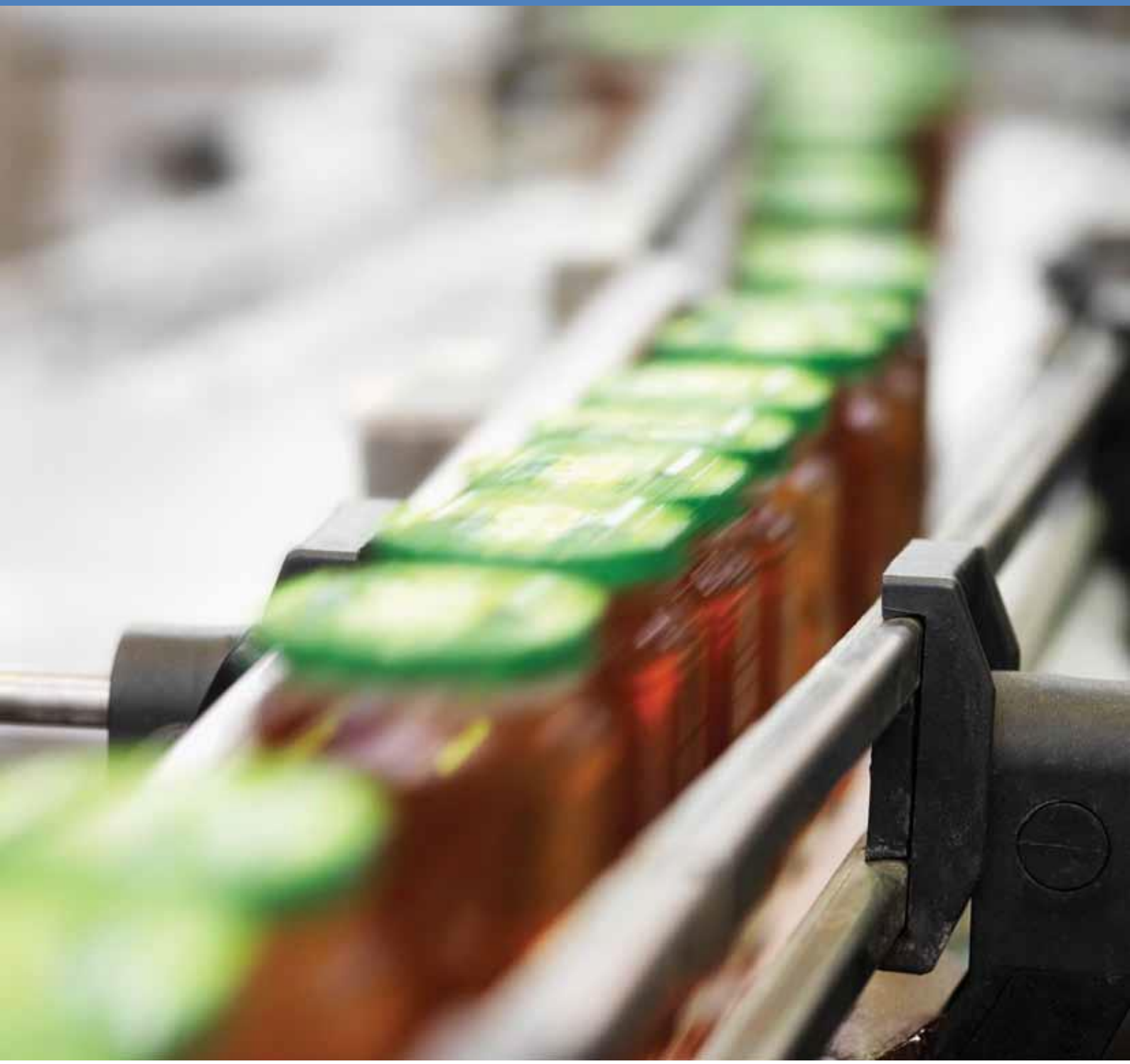

High quality compressed air for the food industry

Food
Production
Compressed Air
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

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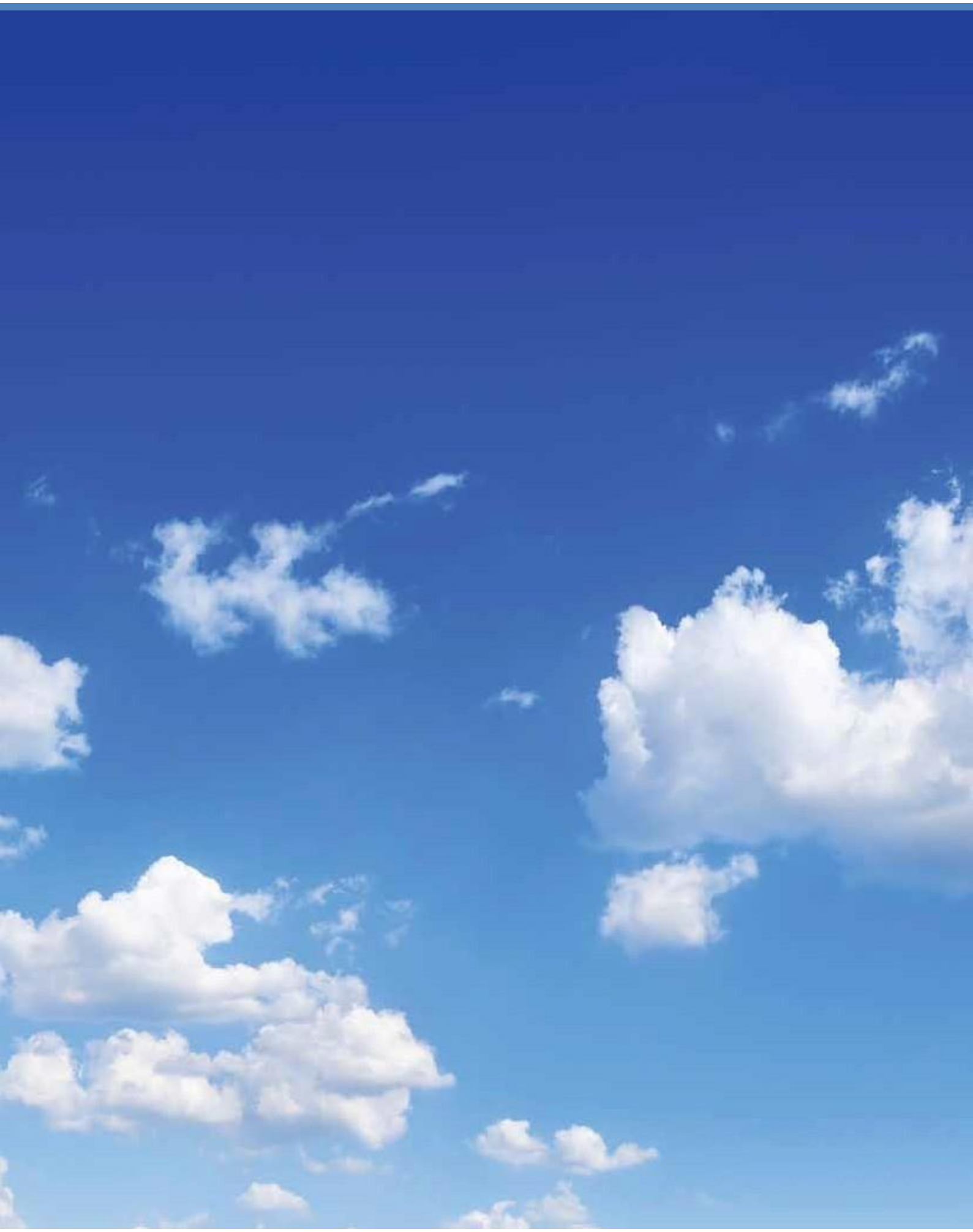
Contents



