

# CHAPTER 4 - MICROCLIMATE AND OUTDOOR COMFORT

300

## 304.05 ORIENTATION OF GLAZED FAÇADES



### INTENT

To reduce heat gain through building facades thereby reducing cooling demand, achieving better energy savings and lowering carbon emissions.

### REQUIREMENT

For all new buildings, other than villas and industrial buildings, one of the following must be achieved for Silver Sa'fa, whereas for Golden and Platinum Sa'fa both the requirements must be achieved:

1. At least 50% of the total glazed surface area of the building, (excluding glazed areas with back insulated panels), must be facing the angle located between the east and the north-west which equals to 135° starting from the east.
2. South and west glazed areas, excluding glazed areas with back-insulated panels, must be treated environmentally.

### SIGNIFICANCE

At near-equatorial latitudes, such as in Dubai, the sun appears at higher polar angles with a more even irradiance of the south, east and west quadrants of the sky than it would be at higher latitudes (as shown in fig. 304.05(1)). The direct solar heat gains (i.e. heat arising from sunlight penetration through glazing) will be significantly lower in buildings where most of the unshaded glazing has a predominantly north orientation.

Direct solar radiation through glazing substantially increases the cooling load of buildings. In densely occupied building types in Dubai such as offices and other commercial buildings, the demand for cooling tends to be high already without solar loads, due to the internal heat gains generated by lighting, equipment and the occupants themselves. Therefore, it is important to minimise any additional solar load to the cooling demand of buildings. The most effective way of reducing solar gains in buildings is by external shading. Another means of reducing solar gains is to restrict the amount of glazing which faces the sun.

Successful implementation of this regulation will help to address energy efficiency right at the front end of the design process. It requires designers to take early consideration of building form, orientation and rationalisation of the use of glass in buildings, which ultimately will help reduce the demand for cooling in buildings. By reducing cooling requirements, energy savings could be achieved.