

**A**IR CONDITIONING has taken more than its fair share of the blame for building-related illnesses over the years, and has had serious trouble convincing people that it is really part of the cure rather than the cause.

The effect of sick building syndrome on productivity has been catastrophic for many companies, and the main symptoms - headaches, nausea, dry throats - leading to high levels of absenteeism, started to be seen in profusion at the same time as air conditioning became more prevalent in the 80's.

It was easy for people to make the connection, but the fact is that fresh air was, and still is, the key. Before small split systems came along, air conditioning was carried out by large plant, mainly ducted, systems.

This meant there was a good volume of fresh air designed into the system from the outset.

### Unhealthy

■ However, as the popularity of air conditioning grew and more and more consumers demanded it, mini splits began appearing in all kinds of applications. There is nothing inherently unhealthy about these systems, but as specifiers started insisting on lower and lower prices certain important design short-cuts were taken.

The extra equipment required to provide fresh air ventilation alongside the split air conditioner was often a casualty of this drive to cut costs. A proper maintenance regime was another factor which was often sacrificed to reduce users' bills.

Yet, the long-term productivity cost far outweighed the initial first cost savings made in this way.

In the US, it is estimated that around 70,000 people have died from illnesses picked up as a result of being exposed over several years to contaminants in their workplace.

The financial cost runs into many hundreds of millions of dollars.

Air conditioning companies are now

“Proper maintenance regimes were sacrificed”

Air conditioning is often singled out as the main culprit in cases of sick building syndrome, but as Timothy Southfield explains, users need to get their houses in order

# Stopping the buck

sick and tired of being accused of making the biggest contribution to these problems, and are turning their attention to the search for Indoor Air Quality.

Scientists have proved that fumes from furniture and carpets, dust and heat from PC's and printers are significant contributors to sickness among office workers as well as odours.

A strict cleaning programme would solve some of the problems as would better organised office space.

Air conditioning cannot remove the problem without these other measures working in tandem, but a correctly designed, balanced and installed system has the major benefit of maintaining the temperature and humidity levels in the space to reduce the effects of fumes from fabrics and heat generated by office equipment.

Also, numerous scientists have shown that people generally work better when the temperature falls below the norm rather than when it rises above it.

A well-balanced system will also ensure that there is an adequate air change rate supplying filtered fresh air to remove fumes and aid breathing.

To be successful, however, maintenance is crucial and this includes cleaning of the coils and ductwork.

“This is not an easy task and as many installations are difficult to access during working hours, a full maintenance programme can appear to be very costly,” says a statement from US manufacturer Trane.

“With budgets cut back, an easy option is to reduce, or eliminate maintenance. Filters which should be cleaned regularly are not. The dust builds up and prevents proper air circulation, the performance of the unit reduces, it draws more power as the fan motors work harder and the imbalance of air causes the indoor unit to frost up providing an even bigger barrier to air circulation. The vicious circle continues until either the fan motor gives up or the compressor does.”

### Maximum

■ It is ironic that, while there is a minimum temperature requirement in an office or factory, no maximum has been set. Extreme heat and humidity, over 30°C, can affect a person's performance by up to 40%, and that does not take into account the undisputed detrimental effect on morale of an overheated office.

Users must take some of this data on board, and accept that simply blaming the air conditioning system when their highly prized designer starts yawning in front of their highly priced PC screen, is not going to help them.

They must make sure the system they have installed in the first place is capable of providing the conditions they want, and that they have invested in a suitable programme of preventative maintenance to keep it that way. ■

\* Timothy Southfield is a buildings inspector in the US.

This article is part of an ongoing debate sponsored by Mitsubishi Electric about controversial issues surrounding air conditioning

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