Filtration, purification and separation is our business

CPS partnered with SMC & Atlas Copco is a world leader in the filtration, purification and separation of compressed air and gases.

CPS Australia specialises in purification and separation technologies where compressed air and gas purity, product quality, technological excellence and global support are paramount. It designs and manufactures compressed air treatment products, gas generators and ancillary equipment for many key industries where ease of integration, low cost of ownership and energy savings can make a real difference.

Compressed Air - The 4th Utility

Compressed air is a safe and reliable power source that is widely used throughout the food industry. Known as the 4th utility, approximately 90% of all companies use compressed air in some aspect of their operations. Unlike gas, water & electricity which is supplied to site by a utility supplier to strict tolerances and quality specifications, compressed air is generated on-site by the user. The quality of the compressed air and the cost of producing this powerful utility is therefore the responsibility of the user.

Compressed air contamination is a real problem for the food industry

In today's modern production facilities, the use of compressed air is often pivotal to manufacturing processes. Irrespective of whether the compressed air comes into direct contact with the product or is used to automate a process, provide motive power, package products, or even to generate other gases on-site, a clean, dry, reliable compressed air supply is essential to maintain efficient and cost effective production.

A tour of any modern food manufacturing facility will uncover the extensive use of compressed air, however production managers and quality managers are often unaware of the potential hazards associated with this powerful utility.

Untreated compressed air contains many potentially harmful or dangerous contaminants which must be removed or reduced to acceptable levels in order to protect the consumer and provide a safe and cost effective production facility. Contaminants that may be a potential hazard in food for human consumption need to be controlled, as a lack of control could potentially result in a prosecution.

Worldwide Standards for Food Grade Compressed Air

Currently, unlike compressed air that is used for breathing or medical purposes, no standards or laws exist that define a minimum acceptable level of cleanliness (quality) when the compressed air is used for food manufacture.

In order to protect consumers against ill health (or worse), contamination of production equipment, ingredients, packaging materials and of course finished product must be prevented. Most countries worldwide have strict standards and laws governing hygiene which must be adhered to during the production, processing, handling, packaging and transportation of food products.

Almost all food hygiene legislation requires food business operators to put into place, written food safety management procedures based upon the principles of HACCP (Hazard Analysis Critical Control Point).

Food Hygiene and HACCP

If carried out correctly, the Hazard Analysis (Risk Analysis) would identify the risks associated with compressed air, however in most manufacturing facilities, compressed air is incorrectly seen as a utility and / or thought of as being as clean as the ambient air in the facility and is therefore completely omitted from the Hazard Analysis.

In reality, every point in a food / beverage manufacturing plant where compressed air is used should be classified as a CCP (Critical Control Point), due to the contamination present in the compressed air system.

Once classified as a CCP, measures must be taken to remove or reduce the compressed air contaminants to acceptable levels.

Food Manufacturers Duty of Care

Food hygiene legislation to protect the consumer places the duty of care on the food manufacturer. For this reason, many companies often devise their own internal quality standards based upon what they think or have been told is 'best practice'. This approach has led to a significant difference in the quality of compressed air used throughout the industry, with major differences even existing in plants owned by the same company.

Introducing the Food Grade Compressed Air Code of Practice

For Australia we follow BCAS. In the United Kingdom, the British Compressed Air Society (BCAS) who are the governing body for compressed air and the British Retail Consortium (BRC) who represent the retail industry, have jointly developed a Code of Practice for Food Grade Compressed Air. This evolved because of the absence of compressed air quality standards or legislation for the food and beverage industries.

The Code gives minimum purity (quality) standards for compressed air and defines allowable levels for dirt, water and oil, in line with quality levels specified in all editions of ISO8573-1, the international standard for compressed air quality.

