
airthinx

Good air quality keeps you happy, well-rested and productive

THE LUNG IS THE MOST COMMON SITE OF AIRBORNE INJURY

The World Health Organization declared air pollution a public health emergency, claiming over 8 millions lives annually. According to the Environmental Defense Fund, air pollution is blamed for more than 600,000 child deaths. OSHA statistics show 70 million Americans working indoors, with 21 million exposed to poor indoor air. Thirty percent of all remodeled and new buildings worldwide may be afflicted with indoor air quality (IAQ) problems. A study by the Lawrence Berkeley National Lab found 12 million Californians living in homes with gas stoves emitting pollutants above EPA standards for outdoor air pollution.

AIR QUALITY INFLUENCES HEALTH

Humans spend at least 2/3 of their day indoors, taking between 17,000 and 23,000 breaths of air that is 10-100x more polluted than outdoors. Exposure to indoor pollutants triggers asthma, allergies and symptoms associated with respiratory disease. About 1 in 12 Americans have asthma, with up to 65% of cases related to indoor air quality. In the US, there are more than 1.7 million asthma-related visits to the ER each year. Globally, there are 5-10 million asthma related ER visits from exposure to fine particulate matter PM 2.5. In schools, controlling exposure to indoor pollutants like dust and pollen could prevent 13.8 million missed school days a year.

an **award-winning** air quality monitoring solution designed to improve the health of a building & the health of it's people

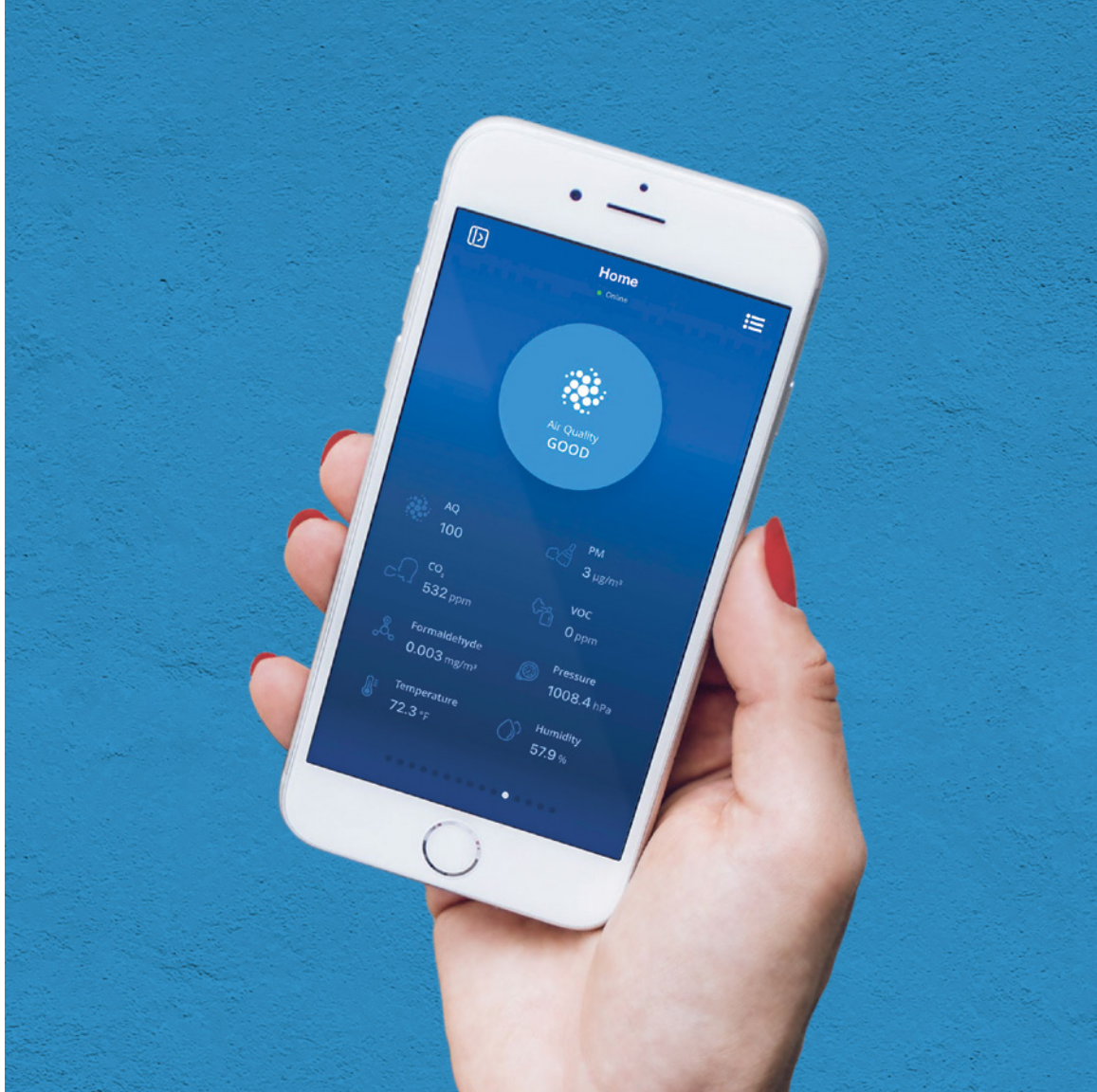
airthinx IAQ

This is a story about how to feel safe and healthy in a home, school, work, factory, hospital, hotel room, airplane or any built environment because of a new trademark in health & wellness technology.

