

Making moves FOR COMFORT

Air movement and ventilation: what standards should you be complying with and how can manufacturers help you achieve this?

Summers in the Middle East can be challenging. With temperatures soaring close to 50 degrees Celsius and humidity levels often topping 80 and 90%, without effective air movement and ventilation systems in buildings productivity levels would drop off the scale.

Maintaining a good level of internal air comfort is essential for the health of both building users and businesses. And while providing cooling is a top priority, a well designed air system must ensure that the quantities of fresh air provided are sufficient and appropriately distributed; stale air is effectively removed; and good energy efficiency is attained.

Internationally, a wide range of standards and regulations exist that stipulate the design of such systems for effective operation. But which ones should be followed in the Middle East and how are changing local concerns such as the increased focus on environmental impact affecting these design needs?

APPLYING STANDARDS

In general, the local MEP sector adheres to the standards produced by the American Society of Heating, Refrigerating and Air Conditioning Engineers' (ASHRAE). Local authority regulations also refer to and are often based around these Standards, with certain adjustments made to meet the Middle East's environmental conditions.

"All new [UAE] codes and Standards refer to ASHRAE handbooks, guidelines and standards," reports Intercool managing director Bassel Anbari. "These form the bases of all building codes and standards."

"MEP consultants in the Middle East usually follow American standards to design their

HVAC systems. With regards to ventilation systems, they are following both ASHRAE Standard 62.2...and ASHRAE Standard 62.1," adds Aldes Middle East strategic marketing manager Alexandre Benoit. "These standards deal mainly with ventilation rates to ensure an acceptable indoor air quality (IAQ) inside any buildings, thus give some procedures to design each ventilation system in a building," Benoit explains.

The standards are continually assessed, with new regulations being imposed as needed to meet local concerns. One of the most prominent additions in the past year is Abu Dhabi's Estidama Pearl Rating system. The system is principally aimed at increasing the sustainability of buildings in the Emirate and was implemented in line with a growing trend towards environmentally friendly construction locally and worldwide. "There is strong push from Abu Dhabi towards sustainability following the launch of Plan Abu Dhabi 2030, which addresses sustainability as a core principle for the development of the Emirate," explains Benoit.