Food Grade Compressed Air Code of Practice – Scope

- **The Code of Practice references complementary international standards for air purity, gives recommendations on installation, testing and maintenance of compressed air systems, but most importantly, defines a minimum acceptable purity (quality) for compressed air used in the food and beverage industries.**
- **The Code of Practice can be applied to the use of compressed air in all food and beverage manufacturing facilities, including bottling plants, however it does not cover the quality of other gases used e.g. CO_2 or nitrogen as these are often covered by other standards.**
- **Following the Code of Practice in the United Kingdom is not mandatory and not required by law; however following the Code of Practice allows a company to show due diligence should a "quality incident" reach a court of law.**
- **Compliance with the Code of Practice is becoming a requirement of major UK retailers with food manufactures being asked to show compliance with the Code of Practice if they wish to remain a supplier or prior to being accepted as a supplier.**
- **The Code of Practice can also be applied to ingredient suppliers should they use compressed air in their manufacturing, transportation or packaging processes.**
- **The Code of Practice may also be adopted in Australia in the absence of any local standards or legislation. This will allow manufacturers to 'show duty of care' should a quality incident occur.**

Sources and types of contamination in a compressed air system

Understanding the sources of compressed air contamination and the types of contaminants which must be reduced or eliminated is a key factor in planning an efficient compressed air system. In a typical compressed air system, there are ten major contaminants that have to be removed or reduced to protect the consumer and provide a safe and cost effective production facility. These contaminants originate from four different sources.

Source 1
Atmospheric Air

Compressors draw in huge amounts of atmospheric air which continuously fills the system with invisible contaminants such as:

- **Water vapour**
- **Atmospheric dirt**
- **Oil vapour**
- **Micro-organisms**

Source 2
The Air Compressor

In addition to the contaminants drawn in from the atmosphere, oil lubricated compressors will contribute small amounts of oil from the compression process. The oil will be in the form of:

- **Liquid oil**
- **Oil aerosols**
- **Oil vapour**

After the compression stage, the after-cooler will cool the air, condensing water vapour and introducing it into the compressed air as:

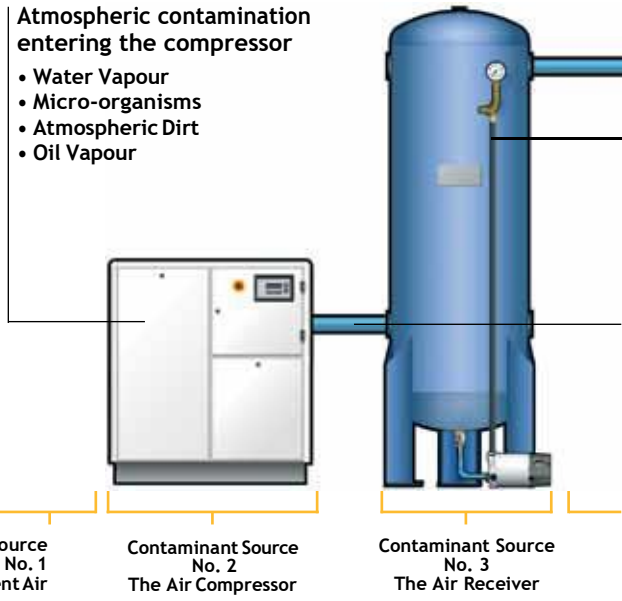
- **Liquid water**
- **Water aerosols**

Sources 3 and 4
Compressed air storage devices and distribution piping

As the air leaves the compressor it now contains eight different contaminants. The air receiver (storage device) and the system piping that distribute the compressed air around the facility
can store large amounts of this contamination. Additionally, they cool the warm, saturated compressed air which causes condensation on a large scale adding more liquid water into the system and promoting corrosion and microbiological growth:

- **Rust**
- **Pipescale**

Contaminants and sources in a compressed air system



Water vapour

Water enters the compressed air system through the compressor intake as a vapour (or gas). The ability of air to hold water vapour is dependent upon its pressure and its temperature. The higher the temperature, the more water vapour that can be held by the air, the higher the pressure, a greater amount of water vapour is squeezed out. As large volumes of air are draw into the compressor and compressed, the temperature of the air increases significantly. This allows the heated air to easily retain the water vapour in the atmospheric air. water.
Condensation occurs at various stages throughout the system as the air is cooled further by the air receiver, the distribution piping and the expansion of air in valves, cylinders, tools and machinery.
Saturated air, water aerosols and liquid water cause:

Corrosion to the storage and distribution system
Damage to valves, cylinders, tools and production equipment
Damage to products and packaging in direct contact with the air
Increased microbiological contamination
Reduction in production efficiency
Increased maintenance costs

Condensed liquid water and water aerosols

After compression, compressed air is normally cooled to a usable temperature by an after-cooler. This cooling reduces the air's ability to retain water vapour, resulting in a proportion of the water vapour being condensed into liquid water. The liquid water is then removed by a condensate drain fitted to the after-cooler water separator.

The air leaving the after-cooler and entering the compressed air system is now 100% saturated with water vapour. Any further cooling of the compressed air will result in more water vapour condensing into liquid

Oil contamination in addition to the compressor, which injects oil into the air

Atmospheric air also contains oil in a gaseous form (Oil vapour) which comes from inefficient industrial processes and vehicle exhausts. As with other contaminants, oil vapour is drawn into the compressor intake and passes through the intake filter. Typical concentrations can vary between 0.05 and 0.5mg per cubic metre, but these can increase significantly should the compressorbe sited near highways and heavy traffic. Additionally, lubricants used in the compression stage of a compressor can also be vaporised and carried into the compressed air system. This oil vapour will then cool and condense into a liquid. Oil vapour can also taint products and packaging with an oily smell and / or make workers feel unwell

.

