Glossary

SHADOW ANGLE:

Shadow angles are formed by sun shading devices or projections on a wall exposed to the sun. Different design of sun shading devices form different shadow angles.

SOLAR ALTITUDE:

Solar altitude angle describes sun's position in relation to the horizon, while VSA describes the performance of the shading device.

SOLAR AZIMUTH:

The **solar azimuth angle** is the azimuth angle of the sun. It defines in which *direction* the sun is, whereas the solar zenith angle or its complementary angle solar elevation defines how high the sun is. There are several conventions for the solar azimuth, however it is traditionally defined as the angle between a line due south and the shadow cast by a vertical rod on Earth.

ANGLE OF INCIDENCE:

The angle that an incident line or ray makes with a perpendicular to the surface at the point of incidence.

SHADOW ANGLE:

When designing shading devices for windows, the required horizontal and vertical shadow angles need to be established. They are dependent on the sun position and on the orientation of the window plane. The horizontal shadow angle (HSA) is relevant for vertical shading devices such as fins. It is easy to determine: It's the angle between the normal of the window pane and the azimuth of the sun.

HSA = azimuth - orientation

The vertical shadow angle (VSA) is a little bit more difficult. If we imagine a virtual plane between the bottom left-hand and right-hand corners of the window and the sun, then the VSA is the angle this plane forms with the ground plane. The VSA is required when designing horizontal shading devices such as overhangs.

VSA = arctan(tan(altitude) / cos(HSA))