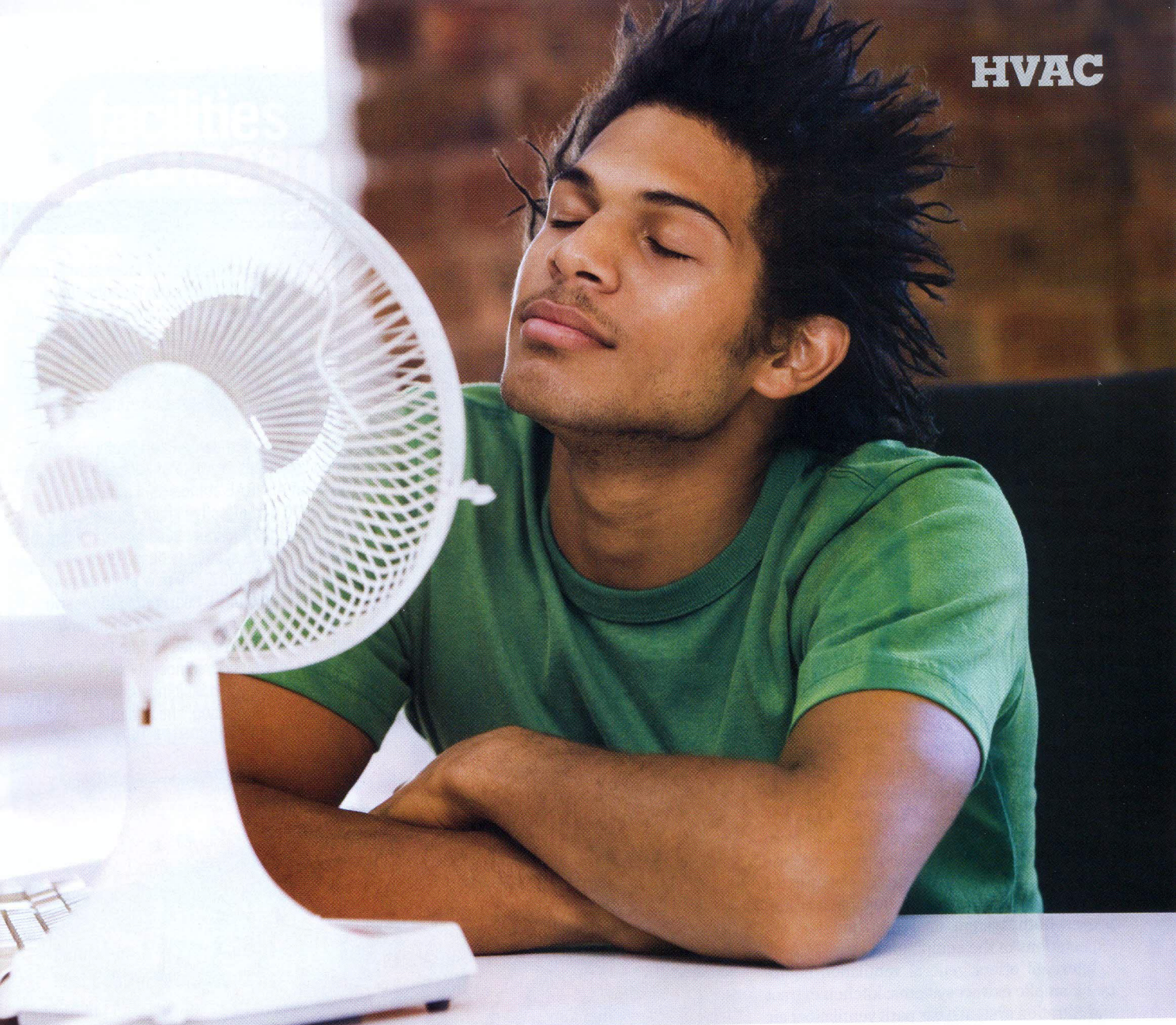
"Estidama requires designers, consultants and building owners to pay special attention to energy efficiencies, proper application, installation and maintenance of the ventilation systems," explains Anbari. There was previously a lack of relevant building codes or standards in Abu Dhabi. "Buildings were constructed following a combination of different countries codes and standards based on the consultant requirement and contractors wishes. Sometimes these codes and standards do not apply to the UAE due to design conditions, construction restraints and implantation," reports Anbari. "As a result we have buildings ranging from very inefficient to highly energy efficient and LEED-certified," states Anbari.



OVERCOMING CHALLENGES

The number of locally enforced regulations in the UAE remains a significant issue for MEP system design. "The main challenge [for the air movement and ventilation sector] is the standardising of codes and standards within the UAE; for example the requirement in Dubai for car park ventilation is different in Abu Dhabi," stresses Anbari.

"One of the main problems in the UAE is to deal with different regulations inside the same country," agrees Benoit. "Abu Dhabi has worked on the green building issue and created the Estidama - Pearl Rating System; unfortunately this is implemented and enforced only in the Abu Dhabi Emirate. It would be much better and much easier for everybody to enforce it everywhere in the UAE, that means all the seven Emirates," Benoit suggests. "I hope these new codes will be applied to all Emirates in the UAE," adds Anbari.



75%

Energy consumption gains that can be made through the use of low-energy fans

Further challenges to manufacturers and contractors within the ventilation sector come from external factors such as the current economic state. "In a recession/recovery economy the general goal is to consider the lowest initial cost as opposed to looking at life cycle cost analysis and return on investment. The innovators, whether it be clients, consultants, contractors or suppliers are rare," explains IMEC Electro Mechanical Engineering Executive Director Aslan Al-Barazi.