Airthinx IAQ, is the 1st data-driven **internet-of-things (IoT)** solution for continuous air quality monitoring with the precision & accuracy of professionally graded instruments, at a fraction of the cost, designed to improve occupant health and create safe & energy-efficient spaces, in every room, everywhere in the world. Each smart device connects via cellular network & WiFi, monitors key parameters of air quality in real-time using 9 built-in sensors (PM 1, PM 2.5, PM 10, CO_2, CH_2O, VOCs, Temperature, Humidity & Pressure) & detects critical events like smoking, fire, or mold contamination with artificial intelligence.

Building managers, employers, and residents access their data anytime, anywhere via the user-friendly app or the professional console on the web, ensuring the safest environment and most energy efficient use of systems. Utilizing the measurements as a nutrition label for air quality, or the LED visual alerts on the device, every user has the ability to see the moment air quality is unhealthy, unsafe or toxic, forcing stakeholders to ask the question: *how can I create a healthy indoor space?* The fully calibrated device can easily be deployed in multiple locations and communicates with building automation systems to quickly mitigate the environmental impacts of indoor air pollution.

airthinx introduces the third dimension of health and wellness allowing you to **see the air you breathe**



how does the airthinx IAQ work?

1. Air travels into the airthinx IAQ where 9 sensors evaluate its quality.

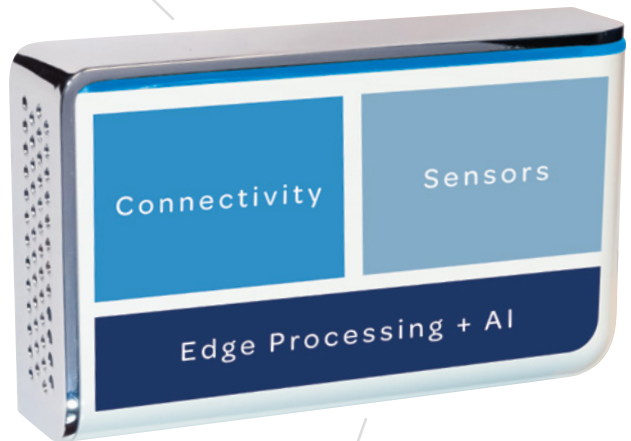
3. Data can be accessed online through the web console or mobile airthinx app, anytime, anywhere.

2. Built-in connectivity enables wirelessly sending data to the cloud.

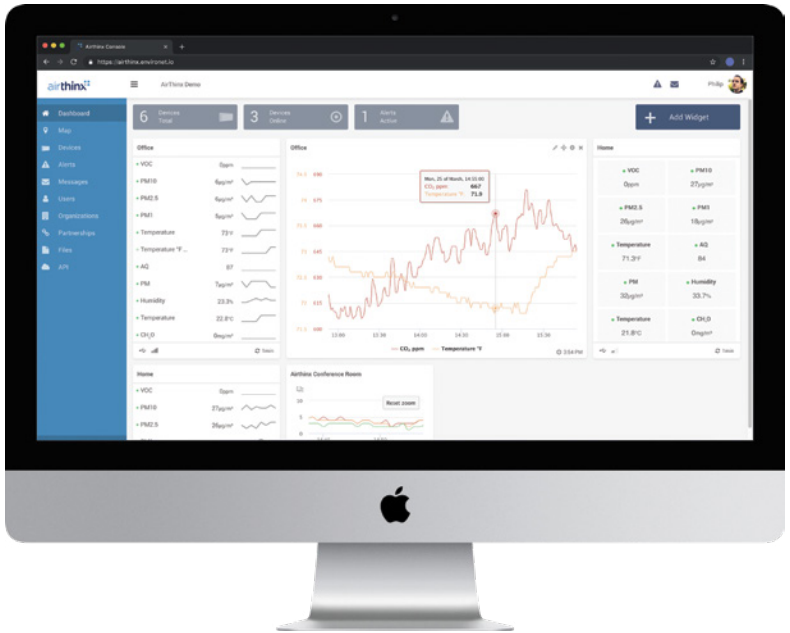
compact, lightweight & elegant design

5G/4G/3G | GPRS | NB-IoT | Bluetooth | Mesh | WiFi

CO_2 | PM 1 | PM 2.5 | PM 10 | CH_2O | TVOC | Barometer | Dew Point | Temperature | Humidity

