# Introduction

This file lists the data structure of the simulation results folder, and the content of the different results files. You can jump to the specific sections by clicking on the folders and files within the folder tree figures. (Only works in the word version)

# The results are structured as follows:

# [input\_dict.txt] The configuration file

This file contains the initial configuration json dictionary as it was created using the synpro-lastprofile.de GUI or that was sent via the REST api.

# [el] For electrical profiles the substructure is as followed:

[building\_i\_technologies] The electric building level folder

## [neighbourhood.csv] The electric neighborhood file

This file represents a timeseries for an annual simulation with a separate column for each building containing the electrical consumption in kW together with a column containing the total consumption of all buildings in kW.

|  |
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| **To read in the file from Python use:** |
| df = pd.read\_csv(‘/path/to/file.csv’, comment=’#’, sep=’;’)  df.index = pd.to\_datetime(df[‘unixtimestamp’], unit=’s’, utc=True) |

## [building\_i.csv] The electric building file

Depending on how many buildings were requested several files starting from 0 to n are provided. Each file represents a timeseries for an annual simulation with a separate column for each zone containing the electrical consumption in kW together with a column containing the total consumption of all zones within the building in kW.

|  |
| --- |
| **To read in the file from Python use:** |
| df = pd.read\_csv(‘/path/to/file.csv’, comment=’#’, sep=’;’)  df.index = pd.to\_datetime(df[‘unixtimestamp’], unit=’s’, utc=True) |

## [building\_i\_technologies] The electric building level folder

For each building a separated folder is created containing the various electrical devices which are used on a building level. This includes a rooftop PV plant, a heat pump, or a stationary battery system.

### [pv.csv] The PV file

This file only consists of a single column for the pv power.

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### [battery.csv] The battery file

This file contains all information on a building level battery system. The battery power exchange is in the column ‘power\_applied’, ‘power\_requested’ is the theoretical power requested from the controller. Positive values signal a charging process negative values a discharging process. Additional information on the battery status is available in self-explaining columns.

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| **To read in the file from Python use:** |
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### [heatpump.csv] The heatpump file

Coming soon

## [building\_i\_zones] The electric ghd and residential zones

For each building a separated folder is created containing the various electrical demands of each GHD and residential zone.

### [res\_i\_XX] The electric residential file

Depending on how many residential zones in a building were requested several files starting from 0 to n are provided.

The filenames contain the following information:

**res\_1\_fam\_3**

**res** signals it is a residential zone

**1** is the counter of all residential zones within the building starting with 0.

**fam** contains the socioeconomic factory of the simulated zones.

**3** is the number of people living within the zone.

The following socioeconomic factors are possible:

|  |  |  |
| --- | --- | --- |
| **Factor** | **Explanation** | **Size** |
| **all** | a mixture of all socioeconomic factors | **1-4** |
| **nn** | one or two unemployed occupants - rest (in the case of 3 or 4 persons) is not specified | **1-4** |
| **vv** | one or two full working occupants - rest (in the case of 3 or 4 persons) is not specified | **1-4** |
| **vt** | one full working occupant and one part working occupant - rest (in the case of 3 or 4 persons) is not specified - In case of 1 person it is a part-time worker | **1-4** |
| **vn** | one full working occupant and one unemployed occupant - rest (in the case of 3 or 4 persons) is not specified | **1-4** |
| **efh** | Average single family home | **1-4** |
| **dhorn** | Average semi-detached house or terrace house | **1-4** |
| **mfhkl** | Average small apartment building up to 10 dwelling units | **1-4** |
| **mfhgr** | Average big apartment building from 11 dwelling units upwards | **1-4** |
| **u30** | age of all person is under 30 (30 included) | **1-2** |
| **z3065** | age of all person is between 30 and 65 (included borders) | **1-3** |
| **o65** | age of all person is higher 65 (65 included) | **1** |
| **fam** | Family simulation: 2 adults; rest children | **1-4** |
| **aer** | Single mother/father simulation: 1 adult (20 or older); rest children (18 or younger) | **2-4** |