Compressor Room

Contamination introduced by the air receiver and distribution piping
- Rust
- Pipescale

Contamination introduced by the compressor
- Water Aerosols
- Condensed Liquid Water
- Liquid Oil
- Oil Aerosols

Total contamination entering the compressed air distribution system
- Water Vapour
- Micro-organisms
- Atmospheric Dirt
- Oil Vapour
- Water Aerosols
- Condensed Liquid Water
- Liquid Oil
- Oil Aerosols
- Rust
- Pipescale

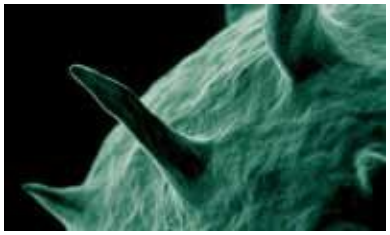
Contaminant Source
No. 4
The Distribution Piping

Liquid oil and oil aerosols

The majority of air compressors in use today still use oil in their compression stage for sealing, lubrication and cooling. The oil is in direct contact with the air as it is compressed, however due to the efficiency of modern air / oil separators built into the compressor, only a small proportion of this lubricating oil is carried over into the compressed air system as a liquid, an aerosol (typically no more than 5mg/m^3 for a well maintained screw compressor) or as oil vapour. Liquid and aerosols mix with water in the system to form a thick, acidic condensate. Compressor condensate causes damage to the compressed air storage and distribution system, production equipment, products and packaging.

Atmospheric dirt

Atmospheric air in industrial and urban environments will typically contain 140 - 150 million dirt particles in every cubic metre. As 80% of these particles are less than 2 microns in



Micro-organisms

Atmospheric air can contain up to 100 million micro-organisms per cubic metre. Bacteria, viruses, fungi and spores are drawn into the compressor air intake and due to their size, will pass directly through the compressor intake filters and into the compressed air system. The warm, moist compressed air provides an ideal environment for microbiological growth.

Many critical applications require

Rust and pipescale

Rust and pipescale can be directly attributed to the presence of water in the compressed air system and is usually found in air receivers and distribution piping. Over time, the rust and pipescale breaks away to cause damage or blockage in size, they are therefore too small to be captured by the compressor air intake filter and will travel unrestricted into the compressed air system.
Sterility and if contaminated compressed air can directly or indirectly contact products, packaging or production machinery, then sterility will be compromised.
Loss of sterility can cause enormous financial damage for a company as micro-organism can:
Potentially harm the consumer
Diminish product quality
Render a product entirely unfit foruse
Lead to a productrecall
Cause legal action against a company
production equipment which can also contaminate final product and processes. Rust and pipescale problems often increase for a period of time after the installation of dryers into older piping systems which were previously operated with inadequate or no purification equipment.

Contaminant removal

To operate a safe and cost effective compressed air system, contamination must be removed or reduced to acceptable limits.

Failure to remove contamination can cause numerous problems in the compressed air system, such as:

- **Microbiological contamination**
- **Corrosion within storage vessels and the distribution system**
- **Damaged production equipment**
- **Blocked or frozen valves, cylinders air motors and tools**
- **Premature unplanned desiccant changes for adsorption dryers**

In addition to problems associated with the compressed air system itself, allowing contamination such as water, particulate, oil and micro-organisms to exhaust from valves, cylinders, air motors and tools, can lead to an unhealthy working environment with the potential for personal injury, staff absences and financial compensation claims.

Compressed air contamination will ultimately lead to:

- **Inefficient production processes**
- **Spoiled, damaged or reworked products**
- **Reduced production efficiency**
- **Increased manufacturing costs**

Compressed air contaminants

To many compressed air users, the realisation that there are ten major contaminants in a compressed air system is somewhat of a surprise. It is often thought that only three contaminants are present (Dirt / Water / Oil), however, upon closer examination, these three contaminants can be broken down further as:

Dirt

- **Micro-organisms**
- **Atmospheric Dirt and Solid Particulate**
- **Rust**
- **Pipescale**

Water

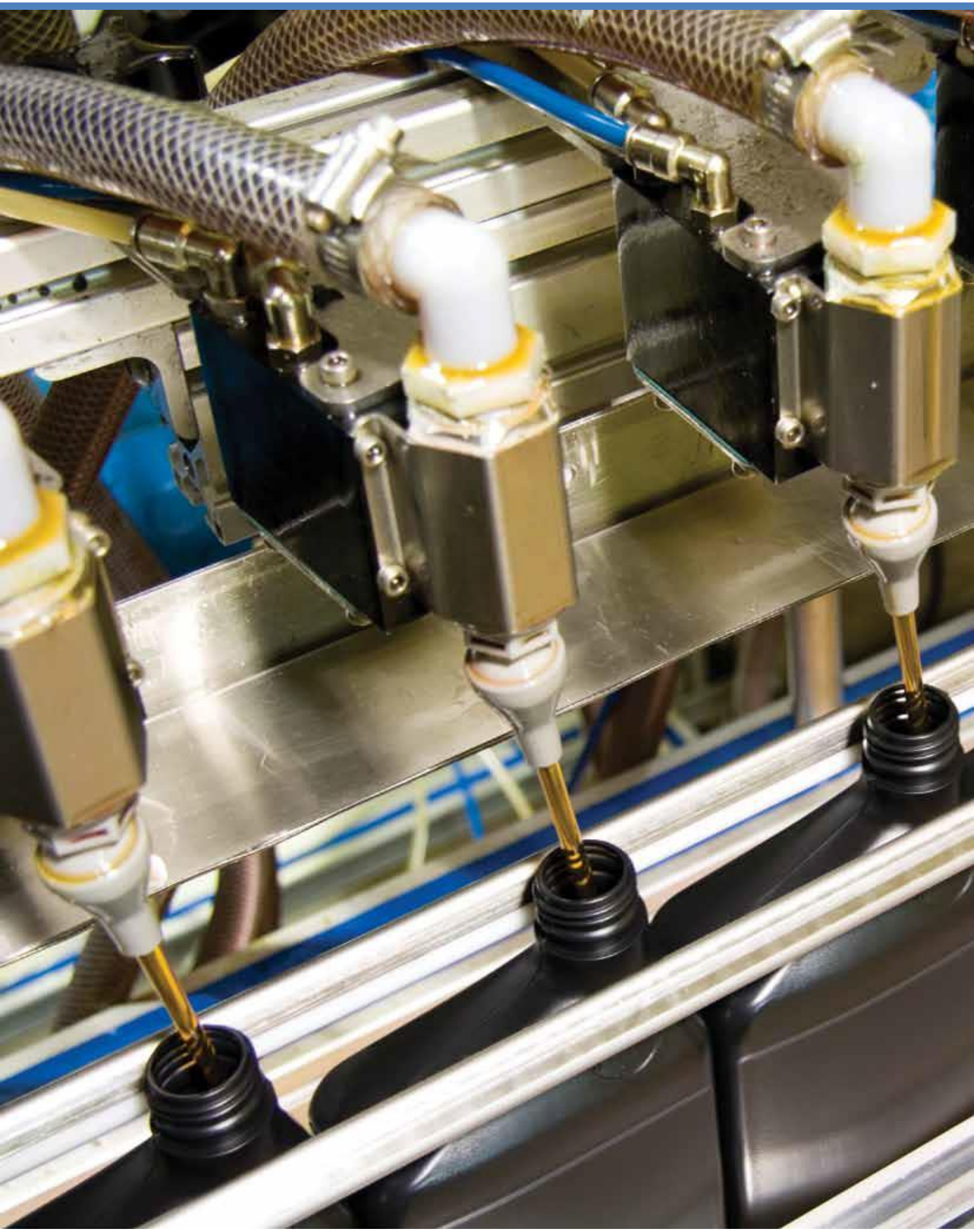
- **Water vapour**
- **Condensed Liquid Water**
- **Water Aerosols**