"The crisis has badly affected the sector all over the GCC, especially in Dubai," agrees Benoit. "The main challenge is to deal with the price war in these difficult market dynamics, as certain competitors are cutting their price dangerously without even making profits."

Both Benoit and Al-Barazi stress that long-term success while overcoming such issues can be gained by maintaining quality of products and services. "Our goal is the same as before the crisis: we want to bring the best quality solutions to our customers, at a competitive price," stresses Benoit.

"So we are sharing our expertise and supporting our customers as much as possible to deal with their requirements in terms of performances, price and deliveries," Benoit adds. "We offer our clients both [low capital cost and life cycle cost analysed] options and educate them on the pluses and minuses of each with the goal to give them a product best suited for their requirements."

PRODUCT PORTFOLIOS

A wide range of products and systems are available for designers and installers of air movement and ventilation systems for the region's buildings.

As distributor for UK-based Vent-Axia, IMEC offers a complete range of the firm's products, including domestic and industrial fans, plus green ventilation products. The Vent Axia products are manufactured in the UK in compliance with all the UK standards.

The environmentally friendly potential of air systems has been particularly targeted by Vent Axia as Al-Barazi explains: "Vent Axia has gone ahead of the current UK Green Ventilation legislation by aiding the UK authorities in writing the next green ventilation UK legislations going up to 2017 and including the 2012 UK Olympics."

With environmental legislation also becoming more stringent in the Middle East, such considerations are becoming higher priority

on local projects. "Green ventilation products would be expected to grow in market size in a buoyant economy, as currently many clients prefer the value engineered approach due to tighter budgets," stresses Al-Barazi.

With this in mind, among the new products added to IMEC's portfolio in the past year is the Vent Axia Totus range of green ventilation products. This incorporates low energy consumption DC motors; sensors for on-demand ventilation; plus heat recovery to extract used cool air back into the room through plate heat exchangers.

"VTS Group creates and implements innovative and technologically advanced solutions for industrial facilities, commercial institutions and hotels," explains regional product manager Eman Mahmoud Alqaisi.

VTS Clima's ventilation and air handling units (AHU) conform to European product safety standards and international standards for quality and environmental protection. The firm's Ventus range of ventilation and air conditioning units offers energy efficiency of up to 85%, with sensible and latent heat recovery possible. The AHU can be used in climatic conditions ranging from -40 to +70°C, with specifications for individual project units easily undertaken using the ClimaCAD software.

Ventus has a frameless casing made from a sandwich construction using polyurethane foam. The lack of thermal bridges eliminates the potential for condensation, hence improves both system operation and lifetime expectations of the equipment.

Intercool offers general ventilation equipment; smoke extract systems; kitchen extract and filtration systems; car park ventilation; air handling units; and fan coil units. The firm's latest additions to its portfolio are Loren Cook fans, USA and Helios Fans, Germany, which it has recently introduced to the UAE market. "We represent Loren Cook USA and Helios Ventilation Germany for fans and ventilators and Dunham Bush for Air Handling Units and Fan coil Units," reports Anbari.

Local regulations are playing a part in the demand levels of products as Anbari explains: "Smoke and kitchen extract fans and ventilators [are currently most popular products] as all of these systems relate to life safety, which is required by all building codes."

Aldes Middle East deals with three main activities: fire protection, ventilation and air distribution. Its ventilation activity includes a complete range of fans designed in accordance with eco-friendly requirements on energy savings, raw materials choice, recycling management and life expectancy. "We have a low energy consumption range of fans to deal with green building criteria and energy

STANDARD DESIGN

Local authority regulations in the UAE routinely refer to handbooks, guidelines and standards produced by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE). The ASHRAE standards are also generally followed by MEP consultants operating within the Middle East.

