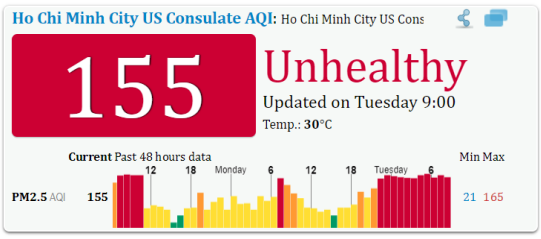
Air Pollution in Vietnam – Engineering Solutions

Air Pollution & Health - Cause for Concern



- Hanoi enjoyed just 38 days of clean air in 2017
- Vietnam's PM2.5 index ranked 164/171 surveyed countries
- Check your air quality at http://aqicn.org/here/

On an ordinary Tuesday morning in May 2018, the Air Quality Index reading (AQI) in Ho Chi Minh City is an unhealthy **155,** a number over three times higher than the level deemed safe for everyday breathing for those with healthy respiratory systems. Unfortunately, it's become an all too common scenario, with the number of unhealthy air days recorded in both of Vietnam's two major cities having increased significantly over the last five years - a trend that looks set to continue.

Created by the U.S. Environmental Protection Agency (EPA), the Air Quality Index is a measure of how polluted the air we breathe is, outlines what health effects we might be susceptible to as a result and focuses on the potential impact within a few hours or days of being exposed (AirNow, EPA).

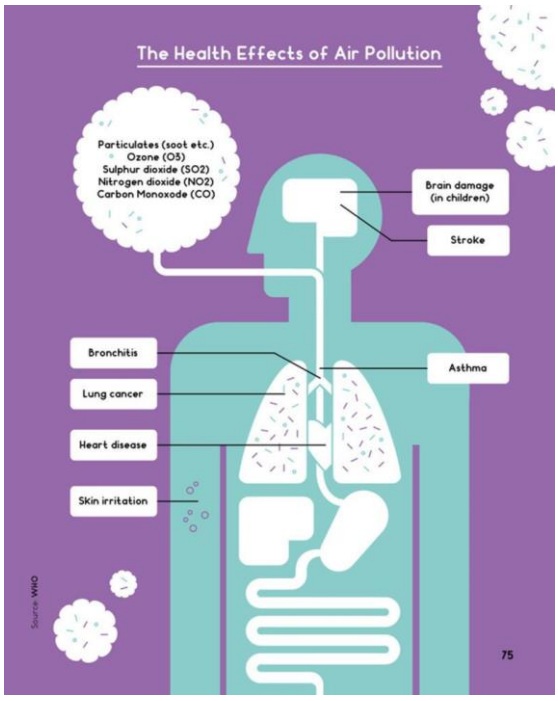
Recognising The Problem

- The EPA developed the formula to convert invisible PM 2.5 air pollution readings into an air quality index (AQI) that acts to inform health policy.
- According to the scale, air is considered safest to breath when the AQI value is below 50.

Air Quality Index Levels of Health Concern	Numerical Value	Meaning
Good	0 to 50	Air quality is considered satisfactory, and air pollution poses little or no risk
Moderate	51 to 100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151 to 200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201 to 300	Health warnings of emergency conditions. The entire population is more likely to be affected.
Hazardous	301 to 500	Health alert: everyone may experience more serious health effects.