Oil

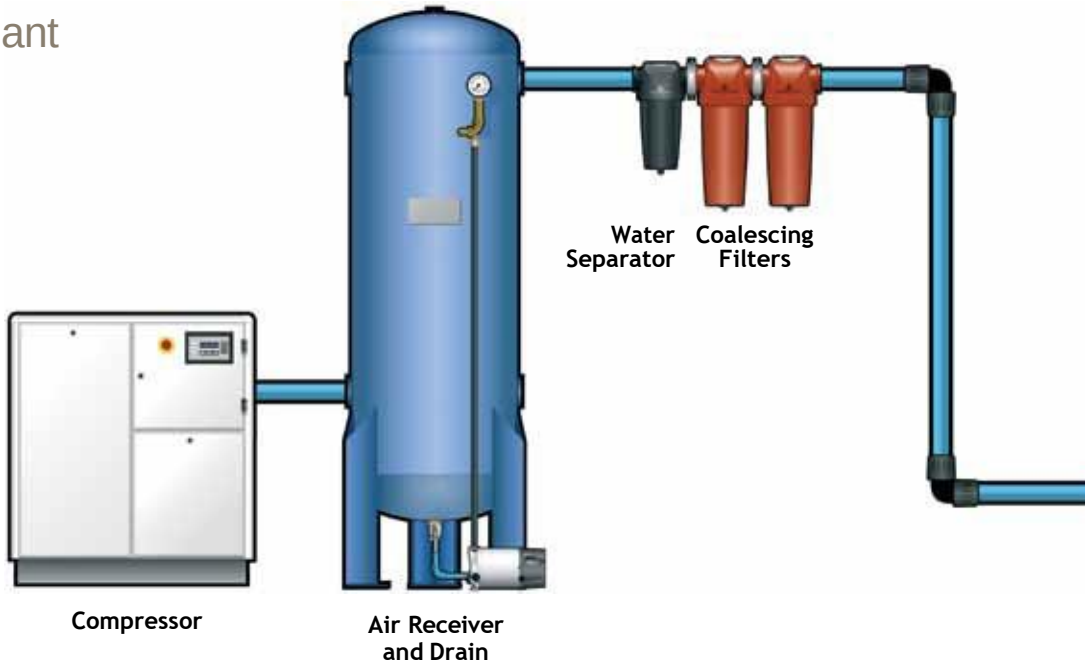
- **Oil Vapour**
- **Liquid Oil**
- **Oil Aerosols**

It is important to look at each contaminant in detail, as due to the diversity of the contamination present, a number of purification technologies must be employed for its removal.

Contamination Removal								
Purification Equipment Technologies	**Bulk Condensed Water**	**Water Vapour**	**Water Aerosols**	**Atmospheric Dirt & Solid Particulate**	**Micro-organisms**	**Oil Vapour**	**Liquid Oil & Oil Aerosols**	**Rust & Pipescale**
Water Separators	•							
Coalescing Filters			•	•	•		•	•
Adsorption Filters						•		
Adsorption Dryers		•						
Refrigeration Dryers		•						
Dust Removal Filters				•	•			•
Microbiological Filters				•	•			



A solution for every contaminant



Water separators

Water separators provide bulk condensed water and liquid oil removal and are used to protect coalescing filters against bulk liquid contamination (for example where excessive cooling takes place in air receivers and distribution piping installed prior to purification equipment).

Water separators will only remove liquids and will not remove water or oil in either an aerosol or vapour phase.

Designs using centrifugal action provide the most efficient method for bulk liquid removal as they use a combination of directional change and centrifugal action to optimise separation efficiency and reduce energy costs.

Coalescing filters

When considering purification equipment, coalescing filters are vital for the cost effective operation of any compressed air system, regardless of the type of compressor installed.

A purification system will normally consist of two coalescing filters installed in series to remove water aerosols, oil aerosols, atmospheric dirt, micro-organisms, rust and pipescale.

Suppliers of oil-free compressors will often state that one of the coalescing filters is a particulate filter and
the other is an oil removal filter, therefore, in oil-free compressor installations, there is no need for the oil removal filter.

In reality, both filters remove exactly the same contaminants. The first filter is a 'general purpose filter' which protects the second, 'high efficiency filter' from bulk contamination.

