

# How air conditioning protects from air pollution

ADRIN SARWAR

As of 2024, more than 55% of the world's population lives in urban areas, which is expected to rise to nearly 70% by 2050. While cities are hubs of innovation and economy, they are also epicentres of concentrated air pollution. Between vehicle emissions, industrial runoff, and the "Urban Heat Island" effect, city dwellers are constantly exposed to a "toxic soup" of atmospheric pollutants. In this context, air conditioning (AC) has evolved. No longer merely a tool for thermal comfort, modern HVAC (Heating, Ventilation, and Air Conditioning) systems have become the primary line of defence in maintaining public health.

## FILTRATION OF PARTICULATE MATTER

AC improves urban air quality by filtering harmful particles like PM2.5 and PM10. Standard residential filters (MERV 8-11) catch dust and pollen, while high-grade versions (MERV 13-16) trap bacteria and smog. Constant air circulation through these filters ensures indoor air stays significantly cleaner than the polluted street air.

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## A SEALED ENVELOPE

One of the greatest risks to urban health is infiltration. In high-traffic cities, outdoor air often contains high levels of nitrogen dioxide and ground-level ozone. When a building utilises air conditioning, it creates a "sealed envelope." AC seals your home by keeping windows closed, blocking exhaust and soot. Advanced systems also use positive pressure to push air

out of cracks, preventing unfiltered outdoor pollutants from leaking in.

## CONTROLLING HUMIDITY AND MOULD

High humidity in cities breeds mould and dust mites. According to the World Health Organization (WHO), indoor dampness and mould are major triggers for asthma and chronic



ILLUSTRATION: ADRIN SARWAR

obstructive pulmonary disease (COPD). Air conditioners act as large-scale dehumidifiers. By stripping excess moisture from the air, they keep indoor humidity levels between the "healthy zone" of 30% to 50%, effectively neutralising biological pollutants before they can colonise.

## MITIGATION OF VOC

Off-Gassing Cities are full of synthetic materials—paints, treated woods, plastics, and carpets. These materials release Volatile Organic Compounds (VOCs). Heat speeds up the release of toxic VOCs from synthetic materials. By maintaining cool, stable temperatures, AC slows this "off-gassing." Advanced units also use activated carbon filters to chemically remove these toxins and odors from the air.

## URBAN HEAT ISLAND PARADOX

The relationship between AC and air quality is complex. The Urban Heat

Island (UHI) effect makes cities 5–15°C warmer than rural areas as concrete absorbs heat. AC units worsen this by dumping indoor heat onto streets, creating a feedback loop where rising heat increases smog, making cooling even more essential for survival. To combat this, urban planners are adopting District Cooling Systems—

centralised plants that cool entire neighborhoods more efficiently than individual units.

## SMART SENSING AND PURIFICATION

The next generation of urban AC is intelligent. We are seeing the integration of: HEPA and UV-C Light: Systems that use ultraviolet light to kill airborne viruses and bacteria, a technology that gained massive traction post-COVID-19. Modern units can now detect high levels of CO2 or PM2.5 and automatically increase ventilation or filtration rates.

In modern cities, the AC has evolved from a luxury into vital health infrastructure. Despite energy challenges, its ability to filter particles, control humidity, and block urban toxins is indispensable. For the urban dweller, the AC isn't just cooling the room; it is cleaning the very air they breathe.



**MD. NURUL AFSER**  
Deputy Managing Director  
ELECTRO MART GROUP



**Nearly 45% of our sales come from district and semi-urban areas. To overcome rural challenges like voltage instability and low awareness, we are leveraging government power initiatives and our extensive network—5,000+ technicians, 2,000+ dealers, 70+ showrooms, and digital media—to drive growth.**

# HEATWAVES, RURAL DEMAND boost AC sales

Electro Mart Group

Record-breaking heatwaves over the past two years have fundamentally altered the consumer landscape in Bangladesh. Air conditioners have turned from high-end luxuries into essential household appliances. In this interview, Md. Nurul Afser, Deputy Managing Director of Electro Mart Group, discusses the projected 20% demand surge for 2026 and how the industry is evolving through AI-driven efficiency and a massive expansion into district towns.

**The Daily Star(TDS):** With temperatures hitting record highs, how has the demand forecast for 2026 changed?

**Md. Nurul Afser(MNA):** The prolonged heatwaves over the past two years have structurally shifted the AC market in Bangladesh. For 2026, we are projecting a 15–20% increase in overall demand compared to earlier forecasts. Air conditioners are no longer viewed as luxury items but as essential home appliances, particularly among middle-income households, along with rural and semi-urban areas.

**TDS:** Almost all new models focus on inverter technology. Is there still a future for non-inverter ACs in Bangladesh?

**MNA:** Inverter technology now accounts for over 80% of new AC sales. However, non-inverter units will not disappear entirely. There remains a niche market in small retail shops, offices,

first-time buyer and certain commercial applications where usage hours are limited and upfront cost sensitivity is high.

**TDS:** What challenges do local manufacturers face in transitioning to R32 refrigerant?

**MNA:** R32 is more environmentally friendly with a lower Global Warming Potential (GWP). Additionally, dependence on imported components and fluctuations in the US dollar increase cost pressures. However, from a sustainability perspective, the transition is both necessary and inevitable.

**TDS:** As you launch the Gree 'Airy' inverter AC series, how does AI personalise cooling?

**MNA:** The new Gree 'Airy' inverter series integrates AI-driven sensors that analyse room temperature, humidity levels, and occupancy patterns to optimise compressor performance automatically. Compared to conventional inverter models, customers can expect an additional 10–15% energy savings. The system reduces unnecessary compressor load while maintaining stable and comfortable cooling. It features WiFi & Bluetooth connectivity, voice control and an advanced Cold Plasma sterilisation system that eliminates 93% of bacteria and viruses, keeping your home environment clean and healthy.

Interview conducted by Adrin Sarwar

অফার দেখতে স্ক্যান করুন

এছাড়া আরো অনেক ব্র্যান্ডে দারুণ সব অফার পেতে কেনাকাটা করুন বিকাশ পেয়ে।

\*শর্ত প্রযোজ্য