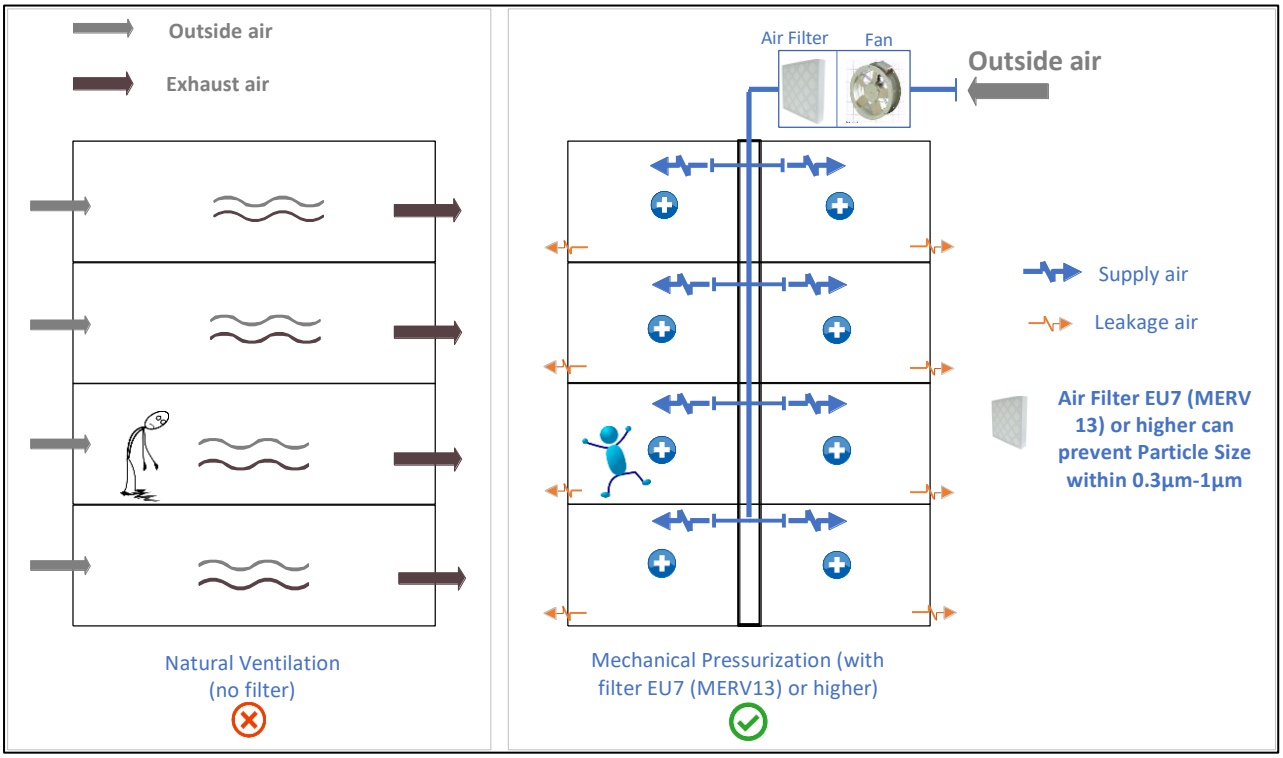
Effects on Health and Well-being

- PM stands for Particulate Matter: a term for the mixture of solid particles and liquid droplets that can be found in the air at any given time. Some particles like dust, soot or smoke are large enough to be seen by the naked eye, while others, like PM 2.5, are so small that they can only be detected using an electron microscope.
- These types of particles can penetrate deep into the lungs and force their way into the bloodstream, meaning repeated exposure to this type of pollution can be extremely dangerous.
- On average, people spend 90% of their time indoors meaning that creating a clean environment where we spend the most time is critical to our health and well-being.
- A clean environment can be achieved through good building design and quality engineered solutions.



- Generally effective air filtration can control the particulate matter (PM2.5) to acceptable levels. Centralised air filtration coupled with building pressurization and air tightness is a better solution than sealing a room and using recirculating filter machines.
- Indochine Engineering are leaders in providing innovation that delivers better air quality control and have been applying methods that have put it at the forefront of best environmental practice for ten years.

Engineering Solutions for Clean Air in the Built Environment



Here are two examples of how quality engineered solutions improve air quality:

- EU7 or higher standard air filters inside any PAU systems have been proven to effectively remove airborne particles from inward flowing fresh air.
- PAU systems that pressurize a building interior prevent the migration of external airborne contaminants into the building.
- Both of these strategies have been employed by Indochine Engineering in commercial properties (offices and hotels) for a decade and with only minor adjustments are beginning to apply them to the residential market to positive effect on occupant's health.

Benefits of Clean Air - Indoors

The home environment:

- Easier breathing and reduced congestion
- Improved sleep
- Elimination of hypoallergenic pollens
- Removal of odors
- Reduced household cleaning bills

The office environment:

- Reduced absenteeism
- Better rate of staff retention
- Enhanced productivity and performance
- Reduced maintenance costs
- Overall improvement in morale