Omitting one of the filters in the belief that it is an oil removal filter will result in poor air quality due to contaminant bypass (carryover), high operational costs due to the pressure loss across the filter and more frequent filter element changes. Most importantly, omitting one of the filters will invalidate performance guarantees.

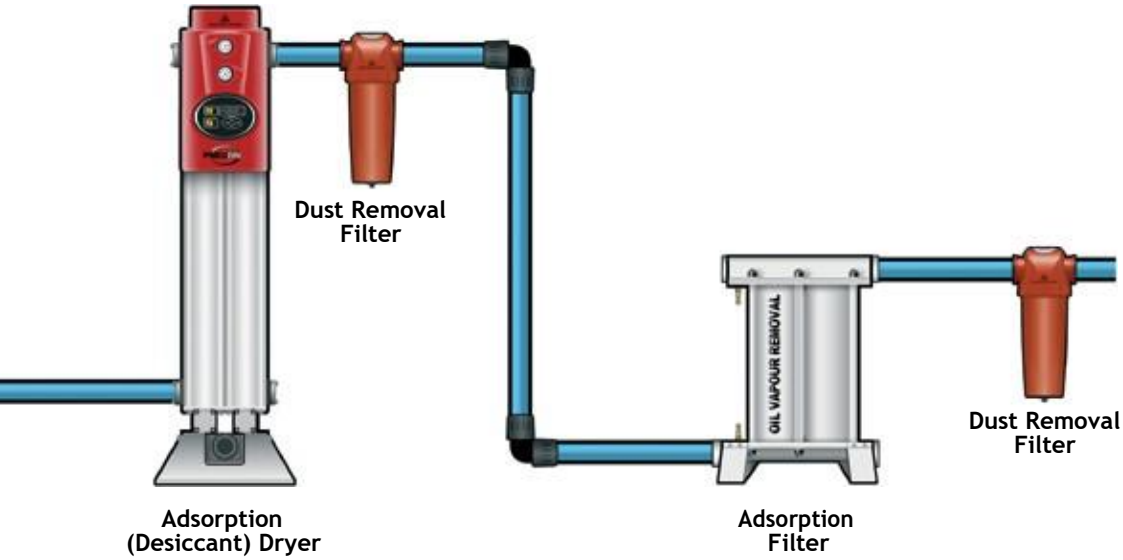
The dual coalescing filter installation ensures a continuous supply of high quality compressed air with the additional benefits of lower operational costs and minimal maintenance compared to a single high efficiency filter.

Compressed air dryers

Water vapour is water in a gaseous form and will pass through water separators and coalescing filters just as easy as the compressed air. Water vapour is therefore removed from compressed air using a dryer. The water vapour removal efficiency of a dryer (its performance) is expressed as a Pressure Dewpoint or PDP.

- **Dewpoint refers to the temperature at which condensation will occur.**
- **Pressure Dewpoint or PDP refers to the dewpoint of air above atmospheric pressure.**
- **Dewpoint is written as a temperature (but this is not the airs temperature).**
- **Compressed air with a PDP of -20°C, would need the temperature to drop below -20°C for any water vapour to condense into a liquid.**
- **A PDP of -40°C is recommended for all food applications where air is in direct or indirect contact with production equipment, ingredients, packaging or finished products because a PDP better than -26°C will not only stop corrosion, it will also inhibit the growth of micro-organisms.**

Compressor Room



Adsorption dryers

Water vapour is removed from compressed air using an adsorption dryer. Adsorption dryers remove moisture by passing air over a regenerative desiccant material which strips the moisture from the air. This type of dryer is extremely efficient. A typical pressure dewpoint specified for an adsorption dryer is -40°C as it not only prevents corrosion, but it also inhibits the growth of micro-organisms. A pressure dewpoint of -70°C is often specified for critical applications.

Refrigeration dryers (not shown)

Refrigeration dryers work by cooling the air, so are limited to positive pressure dewpoints to prevent freezing of the condensed liquid. Typically used for general purpose applications, they provide pressure dewpoints of +3°C, +7°C or +10°C. Refrigeration dryers are not suitable for installations where piping is installed in ambient temperatures below the dryer dewpoint i.e. systems with external piping, or critical applications such as food, beverage or pharmaceuticals as they do not inhibit microbiological growth.

Adsorption (Activated Carbon) filters

Oil vapour is oil in a gaseous form and will pass through a coalescing filter just as easily as the compressed air. Therefore, oil vapour removal filters must be employed which provide a large bed of activated carbon adsorbent for the effective removal of oil vapour, providing the ultimate protection against oil contamination.

Dust removal filters

Dust removal filters are used for the removal of dry particulates. They provide identical particulate removal performance to the equivalent coalescing filter and use the same mechanical filtration techniques to provide up to 99.9999% particle removal efficiency.

Sterile filters (not shown)

Absolute removal of solid particulates and micro-organisms is performed by a sieve retention or membrane filter. They are often referred to as sterile air filters as they also provide sterilised compressed air. Filter housings are manufactured from stainless steel to allow for in-situ steam sterilisation of both the filter housing and element. It is important to note that the piping between the sterile filter and the application must also be cleaned and sterilised on a regular basis.

Important Note:
As adsorption or refrigeration dryers are designed to remove only water vapour and not water in a liquid form, they require the use of coalescing filters to work efficiently.

Air Quality (Purity) Requirements of the Code of Practice

To comply with food hygiene legislation, the food manufacturer is required to follow the principles of HACCP (Hazard Analysis and Critical Control Point) and a risk analysis must be carried out on the entire manufacturing process.

As compressed air is seen as a utility, it is often missed as a potential source of contamination. To be fully compliant, the compressed air system must be included as part of the hazard analysis and anywhere compressed air is used, classified as a Critical Control Point and subject to the air purity (quality) recommendations highlighted in section 6 of the Code of Practice.