Each file represents a timeseries for an annual simulation with a separate column for the electric consumption of different activities conducted by the residents, together with a column containing the total consumption of all subzones within the building in kW. The possible activities are the following derived from the [HETUS Study](https://ec.europa.eu/eurostat/web/microdata/time-use-survey):

|  |  |  |  |
| --- | --- | --- | --- |
| **Activity** | **Connected devices** | **Activity** | **Connected devices** |
| cleaning\_dry | Vacuumcleaner | listening\_to\_music | Hifi |
| using\_tv | Television | circulation\_pump\_htg | Circulationpump |
| laundry | Washing machine, dryer | cooking | Cooking devices |
| using\_light | Light | freezer | Freezer |
| dish\_washing | Dish washer | refrigerator | Refrigerator |
| ironing | Iron | router | Router |
| using\_pc | Computer | other | Other |

|  |
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| **To read in the file from Python use:** |
| df = pd.read\_csv(‘/path/to/file.csv’, comment=’#’, sep=’;’)  df.index = pd.to\_datetime(df[‘unixtimestamp’], unit=’s’, utc=True) |

### [ghd\_i\_XX] The electric GHD file

Depending on how many GHD zones in a building were requested several files starting from 0 to n are provided.

The filenames contain the following information:

**ghd\_1\_sia\_verwaltung** OR **ghd\_1\_tek\_education\_05**

**ghd** signals it is a zone from the category “Gewerbe, Handel, Dienstleistungen” (Commercial, Trade, Services).

**1** is the counter of all ghd zones within the building starting with 0.

**sia/tek** contains the information via the [SIA norm](http://shop.sia.ch/normenwerk/architekt/sia%202024/d/2015/D/Product) or the [tek2go study](https://www.iwu.de/forschung/energie/tek2go/) was used as a source.

**verwaltung/education\_05** contains the actual zone name, where SIA names are in German and are unique and tek2go names are in English and can have various layouts based on the number at the end.

The following zones are possible:

|  |  |  |  |
| --- | --- | --- | --- |
| **sia** | **English translation** | **tek** | **Number range** |
| **\_verwaltung** | Administration | **\_office** | 1-23 |
| **\_verkauf** | Retail | **\_retail** | 1-11 |
| **\_restaurant** | Restaurant |  |  |
| **\_versammlungslokal** | Meeting places | **\_meeting\_places** | 1-15 |
| **\_spital** | Hospital |  |  |
| **\_industrie** | Industry |  |  |
| **\_lager** | Storage |  |  |
| **\_sportbauten** | Sports building |  |  |
| **\_hallenbad** | Indoor swimming pool |  |  |
| **\_schule** | School | **\_school** | 1-15 |
|  |  | **\_education** | 5-19 |
|  |  | **\_hotel** | 1-8 |

Each file represents a timeseries for an annual simulation with a separate column for lighting “light”, electric equipment “equip” and ventilation “vent” for each GHD subzone containing the electrical consumption in kW together with a column containing the total consumption of all subzones within the zone in kW. The GHD Subzones are as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| **GHD subzone** | **German translation** | **GHD subzone** | **German translation** |
| **hotelroom** | Hotelzimmer | **wardroom** | Stationszimmer |
| **lobby** | Hotelzimmer | **treatmentroom** | Behandlungsraum |
| **groupoffice** | Einzel-, Gruppenbüro | **heavyworkhall** | Produktion (grobe Arbeit) |
| **largeoffice** | Großraumbüro | **normalworkhall** | Produktion (feine Arbeit) |
| **meetingroom** | Sitzungszimmer | **lab** | Laborraum |
| **counterhall** | Schalterhalle, Empfang | **storagehall** | Lagerhalle |
| **classroom** | Schulzimmer | **gym** | Turnhalle |
| **staffroom** | Lehrerzimmer | **fitnessroom** | Fitnessraum |
| **library** | Bibliothek | **swimmingpool** | Schwimmhalle |
| **lecturehall** | Hörsaal | **corridor** | Verkehrsfläche |
| **specialroom** | Schulfachraum (Spezialraum) | **corridor24h** | Verkehrsfläche 24 h |
| **grocerystore** | Lebensmittelverkauf | **staircase** | Treppenhaus |
| **specializedstore** | Fachgeschäft | **ancillaryroom** | Nebenraum |
| **hardwarestore** | Verkauf Möbel, Bau, Garten | **kitchen** | Küche, Teeküche |
| **restaurant** | Restaurant | **bathroom** | WC, Bad, Dusche |
| **canteen** | Selbstbedienungsrestaurant | **wc** | WC |
| **kitchenrestaurant** | Küche zu Restaurant | **dressingroom** | Garderobe, Dusche |
| **kitchenselfservice** | Küche zu Selbstbedienungsrest. | **parking** | Parkhaus |
| **eventroom** | Vorstellungsraum | **washingroom** | Wasch- und Trockenraum |
| **hallmulti** | Mehrzweckhalle | **refrigerationroom** | Kühlraum |
| **hallexhibit** | Ausstellungshalle | **serverroom** | Serverraum |
| **hospitalroom** | Bettenzimmer |  |  |