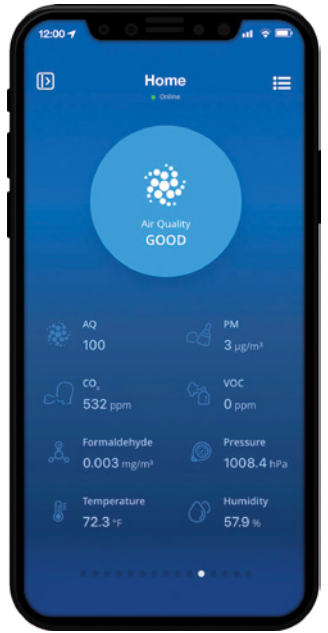


A powerful processor combined with artificial intelligence (AI) provide accurate, and reliable data acquisition, analytics and communication to the cloud.



AIRTHINX CONSOLE

The console is web-based and designed with the professional in mind. It provides a plethora of tools for data analytics, alerts & notifications, device management, user management, collaboration tools between organizations and users, and the ability to view and manage 3rd party instruments in addition to airthinx devices for more comprehensive monitoring.



AIRTHINX APP

The App offers the ability for anyone to better understand their air quality in any environment in the most intuitive way. See the classification of the air quality (AQ) – **Good**, **Moderate** or **Poor** based on data collected by airthinx and advanced algorithms. You can easily identify parameters that contribute heavily on the deterioration of air quality, utilizing data trends and visual alerts.

a new kind of bottom line

Sensors

	airthinx	Awair	Foobot	Particle Plus	TSI	MiniRAE
PM 1	●	X	X	●	●	X
PM 2.5	●	●	●	●	●	X
PM 10	●	X	X	●	●	X
tVOC	●	●	●	●	X	●
CO_2	●	●	●	●	X	●
CH_2O	●	X	X	X	X	●
Temperature	●	●	●	●	X	X
Humidity	●	●	●	●	X	X
Pressure	●	X	X	X	X	X

Prior to airthinx, an end-user had to decide between something affordable or a professional instrument that costs thousands of dollars. Enter airthinx, a professional, affordable, & comprehensive solution for detecting air pollution with the accuracy and precision of traditional instruments. With airthinx, everyone can see the air they breathe.

Connectivity & Integration

	airthinx	Awair	Foobot	Particle Plus	TSI	MiniRAE
3G/4G	●	●	X	X	X	X
WiFi	●	●	●	●	X	X
Bluetooth	●	●	X	●	●	X
LoRA	●	X	X	X	X	X
GPS	●	X	X	X	X	X
Mesh	●	X	X	X	X	●
Visual Alerts	●	●	●	X	X	●
Developer Tools (SDKs, APIs)	●	●	●	X	X	X

Professional Application

	airthinx	Awair	Foobot	Particle Plus	TSI	MiniRAE
Mobile App	●	●	●	X	X	X
User Management	●	●	X	X	X	●
Dashboard	●	●	X	X	X	●
Device Management	●	X	X	X	X	X
Alerts (SMS, Email)	●	X	X	X	X	X
Collaboration Tools	●	X	X	X	X	X
Analytics Tools	●	X	X	X	X	X
Integration 3rd party Devices	●	X	X	X	X	X

all the places it can go

COMMERCIAL SPACES
The innovative cost-effective solution monitors airborne pollutants in workspace environments where air quality stability is essential for occupational health, safety, productivity and wellness.

HOTELS
The world's most luxurious hotel spaces can now be the smartest too with airthinx's continuous IAQ monitoring solution, bringing 5-star experiences and unparalleled health, wellness & comfort to every continent, in real-time.

AIRPLANES
Become the gold standard in the aviation industry by creating the safest and healthiest flight conditions, providing passengers, crew and pilots a sustainable way of flying.

HEALTHCARE SPACES
Create the most sterile environment in operating, patient, & isolation rooms to ensure the highest levels of safety and comfort for patients & staff.

HOMES
Monitor indoor air pollutants in your home that affect vital human organs like the lungs, heart and brain, causing heart attacks, cardiac arrhythmias, strokes, pulmonary disease, respiratory disease and asthma.

SCHOOLS
Achieve academic & athletic excellence in every classroom, art studio, lunchroom & gymnasium by monitoring key IAQ pollutants that impact student learning, memory, concentration, problem-solving and health.