Section 6 states:
The outlet compressed air must be designated as one of the following:

- **Air that comes into direct contact with the food (Contact).**
- **Air that will never come into contact with the food (Non-Contact).**
- **Where the HACCP Hazard Analysis shows a potential risk of the Non-Contact air indirectly contacting food or entering the food manufacturing area then the air shall be defined as Non-Contact High Risk.**

Definition

s Contact

Air that comes into direct contact with ingredients, finished food or beverages, packaging materials, storage vessels or the manufacturing machinery.

Non-Contact

Air that will never come into contact with ingredients, finished food or beverages, packaging materials, storage vessels or the manufacturing machinery.

Non-Contact High Risk

Air that is not supposed to come into contact with ingredients, finished food or beverages, packaging materials, storage vessels or the manufacturing machinery, but may inadvertently do so.

Air Quality Recommendations	Dirt (Solid Particulate) Max Number of particles per m^3			Humidity (Water Vapour)	Total Oil (Aerosol + Vapour)	ISO8573-1:2001 Equivalent	ISO8573-1:2010 Equivalent
	0.1 - 0.5 micron	0.5 - 1 micron	1 - 5 micron				
Contact	100,000	1000	10	-40°C PDP	<0.01 mg/m^3	Class 2.2.1	Class 1.2.1
Non - Contact	100,000	1000	10	+3°C PDP	<0.01 mg/m^3	Class 2.4.1	Class 1.4.1
Non - Contact High Risk	100,000	1000	10	-40°C PDP	<0.01 mg/m^3	Class 2.2.1	Class 1.2.1

The contaminant values for dirt and oil are those at the 'Reference Conditions' in ISO8573-1 at a temperature of 20°C, absolute atmospheric pressure of 1 bar and relative water vapour pressure of zero. Humidity is to be measured at line pressure.

Dirt

The purity requirements for dirt are identical for Contact, Non-Contact and Non-Contact – High Risk. The same level of purification equipment will be required for each.

Water

The purity requirements for water vapour are identical for both Contact and Non-Contact – High Risk. This requires the Installation of adsorption dryers that deliver a Pressure Dewpoint (PDP) better than -40°C. This requirement was introduced to combat the growth of micro-organisms as compressed air with a dewpoint of -26°C or better will inhibit microbiological growth. The purity requirements

+3°C for Non-Contact will not inhibit microbiological growth.

Oil

The purity requirements for total oil are effectively identical for Contact, Non-Contact and Non-Contact – High Risk with the same level of purification equipment required for each.

Microbiological contaminants

The Code of Practice states: HACCP shall establish the risk of contamination by microbiological contaminants.

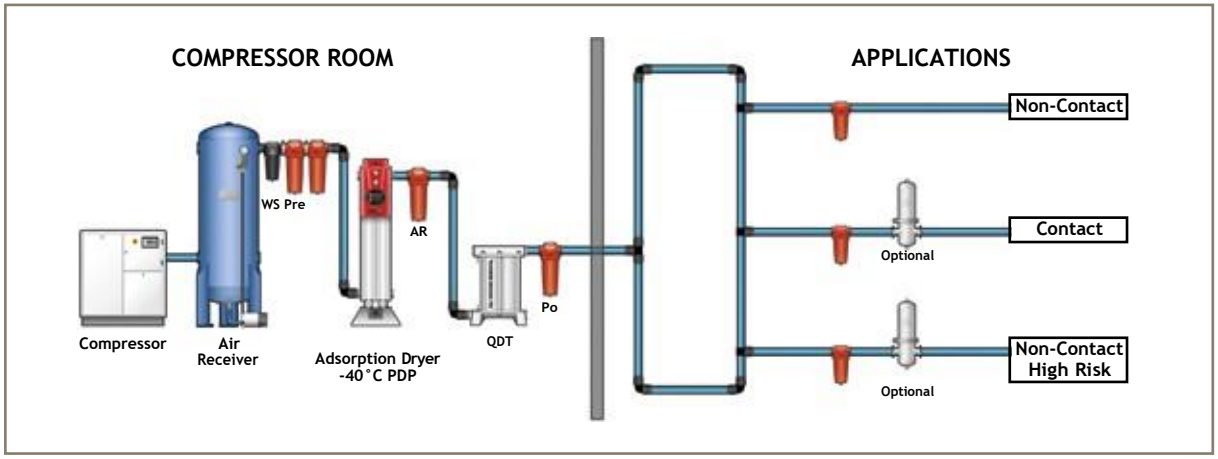
The level of viable microbiological contaminants in the compressed air shall not be detectable using the test method given in ISO8573-7.