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| **To read in the file from Python use:** |
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# [dhw] For domestic hot water profiles the substructure is as followed:

## [neighbourhood.csv] The domestic hot water neighborhood file

This file represents a timeseries for an annual simulation with a separate column for each building containing the domestic hot water consumption in kW together with a column containing the total consumption of all buildings in kW.

|  |
| --- |
| **To read in the file from Python use:** |
| df = pd.read\_csv(‘/path/to/file.csv’, comment=’#’, sep=’;’)  df.index = pd.to\_datetime(df[‘unixtimestamp’], unit=’s’, utc=True) |

## [building\_i.csv] The domestic hot water building file

Depending on how many buildings were requested several files starting from 0 to n are provided. Each file represents a timeseries for an annual simulation with a separate column for each zone containing the domestic hot water consumption in kW together with a column containing the total consumption of all zones within the building in kW.

|  |
| --- |
| **To read in the file from Python use:** |
| df = pd.read\_csv(‘/path/to/file.csv’, comment=’#’, sep=’;’)  df.index = pd.to\_datetime(df[‘unixtimestamp’], unit=’s’, utc=True) |

## [building\_i\_zones] The domestic hot water ghd and residential zones

For each building a separated folder is created containing the various domestic hot water demands of each GHD and residential zone.

### [res\_i\_XX] The domestic hot water residential file

Depending on how many residential zones in a building were requested several files starting from 0 to n are provided.

The filenames contain the following information:

**res\_1\_fam\_3**

**res** signals it is a residential zone

**1** is the counter of all residential zones within the building starting with 0.

**fam** contains the socioeconomic factory of the simulated zones.

**3** is the number of people living within the zone.

The following socioeconomic factors are possible:

|  |  |  |
| --- | --- | --- |
| **Factor** | **Explanation** | **Size** |
| **all** | a mixture of all socioeconomic factors | **1-4** |
| **nn** | one or two unemployed occupants - rest (in the case of 3 or 4 persons) is not specified | **1-4** |
| **vv** | one or two full working occupants - rest (in the case of 3 or 4 persons) is not specified | **1-4** |
| **vt** | one full working occupant and one part working occupant - rest (in the case of 3 or 4 persons) is not specified - In case of 1 person it is a part-time worker | **1-4** |
| **vn** | one full working occupant and one unemployed occupant - rest (in the case of 3 or 4 persons) is not specified | **1-4** |
| **efh** | Average single family home | **1-4** |
| **dhorn** | Average semi-detached house or terrace house | **1-4** |
| **mfhkl** | Average small apartment building up to 10 dwelling units | **1-4** |
| **mfhgr** | Average big apartment building from 11 dwelling units upwards | **1-4** |
| **u30** | age of all person is under 30 (30 included) | **1-2** |
| **z3065** | age of all person is between 30 and 65 (included borders) | **1-3** |
| **o65** | age of all person is higher 65 (65 included) | **1** |
| **fam** | Family simulation: 2 adults; rest children | **1-4** |
| **aer** | Single mother/father simulation: 1 adult (20 or older); rest children (18 or younger) | **2-4** |

Each file represents a timeseries for an annual simulation with a separate column for dhw tap water consumption and dhw circulation and transportation losses in kW together with a column containing the total consumption.

|  |
| --- |
| **To read in the file from Python use:** |
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### [ghd\_i\_XX] The domestic hot water GHD file

Depending on how many GHD zones in a building were requested several files starting from 0 to n are provided.

