bioair.

Over 90% removal of
odours and selected pollutants,
resulting in optimum and
unrivalled indoor air quality.

Substantial HVAC/ventilation
cost reductions.

Exceptional return on investment.

G-PAC is the true environmental
advantage the world has been waiting for.

“I have been most impressed with the professionalism, attention to detail and depth of knowledge of olfaction issues on display in your approach. It is my opinion that your approach represents a breakthrough in that, for the first time, odour filters (i.e. GPAC) may be rigorously tested for efficiency – opening the way for their wider application.

You, as expected, processed your raw test with appropriate statistical rigor to produce the GPAC unit minimum efficiency value of 90.84%. I agree with your assessment that the actual efficiency is all but certainly in excess of 99%. Your conservative approach of quoting a 90% minimum test value is wise. It is also good that the efficiency of your unit remains constant for some considerable time (years).”

Graham Bell, PhD, FRSN.
CEO, E-Nose Pty Ltd.

ABOUT GPAC

- GPAC reduces energy use, peak electricity demand and operating costs of buildings with air conditioning units. Higher levels of benefit will be seen in locations with an increased demand for HVAC capacity, e.g. buildings with higher occupation density, locations with extreme climatic conditions or fluctuations in temperature and humidity.

- GPAC improves the air quality of indoor spaces including those with 'outgassing' issues. It also removes odorous pollutants from the air brought into buildings – important in areas with high air pollution. Specific odour problems can be addressed via customised solutions.

- GPAC reduces the size of the required heating and cooling plant within buildings. Dramatic reductions can be achieved in buildings with densely populated spaces and/or with dynamic occupancy characteristics, e.g. theatres, educational facilities, auditoriums, court complexes, indoor sports and fitness facilities, hospitality and entertainment venues, industrial zones etc. Buildings with high occupancy will gain great advantages from GPAC and adhere to the lead/lag provisions of AS1668.2:2012 (Australian Standard for the use of ventilation and air conditioning in buildings), which may allow for the elimination of ventilation heat load during building occupancy.

- GPAC reduces building fit out difficulties by eliminating or greatly reducing the problem of ducting fresh air to high occupancy spaces, applicable to multi-storey buildings where outdoor air intake locations are restricted.

- GPAC can enable higher occupancy densities without requiring increased outdoor air supply.

GPAC can be retrofitted to an existing HVAC system or can be a component of a new HVAC system design.

