



Tether enables healthy, energy-efficient environments to improve living, working, and learning with IoT-enabled monitoring solutions running on Thinxtra's 0G Network

Tether

Tether enables healthy living, learning, and working environments with IoT-enabled technology solutions that continually monitor and manage indoor air quality, environmental conditions, and energy efficiency in homes, offices, and classrooms.

The Opportunity

In response to growing research around poor indoor air quality and environmental conditions across New Zealand the Tether team created an environmental monitoring solution to show the health of indoor settings and develop recommendations for improvements.

The IoT Solution

Tether's IoT-enabled solutions, connected to the Thinxtra 0G Network, let customers reliably, quickly, and cost-effectively:

- evaluate indoor air quality, environmental conditions, and energy efficiency
- measure a range of parameters including humidity, temperature, CO2, light, and sound
- take corrective action quickly
- improve occupant wellbeing
- increase the quality of future building projects
- reduce the environmental impact of how communities live, work, and learn

The effect of New Zealand's housing crisis on community health and wellbeing

Over the last 20 years, New Zealand has experienced rapidly rising house prices, low levels of housing stock, and slow construction programmes. The combination has contributed to overcrowding, increased homelessness, and construction of poor-quality housing. Studies show around 300,000 New Zealand families live in unsatisfactory housing, plagued by damp, mould, and cold temperatures^[1].

The World Health Organisation lists poor housing conditions as one way social and environmental inequality translates into health inequality. Research indicates living in cold, damp housing can cause higher mortality rates and cardiovascular and respiratory disease incidences, particularly in children^[2].

Tether: enabling healthy, energy efficient environments to live, work, and learn

Tether is a technology company that solves building performance problems by connecting people to the buildings where they live, work, and learn. Tether's IoT-enabled solutions monitor, measure, and interpret three aspects of building performance:



Tether solutions give customers a holistic approach to improving building operations. We focus on deeply understanding indoor settings before placing sensors by creating a contextual data map unique to each building, with quantitative and qualitative insights on how the environment operates. Our monitoring solutions let customers join all the data for a comprehensive, complete view of building operations. That complete insight strengthens decision-making to help drive outcomes that genuinely improve a building's operational efficiency, running costs, and occupant health.

Brandon Van Blerk
Chief Executive Officer at Tether

1. **Health.** Tether's environmental quality sensors measure factors that impact the quality of indoor environs, including light, atmosphere, sound, pressure, temperature, humidity, and volatile organic compounds (VOCs). Once sensors capture the data, Tether's solutions transform the information into actionable insights to support better health and wellbeing. For example, translating high concentrations of carbon dioxide (CO₂) levels into recommendations to increase ventilation to improve occupant comfort and productivity.
2. **Pocket.** Tether sensors capture data on utility consumption to give customers reliable insights into how much money it costs to run a building and where to target efficiency improvements. Real-time consumption data, and historical modeling, lets customers confirm actual operating costs, quickly identify and investigate outliers, and understand the demand on the grid and price surges to improve decisions on what time of day to use different utilities.
3. **Planet.** Tether technology gives customers unique, contextual insight into the environmental impact of running a building and its effect on climate change. For example, calculating CO₂ emissions based on sensor data showing electricity consumption. Tether solutions also give customers options to improve building operations with targeted interventions and recommendations to offset carbon emissions.

¹<https://habitat.org.nz/who-we-are/the-need-in-new-zealand/#:~:text=As%20a%20result%20of%20unaffordable.living%20in%20unacceptable%20housing%20conditions>

²<https://www.stuff.co.nz/business/property/123623884/28000-new-zealand-homes-always-damp-and-mouldy-housing-report>

How Tether solutions work to improve building performance and occupant health

Tether pioneered a solution to digitally model buildings and capture condition data while overlaying real-time performance metrics to monitor how the structure responds to occupant behaviour. Compact IoT-enabled sensors in each room remotely monitor and measure defined parameters assessing environmental quality, indoor air quality, and energy consumption 24x7. Long-life batteries power the sensors, allowing sensors run independently for over three years with no maintenance.

