

GENERAL

Empirical

- 1 Program name and version number** **BSim 4.7.1.18**
- 2 Name of organization performed the simulations** **Aalborg University**
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- 4 Program status**
- ☐ Freeware
☒ Commercial
☐ Other, please specify
- 5 Time convention for weather data: first interval in the weather input lasts 00:00-01:00, climate is assumed constant over the sampling interval**
- ☒ Yes
☐ No, please specify

CALCULATION OF BOUNDARY CONDITIONS

- 6 Please specify the solar model for calculation of incident solar radiation**
Perez
- 7 Transmission of the direct solar radiation into zone 1**
- ☐ Calculated with the constant solar heat gain coefficient (g-value)
☐ Calculated with the g-value as a function of incidence (function of incidence is fixed within code)
☒ Calculated with the g-value as a function of incidence (function of incidence is user defined)
☒ Other, please specify BSim default function was used
- 8 Transmission of the direct solar radiation into zone 2**
- ☐ Treated as diffuse solar radiation and calculated with the constant g-value
☐ Calculated with the g-value as a function of incidence (function of incidence is fixed within code)
☒ Calculated with the g-value as a function of incidence (function of incidence is user defined)
☐ Other, please specify BSim default function was used
- 9 Transmission of the diffuse solar radiation into zone 1**
- ☒ Calculated with the solar heat gain coefficient at the solar incidence 60°
☐ Other, please specify
- 10 Distribution of solar radiation to the surfaces in the zone 1**
- ☐ Distributed equally to all surfaces
☐ Calculated according surface area weighting
☐ Calculated according to solar path and view factors
☐ Other, please specify: direct solar radiation is distributed according to the solar path, the diffuse solar radiation is area weighted
- 11 Distribution of solar radiation to the surfaces in the zone 2**

- ☐ Distributed equally to all surfaces
- ☐ Calculated according surface area weighting
- ☐ Calculated according to solar path and view factors
- ☐ Other, please specify: direct solar radiation is distributed according to the solar path, the diffuse solar radiation is area weighted

MODEL DEFINITIONS

12 Air temperature in the zone 1 is calculated as:

- ☒ One node temperature
- ☐ Few zones are stacked on the top of each other and the air temperature in each of zones is calculated, please specify number of stacked zones
- ☐ Other, please specify

13 Air temperature in the zone 2 is calculated as:

- ☒ One node temperature
- ☐ Few zones are stacked on the top of each other and the air temperature in each of zones is calculated, please specify number of stacked zones
- ☐ Other, please specify

HEAT EXCHANGE WITH EXTERIOR

14 External heat transfer coefficients

- ☒ Split radiative/convective
- ☐ Combined radiative/ convective
- ☐ Other, please specify

15 External heat transfer coefficients are calculated with identical assumptions for all surfaces (window frame, window glazing, walls etc.)

- ☒ Yes
- ☐ No, please specify

16 External convection

- ☐ Constant coefficients fixed within code
- ☐ User-specified constant coefficients
- ☐ Calculated within code as a function of orientation
- ☒ Calculated within code as a function of wind speed
- ☐ Calculated within code as a function of wind speed and direction
- ☐ Other, please specify

17 External radiative heat exchange

- ☐ Assumed to be ambient temperature
- ☒ Assumed to be sky temperature
- ☐ Other, please specify

HEAT TRANSFER WITHIN ZONES

18 Internal heat transfer coefficients

- ☒ Split radiative/convection
- ☐ Combined radiative/ convective
- ☐ Other, please specify

19 Internal heat transfer coefficients are calculated with identical assumptions in all zones and for all surfaces (window frame, window glazing, walls etc.)

- ☒ Yes
☐ No, please specify

20 Internal convection

- ☐ Constant coefficients fixed within code
☐ User-specified constant coefficients
☒ Calculated within code as a function of orientation (vertical/horizontal)
☒ Calculated within code as a function of temperature difference
☐ Calculated within code as a function of air velocity in the zone
☐ Calculated within code as a function of surface finishes
☐ Other, please specify

21 Longwave radiation exchange within zone

- ☐ Constant linearized coefficients
☒ Linearized coefficients based on view factors
☐ Linearized coefficients based on surface emissivities
☐ Nonlinear treatment of radiation heat exchange
☐ Other, please specify

WINDOW

22 Window

- ☐ Window frame and glazing are modelled as separate elements of construction
☐ Window frame and glazing are modelled as separate elements of construction, but the total U-value is calculated within the code
☐ Window frame and glazing are modelled as separate elements of construction, but the total U-value and g-value are calculated within the code
☒ Other, please specify : Window frame and glazing are modelled as separate elements of construction, but the total U-value is calculated within the code, but the g-value is calculated in the code on the basis of user defined function of solar incidence.

23 Glazing temperature

- ☐ Calculated for 1 nodal point on the basis of fixed resistance
☐ Calculated dynamically, using the same scheme as for opaque elements
☒ Other, please specify: Calculated as a thermal balance for the surface, depending on amount of absorbed/reflected solar radiation and air temperature in the neighbouring zones

AIRFLOW MODEL

24 Discharge coefficient

- ☐ Fixed within the code
☒ User-specified fixed value
☐ Calculated by code, please specify what are the parameters involved in code calculations
☐ Other, please specify

25 Pressure difference coefficients

- ☒ Fixed within the code, identical for all openings sharing the same surface
☐ User-specified, identical for all openings sharing the same surface
☐ User-specified for every opening
☐ Other, please specify

26 Calculated mass flow rate in the model is a function of

- ☒ Buoyancy force
- ☒ Wind pressure
- ☐ Wind turbulence
- ☐ Other, please specify