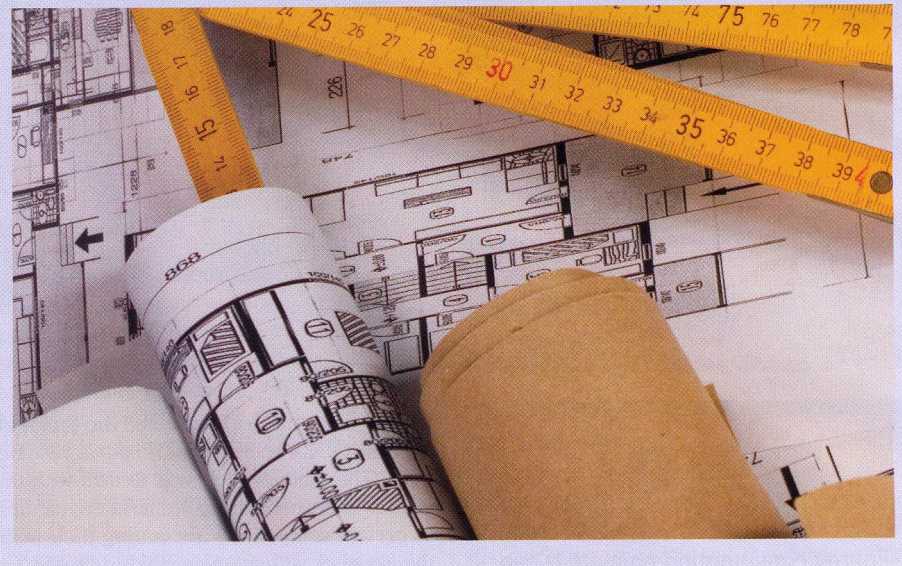
For ventilation systems, two main ASHRAE standards are adhered to:

- ASHRAE Standard 62.2: Ventilation and acceptable indoor air quality in low-rise residential buildings
- ASHRAE Standard 62.1: Ventilation for acceptable indoor air quality

These standards deal mainly with ventilation rates to ensure an acceptable indoor air quality (IAQ), thus give procedures to design each ventilation system in a building. The scope of Standard 62.2 covers single-family houses

and multifamily structures of three stories or fewer above grade, including manufactured and modular houses; Standard 62.1 covers all other buildings such as hotels, mid/high-rise buildings, hospitals, offices and malls. The new standard editions 2010 have just been released, see www.ashrae.org/publications/page/2670.

Abu Dhabi's Estidama Pearl Rating System is one important example of a local regulation based on ASHRAE standards. Launched in April 2010 and effective since January 2011 on the design of all new buildings and villas in the Emirate, the system is based on ASHRAE Standard 62.1: 2007. "All new projects must achieve a minimum 1 Pearl rating to receive approval from the planning and permitting authorities," reports Aldes Middle East strategic marketing manager Alexandre Benoit. "Government-funded buildings must achieve a minimum 2 Pearl rating," he adds.



saving with up to 60-75% energy consumption gains," reports Benoit.

For air distribution, Aldes offers airflow control products like VAV boxes for variable air volume; CARs for constant air volume in air supply or air exhaust ducts; and VCDs for balancing the whole HVAC system.

Aldes has added a number of new products to its portfolio over the past few months, with more product launches planned for 2011. In October 2010, the firm launched the Combined diffuser. A product that combines supply and return air, this is an ideal solution for small rooms to avoid any bypass effect that can occur from a supply diffuser to a return

diffuser. "This diffuser allows time saving on installation and maintenance of around 40% as only one diffuser is needed instead of two," explains Benoit.

A further product launch is scheduled for November 2011 reports Benoit, with a new aesthetic swirl diffuser called Twisted to be introduced to the market. "Ideal for variable air volume systems with VAV boxes, this diffuser will be the perfect match for the architect and the interior designer in terms of aesthetics; the MEP consultant in terms of performances with VAV systems; and the MEP contractor in terms of selection and installation as there is one model only," reports Benoit. **ENR**