INDUSTRIAL
Ensure compliance with OSHA regulations by monitoring air quality in real-time and seamlessly producing daily, weekly and monthly reports about 9 air quality parameters. From industrial hygienists and facilities managers, to EHS professionals, the ease of use makes the airthinx solution an industry standard.

specifications

PM Sensors		**PM 1, PM 2.5, PM 10**	0.3~1.0; 1.0~2.5; 2.5~10 μm
		Effective Range	0~500 μg/m³
		Resolution	1 μg/m³
		Efficiency	98%>=0.5μm
		Maximum Consistency Error	±10% @100~500 μg/m³
		Standard Volume	0.1L
Gas Sensors	CH_2O	**Effective Range**	0~1 mg/m³
		Resolution	0.001 mg/m³
		Maximum Error	<5% FS
	CO_2	**Effective Range**	0~3000 ppm
		Resolution	1 ppm
		Maximum Consistency Error	±50ppm+5%FS
		Single Response Time	< 3 sec.
		Total Response Time	≤ 25 sec.
	tVOCs (EtOH)	**Effective Range**	.01 – 10 ppm
	tVOCs (C_4H_8)	**Effective Range**	.01 – 1 ppm
Environmental Sensors	**Temperature**	**Industrial Range**	-25° – 75° C
		Recommended Range	0° - 35° C
		Resolution	0.1 °C
		Maximum Error	±0.5 °C
	Humidity	**Range**	0-99 %RH
		Resolution	0.1 %RH
		Maximum Error	±2 %RH
	Barometer	**Range**	300-1100 hPa
		Resolution	±0.12 Pa
		Maximum Error	±1.3 Pa
	Dew Point & **Heat Index** (Additional Parameters)		

Communications	**Cellular**	GSM/GPRS/EDGE 850, 900, 1800, 1900 MHz, UMTS/HSPA 800/850, 900, AWS 1700, 1900, 2100 MHz
	WiFi	802.11 b/g
	Bluetooth	Bluetooth 4.0
	Mesh	Zigbee, LoRa
	GPS	Sensitivity > -165dBm, 3m Accuracy, A-GPS
	Antenna	Built-in (GPRS, 3G, GPS, Zigbee, Bluetooth, LoRa)
	SIM Card	Built-in
General	**Input Voltage**	5 VDC (micro-USB)
	Power	0.6 Watt
	Operating Temperature	-30 °C to 75 °C (-22 F to 167 F)
	Accelerometer	16g (13-bit resolution)
	Dimensions (LxWxD)	4.3in (110mm) x 2.6in (66mm) x 1.2in (30mm)
	Weight	0.4 Lbs (0.18 kg)
	Certifications	CE, FCC, PTCRB

indoor air quality starts here

airthinx PRO

For professionals seeking customized pollutant detection, the Airthinx PRO, offers the 1st sustainable & weatherproof data-driven IoT solution for continuous monitoring of air quality outdoors, and harsh indoor environments, like in factories & refineries, in real-time. It has built-in technology, so the devices are always connected and collecting data, and built-in artificial intelligence to detect critical events like wildfires and gas emissions.

With the demand in indoor air quality monitoring on the rise, it became apparent that the same type of instrument is missing in the outdoor environmental market. By closing the gap between low-cost gadgets and industrial equipment, Airthinx offers a customizable instrument for precise air quality monitoring of more than 9 pollutants at scale, with unparalleled security. Each airthinx PRO includes a six-channel particle sensor, customization of up to six gas sensors, high accuracy environmental sensors (temperature, pressure & humidity), a sound pressure sensor, built-in battery & solar charger, weatherproof enclosure, 3G/wifi, the web-enabled console and app for access and control to air pollution data, anytime, anywhere.

Smart City governments, facilities seeking to comply with the Clean Air Act, or anyone concerned with their health, accesses their data anytime, anywhere via the user-friendly app or the professional console on the web. Each fully calibrated device can easily be deployed in multiple locations anywhere in the world to quickly mitigate the environmental impacts of air pollution.

the professional's approach to air quality monitoring

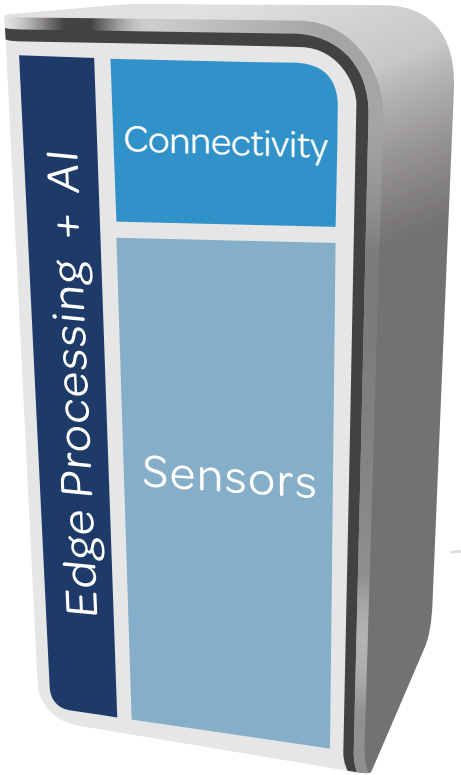
how does the airthinx PRO work?

