



**PRODESIGN**  
SUSTAINABILITY & MEP ENGINEERS

# Building Design Factsheet

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## Improve productivity of employees with better indoor air quality

Indoor air quality can be a silent killer for businesses, so it is important to look at the living environment of work spaces. There is a direct correlation between air quality and the productivity of employees. Understanding this correlation will help employers improve both the health and performance of their staff.

Better air quality means that there is a good level of oxygen and less harmful substances in the air resulting in higher oxygen flow to the brain and better cognitive performance. For energy efficiency, buildings have become more airtight and if ventilation is not increased, a build-up of carbon dioxide and pollutants occurs. This results in the 'Sick Building Syndrome' with employees complaining of negative health and comfort effects linked to the time spent in their workplace. Employees are more likely to take sickness leave or feel drowsy and sleepy during working hours.

When planning for offices, architects and engineers should consider the following:

- Allow for 1 person per 4 sqm if the tenancy is still undefined at design stage. Open plan offices can accommodate more people than the recommended standard of 1 person per 10 sqm. Quite often fresh air provisions are made on the standard, which then result in poor indoor air quality when more people are accommodated.
- Allow for proper space inside suspended ceiling for running of fresh air ducts. We generally recommend that a minimum 400 mm of clear space is kept inside ceiling voids. This depth will increase with the area of the office floor and the size of the air conditioning units.
- As far as possible, provide office areas with their individual fresh air supply fans. Centralised systems are often designed on standards of 1 person per 10 sqm and can fall short of the fresh air required on floors with higher staff density.
- Fresh air supplies must be filtered before connecting to grilles or fan coils. This is especially recommended in city centres or zones with high level of dust and pollution.
- We always recommend to pre-cool the fresh air before it is blown into the office. This can avoid condensation and growth of moulds and mildews which cause poor indoor air quality.
- Fresh air fans can be noisy. We recommend locating them in non-occupied areas like stores, toilets, archives, mess etc. If the fan is in the occupied space, it is better to have several smaller fans than one large unit. Fans must also be acoustically lined and a silencer on both the intake and discharge side is necessary. Noise, particularly continuous noise, can be a major source of staff complaints.
- If your office is fitted with a split AC, it is very likely that there is no fresh air supply. In such cases, do not hesitate to open your windows slightly to allow fresh air to get in. The split unit should be able to handle that. An opening of a few centimetres is generally sufficient.

## BIM IN REVIEW

### ISO 19650: BIM going Global

BIM represents the opening of the AEC industry to inter-operability and we need to recognise that it is here to stay.

There has been a significant increase in international projects and collaborations using BIM. However, BIM is a process and processes need standards and guidelines to be properly implemented. Up until recently, several countries have been using their own national BIM standard to implement BIM, e.g. the BS1192 (and PAS 1192) standard in the UK and National Standard (NBIMS-US) in the US. This, of course, makes it difficult to adopt BIM globally, thereby creating the need for an international framework that allows the industry to work together across projects and national borders.

The new international ISO 19650 standard was published in December 2018. ISO 1950 series represents the latest industry standards and were developed based on the tried and tested British Standard BS 1192.

We have already adopted the ISO 19650 and have updated our manual in December last year to this standard. It took us quite some time to understand the changes from the former PAS 1192 to the new standards and it is now looking all good. We look forward to collaborate with other BIM enthusiasts on this international standard and assess its usability in the local context - We will keep you posted regularly.

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