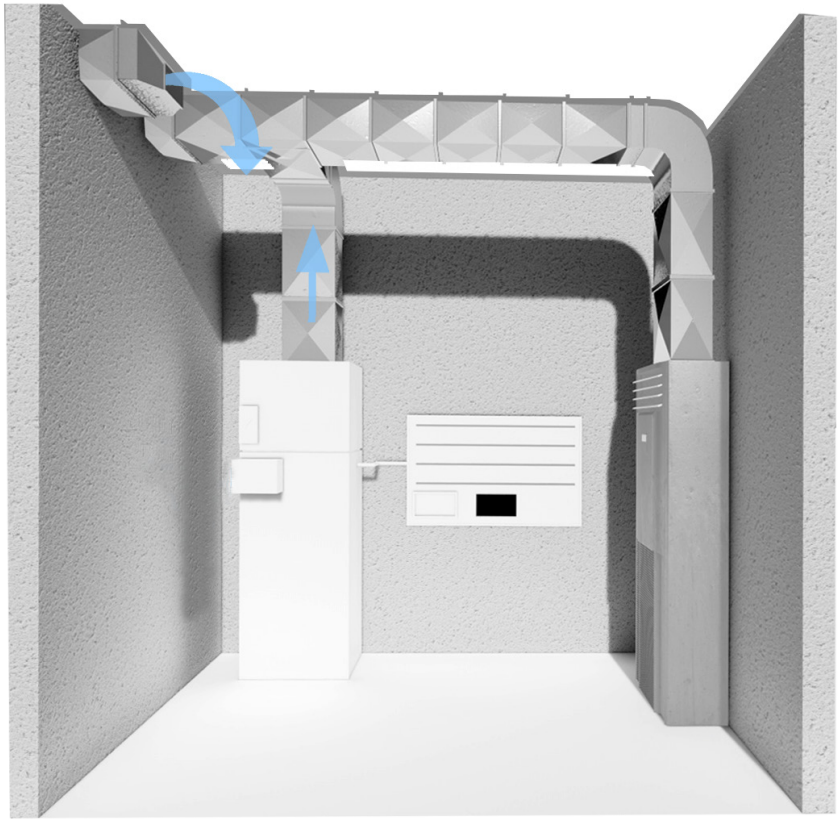
HOW GPAC WORKS

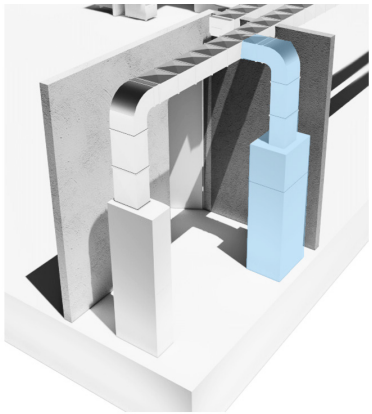
GPAC (Gas Phase Air Cleaning) is fundamentally an air conditioning augmentation system designed to enhance air quality and reduce energy consumption and costs.

GPAC units are usually positioned in a building's plant room and require only simple ducting and power connections. Other installation options are available, for instance an non-ducted standalone unit may be placed in the area it serves e.g. in sports and fitness facilities.

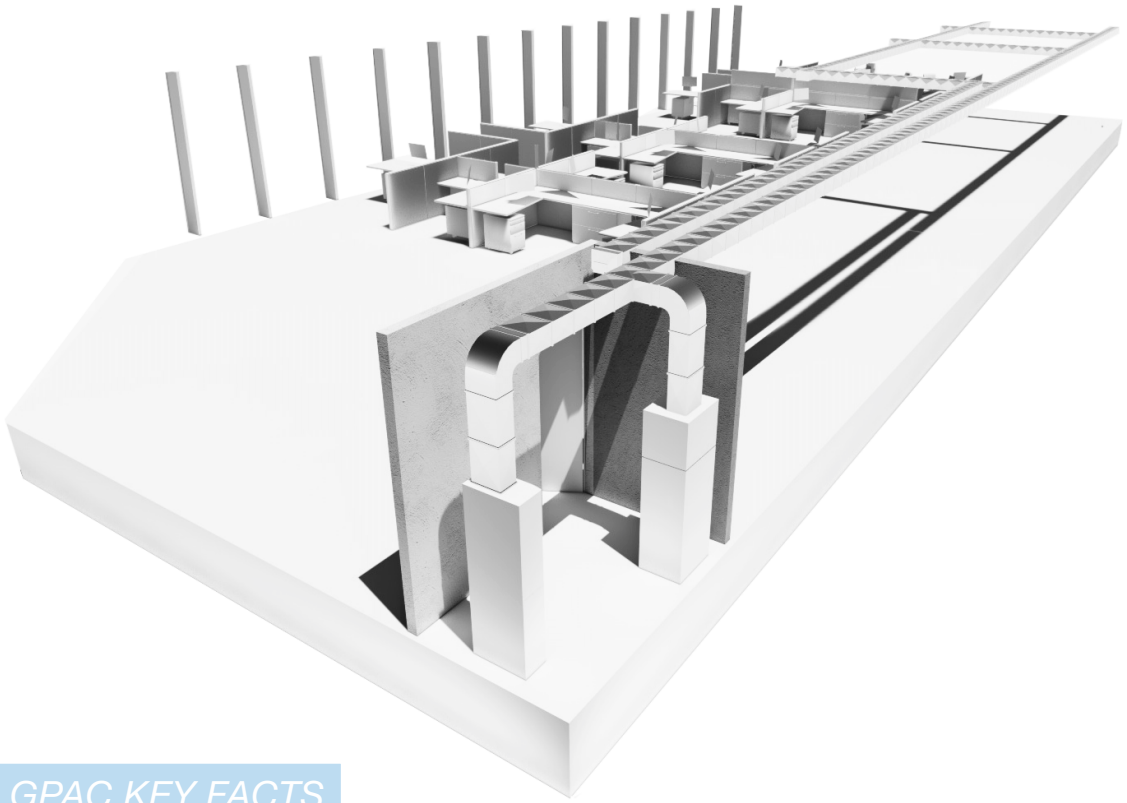
The GPAC unit is ducted into the air conditioning system to draw out a percentage of air that is returning from the occupied space to the air conditioning unit.