1 Air travels into the airthinx PRO where more than 9 sensors evaluate its quality.

3 Data can be accessed online through the web console or mobile airthinx app, anytime, anywhere.

2 Built-in connectivity enables wirelessly sending data to the cloud.

A powerful processor combined with artificial intelligence (AI) provide accurate, and reliable data acquisition, analytics and communication to the cloud.



5G/4G/3G
GPRS
NB-IoT
Bluetooth
Mesh
WiFi

Gas Sensors

up to 6 gas sensing modules, SO_x, NO_x, VOCs, O_3, CH_2O, CO_2, CO, NH_3, CH_4, and more

Temperature
Dew Point
Humidity
Barometer
PM 1
PM 2.5
PM 10
Sound Pressure

a complete solution for smart cities

a trademark for health & wellness

A PROFESSIONAL INSTRUMENT, NOT A GADGET

- Continuous and ongoing monitoring of air pollutants in real-time
- Critical event detection for smoke, wildfires, mold, and gas leaks
- Feeding of real-time data to BMS, FMS, or BIM through open APIs

PROVEN TO CREATE HEALTHIER INDOOR SPACES

- Improved health & well being
- Better sleep quality
- Heightened productivity
- More energy
- Heart rate
- Dietary rhythms
- Hormone balance
- Respiratory patterns

airthinx democratizes air quality data by making it accessible to everyone, everywhere.

temperature

Heat stress may cause mental fatigue during performance of sustained-attention tasks that demand greater cognitive resources. Optimal temperature conditions are 68-74 degrees Fahrenheit.

pressure

Differences in pressure can increase the flow of infectious particles. Low pressure differentials create optimal pressure conditions.

humidity

Spikes in humidity may result in mold growth on any surface contaminated with moisture within 48hrs of contact. Optimal relative humidity conditions are below 50%.

dew point

The dew point is the temperature where water vapor condenses into liquid water. Humid air has a higher dew point because of the higher level of moisture in the air at a given temperature.

particulate matter

Particulate Matter is commonly in dust, allergens and pollen. Cooking, smoking, crumbs and dirt will cause PM to spike. To give an idea about just how invisible these particles may be, a single strand of human hair is 50 microns in diameter. The smaller the particle, the worse it is and the more likely it is to increase infection rates and cause respiratory illnesses. LEED recommends PM 10 levels below 50 µg/m³ and PM 2.5 levels below 15 µg/m³.

volatile organic compounds

The EPA classifies more than 300 Volatile Organic Compounds (VOCs) as carcinogens, with emissions indoors now equal to what comes out of the tailpipe of your car.

Airthinx IAQ is the only low-cost instrument to provide TVOCs calibrated simultaneously with two biased gases, offering professionals a calibration score choice – TVOCs calibrated with isobutylene and TVOCs calibrated with ethanol – that is most appropriate for their application.

formaldehyde

Formaldehyde is a colorless, flammable gas that has a strong odor. Exposure to formaldehyde may cause adverse health effects. Indoors, formaldehyde can be commonly found in adhesives & glues in furniture and building materials like pressed wood, carpets, fabrics, particle board and tobacco smoke. The major source of formaldehyde outdoors is automobile exhaust. The World Health Organization guideline for formaldehyde concentration is 0.1mg/m³.

carbon dioxide

Humans emit CO_2 with every exhale. When we sit in a densely occupied space, there is a CO_2 bubble right in front of our faces! Anytime you have an increase of people in a closed environment, levels of CO_2 will spike. Safe levels of CO_2 are around 500-600 parts per million. ASHRAE recommends levels below 1000 ppm.

airthinx PRO only

oxides of nitrogen

Nitrogen Dioxide (NO_2) is one of a group of highly reactive gases known as oxides of nitrogen or nitrogen oxides (NOx). Other nitrogen oxides include nitrous acid and nitric acid. NO_2 is used as the indicator for the larger group of nitrogen oxides. NO_2 is formed by the burning of fuel, emissions from cars, trucks and buses, power plants, and off-road equipment. The U.S. Energy Department's Alternative Fuels Data Center indicates about 55 % of man-made NOx come from school buses.

airthinx PRO only

carbon monoxide

CO is a colorless, odorless gas that can be harmful when inhaled in large amounts and is released when something is burned. The greatest sources of CO to outdoor air are cars, trucks and other vehicles or machinery that burn fossil fuels. A variety of items in a home such as unvented kerosene and gas space heaters, leaking chimneys and furnaces, and gas stoves also release CO.