The filenames contain the following information:

**ghd\_1\_sia\_verwaltung** OR **ghd\_1\_tek\_education\_05**

**ghd** signals it is a zone from the category “Gewerbe, Handel, Dienstleistungen” (Commercial, Trade, Services).

**1** is the counter of all ghd zones within the building starting with 0.

**sia/tek** contains the information via the [SIA norm](http://shop.sia.ch/normenwerk/architekt/sia%202024/d/2015/D/Product) or the [tek2go study](https://www.iwu.de/forschung/energie/tek2go/) was used as a source.

**verwaltung/education\_05** contains the actual zone name, where SIA names are in German and are unique and tek2go names are in English and can have various layouts based on the number at the end.

The following zones are possible:

|  |  |  |  |
| --- | --- | --- | --- |
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| **\_verwaltung** | Administration | **\_office** | 1-23 |
| **\_verkauf** | Retail | **\_retail** | 1-11 |
| **\_restaurant** | Restaurant |  |  |
| **\_versammlungslokal** | Meeting places | **\_meeting\_places** | 1-15 |
| **\_spital** | Hospital |  |  |
| **\_industrie** | Industry |  |  |
| **\_lager** | Storage |  |  |
| **\_sportbauten** | Sports building |  |  |
| **\_hallenbad** | Indoor swimming pool |  |  |
| **\_schule** | School | **\_school** | 1-15 |
|  |  | **\_education** | 5-19 |
|  |  | **\_hotel** | 1-8 |

Each file represents a timeseries for an annual simulation with a separate column for each GHD subzone containing the thermal domestic hot water consumption in kW together with a column containing the total consumption of all subzones within the building in kW. The GHD Subzones are as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| **GHD subzone** | **German translation** | **GHD subzone** | **German translation** |
| **hotelroom** | Hotelzimmer | **wardroom** | Stationszimmer |
| **lobby** | Hotelzimmer | **treatmentroom** | Behandlungsraum |
| **groupoffice** | Einzel-, Gruppenbüro | **heavyworkhall** | Produktion (grobe Arbeit) |
| **largeoffice** | Großraumbüro | **normalworkhall** | Produktion (feine Arbeit) |
| **meetingroom** | Sitzungszimmer | **lab** | Laborraum |
| **counterhall** | Schalterhalle, Empfang | **storagehall** | Lagerhalle |
| **classroom** | Schulzimmer | **gym** | Turnhalle |
| **staffroom** | Lehrerzimmer | **fitnessroom** | Fitnessraum |
| **library** | Bibliothek | **swimmingpool** | Schwimmhalle |
| **lecturehall** | Hörsaal | **corridor** | Verkehrsfläche |
| **specialroom** | Schulfachraum (Spezialraum) | **corridor24h** | Verkehrsfläche 24 h |
| **grocerystore** | Lebensmittelverkauf | **staircase** | Treppenhaus |
| **specializedstore** | Fachgeschäft | **ancillaryroom** | Nebenraum |
| **hardwarestore** | Verkauf Möbel, Bau, Garten | **kitchen** | Küche, Teeküche |
| **restaurant** | Restaurant | **bathroom** | WC, Bad, Dusche |
| **canteen** | Selbstbedienungsrestaurant | **wc** | WC |
| **kitchenrestaurant** | Küche zu Restaurant | **dressingroom** | Garderobe, Dusche |
| **kitchenselfservice** | Küche zu Selbstbedienungsrest. | **parking** | Parkhaus |
| **eventroom** | Vorstellungsraum | **washingroom** | Wasch- und Trockenraum |
| **hallmulti** | Mehrzweckhalle | **refrigerationroom** | Kühlraum |
| **hallexhibit** | Ausstellungshalle | **serverroom** | Serverraum |
| **hospitalroom** | Bettenzimmer |  |  |

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| --- |
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If questions occur, contact [synpro@ise.fraunhofer.de](mailto:synpro@ise.fraunhofer.de)