Reliable, real-time access to information about conditions in indoor environments is changing the way communities across New Zealand live, work, and learn. Data from Tether sensors informs occupants when changes are recommended to improve ventilation, temperature, light, and sound levels. Tether's solutions guide customers on how to construct buildings that operate more efficiently, cost-effectively, and with a lower environmental impact.

Recent research shows how concentrations of CO₂ can indicate the likelihood of COVID-19 transmission indoors. As pandemic restrictions ease in different communities, Tether's indoor air quality monitoring solutions help schools, offices, and care facilities prepare for a COVID-safe return to living, learning, and working environments.

Jose L. Jimenez, Professor of Chemistry at the University of Colorado's Cooperative Institute for Research in Environmental Studies (CIRES) and CIRES Fellow, says, "If you are sharing air, the lower the CO₂, the lower the risk of infection."^[3]

The advantages of the Thinxtra 0G Network to monitoring indoor environments

Each Tether sensor connects to the public, low-cost Thinxtra 0G Network, powered by Sigfox. The 0G Network is a low-power, wide area network dedicated to connecting Internet of Things (IoT) devices over long distances. With close to 100 percent network coverage of New Zealand, Thinxtra's 0G Network connects devices in places where other options, such as WiFi, are unavailable or unstable. Connectivity to the 0G Network is fast, simple, and reliable.



*There is **no other network like the Thinxtra 0G Network for accuracy, ease of installation, and reliable connectivity.** It is a ubiquitous network across New Zealand which means installing Tether devices is as simple as "click and stick." We have a strong focus on providing an outstanding customer experience. If a customer installs a sensor and it doesn't work, that's a lost customer. We chose the 0G Network because it always works and it's not as expensive or power hungry as mobile networks.*

Brandon Van Blerk
Chief Executive Officer at Tether

³<https://www.sciencedaily.com/releases/2021/04/210407143809.htm>

The future of environmental quality monitoring with Tether

With growing global awareness on the value of building and operating buildings with optimised efficiency and minimal environmental impact, Tether's future is bright. Tether's solutions are ideal for ensuring public buildings, including day care centres, aged care facilities and schools, manage risk and meet government-mandated compliance requirements for indoor climates that meet specific temperature, ventilation, and humidity criteria. Tether's data-based analytics improves ESG reporting to help enterprises honour commitments to green building initiatives and give business operators tangible insights to make targeted improvements to indoor environs.

Van Blerk says, "Communities and business leaders are just beginning to understand the true value of gathering data to measure the quality of indoor environments. The global COVID-19 pandemic and climate change have made people think differently about energy consumption, air quality, and the environmental impact of how they live. Tether solutions give customers the data they need to mitigate risk and real actions to improve indoor environments. Our next step is to give customers funding options to make changes and measure the impact of those changes to show the return on investment and reduce the impact on the planet."



The ThinXtra OG Network is a proven network for IoT devices that reliably fulfills what our partners need it to do. The OG Network provides low-cost, long-range connectivity that is simple to set up and performs in even the most complex environments. ThinXtra and its partners understand the challenges organisations experience with network connectivity, and we know how to solve those challenges. We're energised to work with partners like Tether to cost-effectively connect their solutions and make the world a better, healthier place.

Loic Barancourt
Founder at ThinXtra

About Tether

Tether pioneered a solution that continuously assesses, reports on, and rates the indoor environmental air quality and energy efficiency of homes, offices, and classrooms. Each founding member of the Tether team has a technical background, from systems engineering to software development and embedded electronics. Our technical prowess and thirst for perfection are evident in our products and how we engage with our customers. We are proud of what we have already created, but this is just the beginning. Our goal is to impact as many lives as possible through empowering smart decision-making and highlighting risks that could save lives and protect valuable assets.

For details on Tether's full range of products and services, visit our [website](#).

About ThinXtra

ThinXtra, The IoT Telco, accelerates business efficiency by connecting assets and making them work smarter. We provide fit-for-purpose Internet of Things (IoT) connectivity and solutions that are economically viable and operationally scalable. ThinXtra owns and operates the Sigfox OG Network in ANZ & HK and is a member of the OG United Nations, the global association of OG Network Operators, and is the exclusive distributor of Soracom cellular IoT services.

Visit thinxtra.com for more information.