airthinx PRO only

oxides of sulfur

The EPA's national ambient air quality standards for SO_2 are designed to protect against exposure to the entire group of sulfur oxides (SOx). SO_2 is the component of greatest concern and is used as the indicator for the larger group of gaseous sulfur oxides (SOx). Emissions that lead to high concentrations of SO_2 generally also lead to the formation of other SOx. The largest sources of SO_2 emissions are from fossil fuel combustion at power plants and other industrial facilities. Smaller sources of SO_2 emissions include: industrial processes such as extracting metal from ore; natural sources such as volcanoes; and locomotives, ships and and heavy equipment that burn fuel with a high sulfur content.

airthinx PRO only

ozone

Ozone at ground level is a toxic air pollutant and is the main ingredient in "smog." Ground level ozone, is not emitted directly into the air, but is created by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOCs). This happens when pollutants emitted by cars, power plants, industrial boilers, refineries, and chemical plants react in the presence of sunlight.

airthinx PRO only

ammonia

NH_3 plays a primary role in the formation of secondary particulate matter by reacting with the acidic species, e.g. SO_2, NOx, to form ammonium-containing aerosols, which constitute the major fraction of PM2.5 aerosols in the atmosphere, posing significant health concerns. The primary source of global NH_3 emissions is agriculture (~85 %), which includes NH_3 emissions from livestock and NH_3-based fertilizer applications. Other sources of NH_3 emissions include industrial processes, motor vehicles, plant decomposition, biomass burning, and volatilization from soils and oceans.

airthinx PRO only

methane

CH_4 is a key precursor gas of the harmful air pollutant, ground level ozone. Natural gas is more than 90% methane, a much stronger heat-trapping greenhouse gas that can warm the atmosphere at 25 times the rate of CO_2 and is 80 times more potent than CO_2. The EPA lists the oil and gas industry as the largest source of methane emissions in the country, primarily through leaks from pipelines and other infrastructure.

air, the most shared resource

"The expected launch of Airthinx PRO, which can monitor both the indoor as well as outdoor air quality, is well aligned with Smart City goals of major developed and developing nations."

“Real-time indoor air quality data provides a real value to customers, especially considering the potential health risks of waiting for a monitoring device to arrive or waiting for the results of a test. This is a cost-effective solution.”

"AirThinx provided the most complete set of IAQ readings, so I was willing to pay a premium for the AirThinx solution."

“Langan partnered with Airthinx to leverage the use of the devices inside corporate buildings to help create a healthier and more productive environment while generating significant cost-savings from maintenance and energy optimization.”

"We started using the Airthinx monitor to track our office’s air quality. What we first loved about the device was the ease in the activation; after setting up an account online, it was simply plugged in anywhere and able to be used. This portable monitor can be moved to any location and instantly start collecting data."

USA TODAY

Air pollution inside my house could kill me. What are you breathing in, at your home?

Jennifer Jolly, Special to USA TODAY

The air pollution inside my house could kill me. That's what I've learned after testing a handful of new high-tech indoor air quality monitors. Are you in the same boat – er, room?

Research shows 96% of homes have at least one type of indoor air quality issue. Everything from cooking to blow-drying your hair can cause problems.

According to the EPA, most of us spend 90% of our time indoors, exposed to air that is up to five times more polluted than outdoors. That can trigger allergies and asthma, affect child development, disrupt sleep and more.

"Most people have no idea how polluted the air is outside of their house, let alone inside," says Vasileios Nasis, Ph.D. and founder of Netronix Inc. "It sounds alarmist – to say indoor air quality could kill you or make you seriously ill – and people tend not to believe it, but it's happening, and people have the power to stop it."

Nasis hopes his company's $699 gadget called Airthinx will be just the fix people need. Not only to learn more about the air they breathe every day but also how to do something about it.

> **Most people have no idea how polluted the air is outside of their house, let alone inside.**
>
> Vasileios Nasis, Ph.D.
> Founder of Netronix Inc.

"For outdoor air quality, you need government policy to change it. But you can control the indoor air quality in your own space and change it on a personal level right away," Nasis tells me over the phone.

Breathing clean air is big business

The Air Quality Monitoring Market is expected to exceed more than $7 billion by 2024.

It's been one of the biggest new areas of personal health gadgets I've seen since the flood of activity trackers. Could monitoring the air we breathe become the next big health tech trend after the Fitbit or Impossible Burger?

"Yes, except I don't think it's a trend," Shelly Miller, a professor of Mechanical Engineering at the University of Colorado, Boulder tells me. "These new, lower-cost sensors are a critical development in improving public health, and I think they are here to stay."

Plugged into a power outlet like a nightlight, sitting on a shelf like a book, or attached to a wall like a thermostat, these Wi-Fi and Bluetooth-connected gadgets monitor indoor air quality 24/7. Many of them also have a traffic light type display on the device itself that glows green (good), yellow (caution) and red (alert).