The GPAC unit then proceeds to strip the air of odours, gaseous contaminants and offensive molecules by trapping them within the GPAC media reservoir. The clean air is then returned to the building's internal spaces. Consequently, less external air, which may be quite polluted, needs to be drawn into the air conditioning system. In the process, less energy is consumed, as external air needs to be heated or cooled to bring it to room temperature. Energy use is reduced, whilst the air quality improves in accordance with the Australian Standard (AS1668.2:2012).





The GPAC unit contains sophisticated control and monitoring mechanisms operating under advanced algorithms. It houses a reservoir of select catalytic and physisorptive media, which trap odours and other gaseous pollutants. GPAC is designed to give years of service between media changes.



GPAC KEY FACTS

- Australia's energy costs are ranked amongst the highest in the world.
- GPAC reduces energy cost associated with the operation of air conditioning systems.
- GPAC is a proven technology which has been rigorously tested. The construction of the test facilities, and the testing, was funded by the ACT Government.
- GPAC is a highly effective and efficient air quality solution. Its maximum rated airflow is 600 litres/second with a minimal efficiency of 90% removal of occupancy odour (meeting AS1668.2:2012 requirements).
- GPAC application is patented – final patents are issued in Australia and other national markets.
- GPAC complies with AS1668.2:2012 – this is the ventilation/air quality standard prescribed by the National Construction Code (formerly known as the Building Code of Australia, BCA).
- GPAC features a self-balancing dial-up air flow rate, external static pressure capacity, dual flow capacity set point options and BMS control interface.
- GPAC is a sophisticated and robust technology which delivers a significant economic advantage. It is also very space efficient and easily integrated into the air conditioning system as a result of the design flexibility it brings. Installation is simple and maintenance is minimal.
- GPAC is manufactured in Australia and built in a manner that reflects pride in workmanship and quality of finish. It also features a range of cutting edge European components.

GPAC DEVELOPMENT HIGHLIGHTS

1991 Provision for gas phase air cleaning incorporated into the AS1668.2 standard.

1995 Spry Engineering Pty Ltd commences research and development on the commercial GPAC unit.

2006 A robust testing procedure of GPAC unit is implemented on a test rig designed and constructed by Spry Engineering and located at Australian National University (ANU). Testing is successful resulting in proof of concept and determination of its efficiency. The GPAC testing was fully funded by the ACT Government.

Spry presents two papers on the science and engineering of gas phase air cleaning at the Clima Conference in Helsinki. Clima is hosted by REHVA (the Federation of European Heating, Ventilation and Air Conditioning Associations). After these presentations, Paul is invited onto the REHVA scientific committee.

2007 Design innovation continues on the commercial GPAC unit.

2012 First commercial unit installed at Research School of Earth Sciences at ANU.

2015 Installations begin into government premises (Family Law Court Sydney / Administration Appeals Tribunal Sydney) and continue to gain traction.

2017 Active roll out of GPAC technology continues with a global focus supported by an accelerated shift to green technology and building practice. These trends are seen to mitigate environmental risk, support social objectives and reflect good corporate governance.

RECENT CASE STUDIES

A new 13 level office building (120 people per level) is proposed for Brisbane.

The use of GPAC to lower ventilation loads means that the capital cost of the cooling plant will be reduced by $305,000 (at an estimated AUD$1200/kW) and running costs (day only) are reduced by $18,000 per annum.

A 2017 project in Canberra's CBD called for an HVAC modification to accommodate for a higher building occupancy. The standard design solution would be to duct more outdoor air from the roof and then condition it with two split system air conditioners. This would require infrastructural upgrades and a greater energy consumption.

However, the implemented GPAC solution utilized two 500 l/s GPAC advantage units to recycle the existing conditioned air, resulting in net savings of more than AUD$50,000 (for a single floor retrofit).

A heritage building in Sydney was renovated to serve as a tribunal. The reception area was critical to the architect's concept, however the ceiling height was being restricted by conventional air flow solutions. The necessary air ducting would have ruined the architects concept, and marred the ceiling of this space. However, the GPAC units installed allowed for the same quality of indoor air, without the offending ductwork and reduced ceiling height. Fit-out costs and HVAC operation costs were also reduced in the process.

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