod[2]quant	wattrack[1]prod[2]unit
Domestic & Production	wattrack[1]all[2]quant	wattrack[1]all[2]unit

Where the wildcards `[1]` and `[2]` represent the water source and facility type which may be any of the following values:

Index	Kind	Reference	Value
1	Water Source	watsourcesurface	Surface Water
1	Water Source	watsourceground	Groundwater
1	Water Source	watsourcemunicipalblue	Municipal Blue Water
1	Water Source	watsourcemunicipalunk	Municipal Water (Origin Unknown)
1	Water Source	watsourcesea	Brackish surface water/seawater
1	Water Source	watsourcecond	Condensate from External Steam Source
1	Water Source	watsourcerain	Rainwater
1	Water Source	watsourcemunicipalgrey	Municipal Grey Water
1	Water Source	watsourcerecycle	Recycled Water
1	Water Source	watsourcereuse	Reuse Water
1	Water Source	watsourcewaste	Treated Wastewater
1	Water Source	watsourcewasteinternal	Untreated Wastewater (treated internally)
2	Facility Type	finalProductAssembly	Finished Product Assembler
2	Facility Type	printingProductDyeingAndLaundering	Finished Product Processing
2	Facility Type	hardComponentTrimProduction	Component / Sub-Assembly Manufacturing
2	Facility Type	materialProduction	Material Production
2	Facility Type	rawMaterialProcessing	Raw Material Processing
2	Facility Type	rawMaterialCollection	Raw Material Collection & Bulk Refining

So the raw value for usage of surface in Raw Material Collection & Bulk Refining for production would be found in either the ref_id `wattrackwatsourcesurfaceprodrawMaterialCollectionquant` or `wattrackwatsourcesurfaceallrawMaterialCollectionquant` the former if `ensourcetracksepdomprod` is `Yes` the latter if it is no and then combined with domestic water use but never both.

Water Aggregates

`[1]total`

Total liters of water across all facility types, and domestic usage from the water source represented by the wild card `[1]`

`domestic_total_water_l`

Total water use from domestic usage across all sources.

`watsourcewithdrawal`

Total liters of water across all facility types, and domestic usage from the water sources:

```
watsourceground
watsourcemunicipalblue
watsourcemunicipalunk
```

`watsourcerecycled`

Total liters of water across all facility types, and domestic usage from the water sources:

```
watsourcemunicipalgrey
watsourcecond
watsourcerecycle
watsourcereuse
watsourcewaste
watsourcewasteinternal
```

`watsourcetotaltotal`

Total water use across all sources, facility types, and domestic use.

`[2]_water_l`

Total liters of water used across all sources for the facility type represented by the wild card `[2]`

`[2]_water_l`

Total liters of water used across all sources for the facility type represented by the wild card `[2]`. Includes domestic usage added evenly across each facility type.

`[2]_normalized_water_l`

Total liters of water used per unit produced across all sources for the facility type represented by the wild card `[2]`. Includes domestic and vehicle usage added evenly across each facility type. The unit total and unit of measure can be found in `sipfacilityannualprodvolquant[2]` and `sipfacilityannualprodvolunits[2]` respectively.

Waste Data

Data about waste generation is collected in the Waste section of FEM separated by hazardous and non-hazardous waste type. Unlike energy and water it is not reported by facility type.

Raw waste generation is reported in the follow ref_ids:

Scope	Usage	Unit of Measure
Hazardous	wstsourceh[1]quant	wstsourceh[1]unit
Non Hazardous	wstsourcenh[1]quant	wstsourcenh[1]unit

Where the wildcard `[1]` represents the waste source which may be any of the following values:

Index	Waste Stream	Reference	Value
1	Non-Hazardous	textile	Textile Waste
1	Non-Hazardous	leather	Leather Waste
1	Non-Hazardous	rubber	Rubber Waste
1	Non-Hazardous	metal	Metal
1	Non-Hazardous	plastic	Plastic
1	Non-Hazardous	paper	Paper
1	Non-Hazardous	cans	Cans
1	Non-Hazardous	wood	Wood
1	Non-Hazardous	food	Food Waste
1	Non-Hazardous	glass	Glass
1	Non-Hazardous	cartons	Cartons
1	Non-Hazardous	foams	Foams (EVA, etc.)
1	Non-Hazardous	wastewaterTreatmentSludge	Pre-water Treatment Sludge
1	Non-Hazardous	general	General or unspecified waste
1	Non-Hazardous	slagnh	Slag (Non-Hazardous)
1	Non-Hazardous	other	Other
1	Hazardous	prodchemdrum	Empty chemical drums and containers
1	Hazardous	prodfilmprint	Film and Printing Frame
1	Hazardous	prodsludge	Pre-water Treatment Sludge
1	Hazardous	prodchem	Expired/unused/used chemicals
1	Hazardous	prodcompgas	Compressed gas cylinders
1	Hazardous	prodcontammat	Contaminated materials
1	Hazardous	dombatteries	Batteries
1	Hazardous	domflolight	Fluorescent light bulb
1	Hazardous	dominkcart	Ink cartridges
1	Hazardous	domoilgrease	Waste oil and grease from cooking
1	Hazardous	productionoil	Waste oil and grease not from cooking)
1	Hazardous	metalsludge	Metal Sludge
1	Hazardous	emptyother	Empty containers (cleaning, sanitizing, pesticides, etc.)
1	Hazardous	domelectronic	Electronic Waste
1	Hazardous	domcoalcomb	Coal combustion residuals
1	Hazardous	slag	Slag (Hazardous)
1	Hazardous	other	Other

Waste Aggregates

Waste totals are converted to kilograms from the reported units and aggregations are provided in the following calculations:

`wstsourcetotalnonhaz`

Total kilograms of non hazardous waste.

`wstsourcetotalhaz`

Total kilograms of hazardous waste.

`wstsourcetotal`

Total kilograms of all waste, both hazardous and non hazardous.