Putting them to the test

There's no better testing ground than my very own new (to me) home. It's an 1888 Victorian that sits in a pocket of some of the worst outdoor air quality in the entire United States.

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> Shelly Miller,
> University of Colorado, Boulder

We're a few blocks away from the Port of Oakland, sandwiched in an industrial area between major freeways. Diesel truck traffic, massive cargo ships, trains, recycling and wastewater treatment plants – all of it – belching invisible particles nonstop into the air and, eventually, into our lungs. Add to that stirring up 131 years of ashy-like dust renovating this old house, and there's no telling what we're going to find in our air.

But if you're really serious...

If you think of the Awair Glow C as a car that gets you to a clean air destination in the most basic way possible, the Airthinx IAQ is more like a fighter jet.

Yes, the Airthinx unit monitors the basics like temperature, humidity and chemicals, but it also does a whole lot more by sniffing out the tiniest

particles drifting through a living space. These microscopic specks are called particulate matter, and depending on their size, they can stay afloat for weeks. This includes things like dust, fungi, pollen and even bacteria. The levels of particulate matter in the air can change dramatically within hours, signaling a rise in mold growth or outside winds pushing pollutants into open windows.

The gadget feeds all of that information into a cloud-based dashboard accessible from anywhere, seeing up-to-the-minute reports on air quality. Trouble is, it's so detailed that I have no idea how to interpret the data on my own.

"Ah, you seem to have the perfect storm of poor air this week," Nasis says when I call him back to translate the Airthinx readings for me.

It's true, the renovation going on right now includes finding that leak in the roof, drilling holes in ceilings and walls, installing tile, painting and so. much. dust.

"Every day around 6 p.m., there are a lot of particles and high VOCs and that might make you feel dizzy. Specifically on Monday around 6 p.m., it was really bad with high formaldehyde, too. Perhaps something plastic was burning, or someone sprayed an aerosol?"

If you think of the Awair Glow C as a car that gets you to a clean air destination in the most basic way possible, the Airthinx IAQ is more like a fighter jet.

That's when the real sleuthing starts. We're priming and painting our walls, which could be to blame. Our contractor also removed old foam insulation from a half bathroom right next to our kitchen this past week. During the 1970s, urea-formaldehyde foam insulation (UFFI) was the go-to for any homes, and since that's the last time this home was renovated, that's also a likely source of icky air.

But my husband was cooking on our gas stove during those specific times as well. According to the EPA, gas stoves and ranges are a common cause of poor air quality.

We adjusted the stove hood and fan, and added two more new gadgets to the review mix – the Blue Pure 211+ ($299.99) and Molekule ($799) air monitoring purifiers. (Stay tuned for those reviews.)

The air quality is better already, but I wouldn't have figured it out without Nasis' help.

Bad air, now what?

Knowing your air quality is bad is one thing, but understanding why it's bad and how to fix it can take some serious detective skills, and in some cases, more than a basic understanding of the role of various pollutants in your space. That's the biggest weakness in all of these consumer air quality monitors so far.

"This information is really complicated," professor Miller says, "They all should have good customer service because most people need it." She said of the devices she's tested out, Airthinx has the best support overall. "With all of these devices, I always check to see if they have a good user interface, how responsive their support is, and whether they have independent, third-party studies to show how accurate they are."

The night we almost died

Even as studies drawing links between poor air quality and tens of thousands of deaths continue to pile up, most of us don't think too much about air quality until it gets really bad. Or almost kills us.

That's what happened two winters ago, when my family experienced a series of strange illnesses that culminated with my husband in the emergency room after a weeklong debilitating migraine. The whole family was experiencing headaches, nausea, sleepiness and body aches, and we soon found out why: The 100-year-old disintegrating gravity furnace in our rented home had been spewing toxic exhaust into our space for months. (Our former landlady apparently forgot – her words, not mine – to fix it for at least a year.)

When gas-company crews came to inspect the entire system late one night, after I felt especially sick and thought I smelled "gas" in the air, the technician told us carbon dioxide (CO_2) and carbon monoxide (CO) levels were so high, especially in our bedrooms, that our family "might have made it until morning." Our carbon monoxide detector had not gone off, and it seems all of the indoor air quality monitors I've now reviewed could have tipped us off, long before any of us got sick.

Airthinx IAQ professional-grade air quality monitor shows a red light signaling poor quality during recent renovations of the author's house in West Oakland, Calif. (Photo: Jennifer Jolly)

Forbes

An Air Quality Sensor Was The Only Warning That My Furnace Was Spewing Exhaust Indoors

John Koetsier, Forbes Contributor, Consumer Tech

We have a lot of smart home devices today. I have a Nest, an Amazon Echo, a Google Home, garage doors I can control with an app, and multiple other smart home technologies. But can you really call a home smart if it doesn't know whether or not your most critical environment is safe?

After today, the answer is no. At least for me.

My home furnace was venting exhaust into my house for at least three to five months and I had no clue. Until I started using a home air quality sensor.

About three weeks ago I started testing air quality sensors: one from Airthinx and another from Awair. What they showed me -- especially the Airthinx, which I received first -- was shocking. Carbon dioxide levels in my house were five times normal levels and regularly safe exposure limits.

Good outdoor air typically has CO_2 at 250 to 350 parts per million. Over 1,000, people start to complain of drowsiness. At 2,000 to 5,000, symptoms includes headaches, sleepiness, increased heart rate, and slight nausea.

Our levels were hitting 5,000 and plateauing there.

My family had some of those symptoms over the past few months, ever since we had redone the siding on the home. But we didn't connect the dots, and unbeknownst to us, the workers putting siding on the house had likely impacted the furnace exhaust piping, jostling it enough so that a poorly attached connection to the furnace popped off.

We were literally breathing combustion exhaust.

Only when we knew that the CO_2 levels were that high, however, did we start to explore why, and learn the cause. What we found ensures that we'll never live in a house again without internal air quality sensors.

Apparently, indoor air quality can be five to ten times worse than outdoor air, simply because we are enclosing ourselves in ever-more-tightly sealed boxes, and contaminants build up.

"We see this category growing exponentially as people start to become more aware of air quality dangers," says Vasileios Nasis, CEO of Airthinx parent company Netronix. "We see it becoming the equivalent of a smoke detector ... a detector that provides much more valuable information."

The AirThinx is small, about the volume of an oversized deck of cards.

But it will check for four different dangerous components in your air: CO_2, formaldehyde, volatile organic compounds (chemicals from cleaning agents or other materials), particulate matter (like smoke from a nearby forest fire) as well as pressure, humidity, and temperature, each of which can affect health and air quality as well. It's sophisticated, testing for large, medium, and small particulate matter at one, 2.5, and 10 micron sizes.

It then gives you a score on your air quality, which you can see visually on the device by a glowing color strip (blue-good, red-bad), or in more detail in the companion app. You can get even more detail in charts and graphs in the companion website, and there you can tell this is designed for large buildings as well as homes. (Apparently, a major airport in the UK is testing it.)

It's super-sensitive: my son tested it by breathing directly on it, and the app immediately showed an uptick in CO_2 in the room.

In addition, Airthinx can connect with your Nest thermostat and automatically initiate a non-heating ventilation of air, if your furnace supports that function, thereby cycling in fresh air.

Airthinx costs $699, or you can lease for $49/month.

[...]

Ultimately, knowing what I know now, I wouldn't live without an air quality sensor. Air quality testing is now an essential part of the smart home revolution.

Without it, you quite literally don't know what you're breathing, and you don't know what risks you're subjecting yourself and your family to.

The interesting thing is that the furnace is only four years old, and cost us somewhere around $5,000.

But even at that price it was too stupid to tell me it was malfunctioning, and dangerously so.

Some of our clients

As a consulting design engineer, I am aware that the best intentions and latest technology often fail when needed maintenance and constant monitoring are neglected. In that regard, the Airthinx is a significant development and improvement. It's low-cost, easy installation, ability to monitor multiple potential contaminants and ease of integration with BMS and specialized monitoring alarm centers allows for an unprecedented number of devices to be installed, and the original design intent to be fully maintained, assuring high IAQ.

Valentine Lehr

CEO
Lehr Engineering

We have been indoor air quality consultants in the GTA for roughly 20 years. We provide indoor air quality and indoor environmental consulting to small business, large corporations as well as niche markets. *Never have we seen an indoor air quality monitoring solution like the Airthinx.*

Frank Haverkate

Director of Corporate Sustainability
Bionic Healthy Workspace

We appreciated the consistency of the data and being able to log-in remotely and receive alerts at our convenience, allowing us to become more productive. The longer-term indoor air quality survey also fostered a more comfortable worker environment. Employees feel safer knowing that the air quality is being monitored continuously in real-time, creating a positive cultural impact.

Rayna Brown

Industrial Hygienist
Evergy Co

After only two days of monitoring, the data indicated an odd pattern in the temperature and CO_2 trends prompting the facility managers to review the BMS system and VAV box, where they found a broken drive linkage. The room is now controlled at 22C, and CO_2 remains steady at 600 ppm. The radiotherapists are very happy, and the hospital has not spent $50,000 on a new AC system to control the air quality conditions in the room.

Simon Witts

Principal
LCI Australia

HOW CAN WE HELP YOU?

If you would like to find out more about how we can help you, please give us a call or drop us an email.

GENERAL QUESTIONS

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TECHNICAL SUPPORT

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If you can't breathe, nothing else matters
– Harold Wimmer, American Lung Association

See The Air You Breathe

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