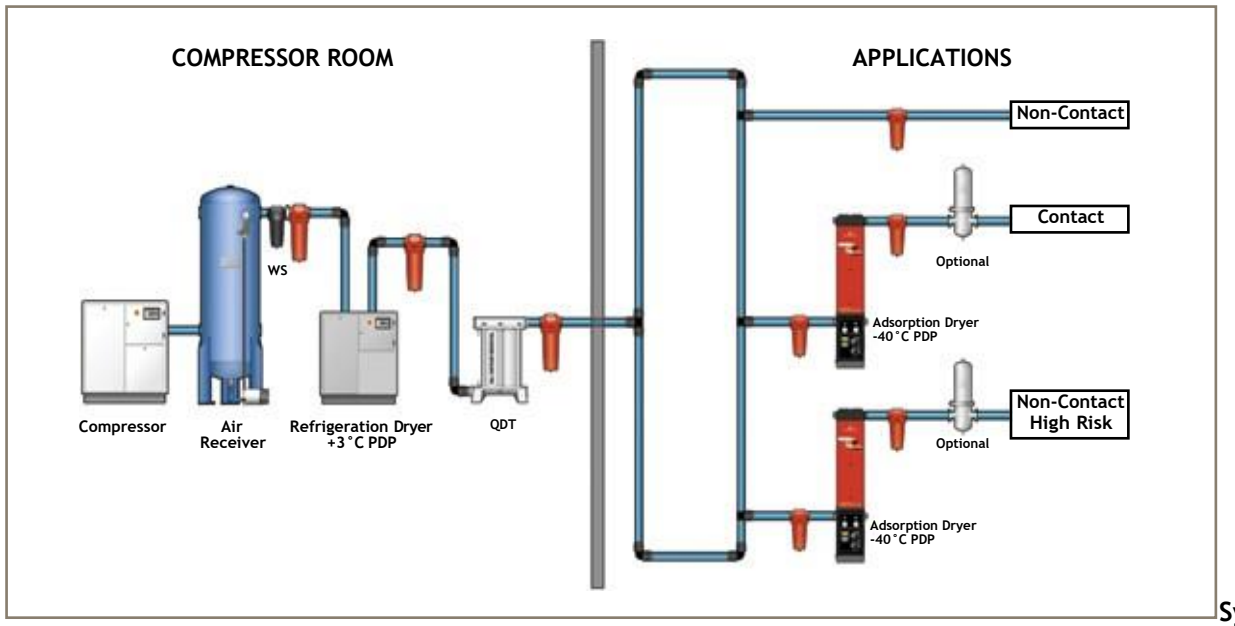
Cost effective system design

To achieve the stringent air quality levels required for today's modern food manufacturing facilities, a careful approach to system design, commissioning, installation and operation must be employed. Treatment at one point alone is not enough and it is highly recommended to treat compressed air prior to entry into the distribution system (usually in the compressor room or at point of generation) to a specification that will provide contaminant free air for general purpose applications and protect air receivers and distribution piping from corrosion and damage. Point of use purification should also be employed, with specific attention being focussed on the quality of air required by each application. This approach to system design ensures that air is not "over treated" and provides the most cost effective solution to high quality compressed air.

Recommended purification equipment for compliance with the Food Grade compressed air Code of Practice

Air Quality Recommendations	Dirt (Solid Particulate)	Humidity (Water Vapour)	Total Oil (Aerosol + Vapour)
Contact	Pre, Post & After Filters or Pre & Post Filtration (for dry particulate*)	I -40°C PDP	Contact for more info
Non - Contact		+3°C PDP	
Non - Contact High Risk		-40°C PDP	





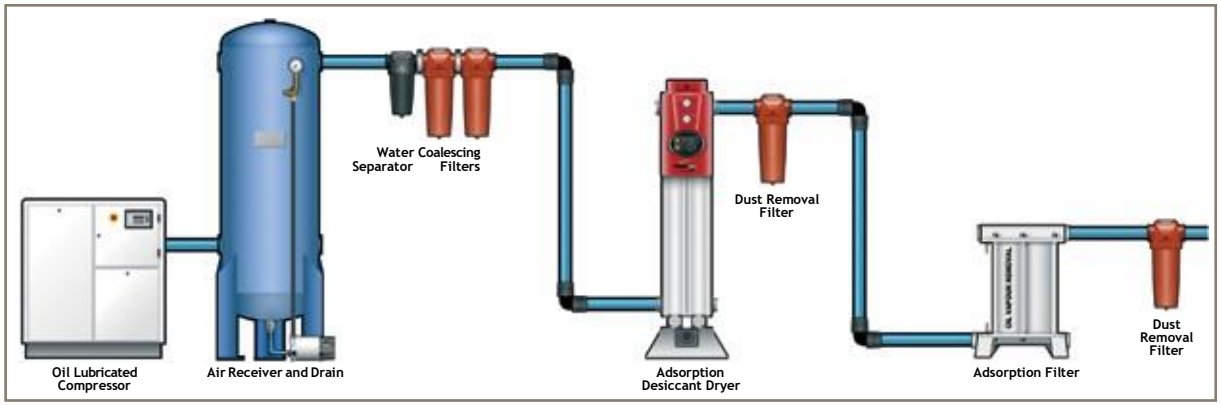
System

Compressors for the food industry

The Code of Practice does not make any specific recommendations regarding compressor type with both oil lubricated and oil-free compressors being acceptable choices.

Important Note:
Regardless of whether oil lubricated or oil-free compressors are installed, the purification equipment required to achieve the purity levels stated in the Food Grade Compressed Air Code of Practice is identical.

Oil Lubricated Compressor Installation



Oil-Free Compressor Installation

Compressor lubricants

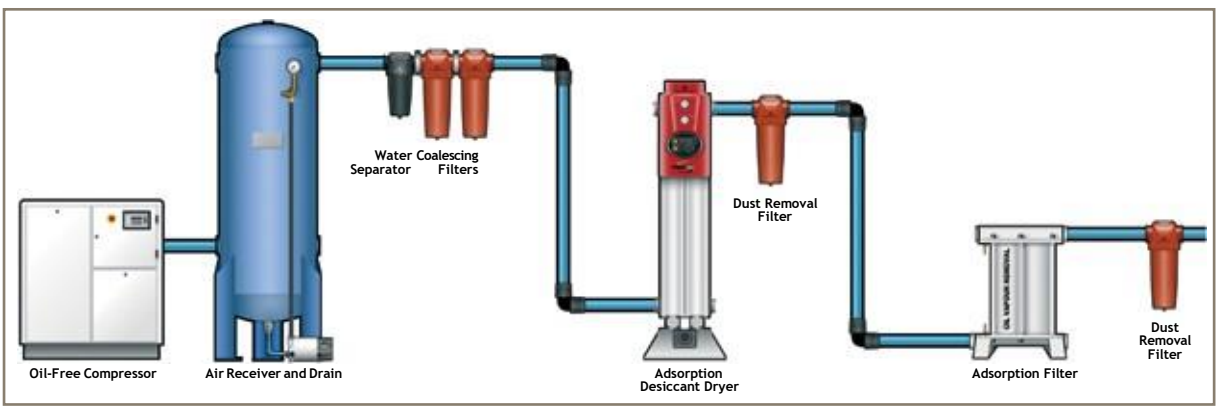
Oil lubricated compressors

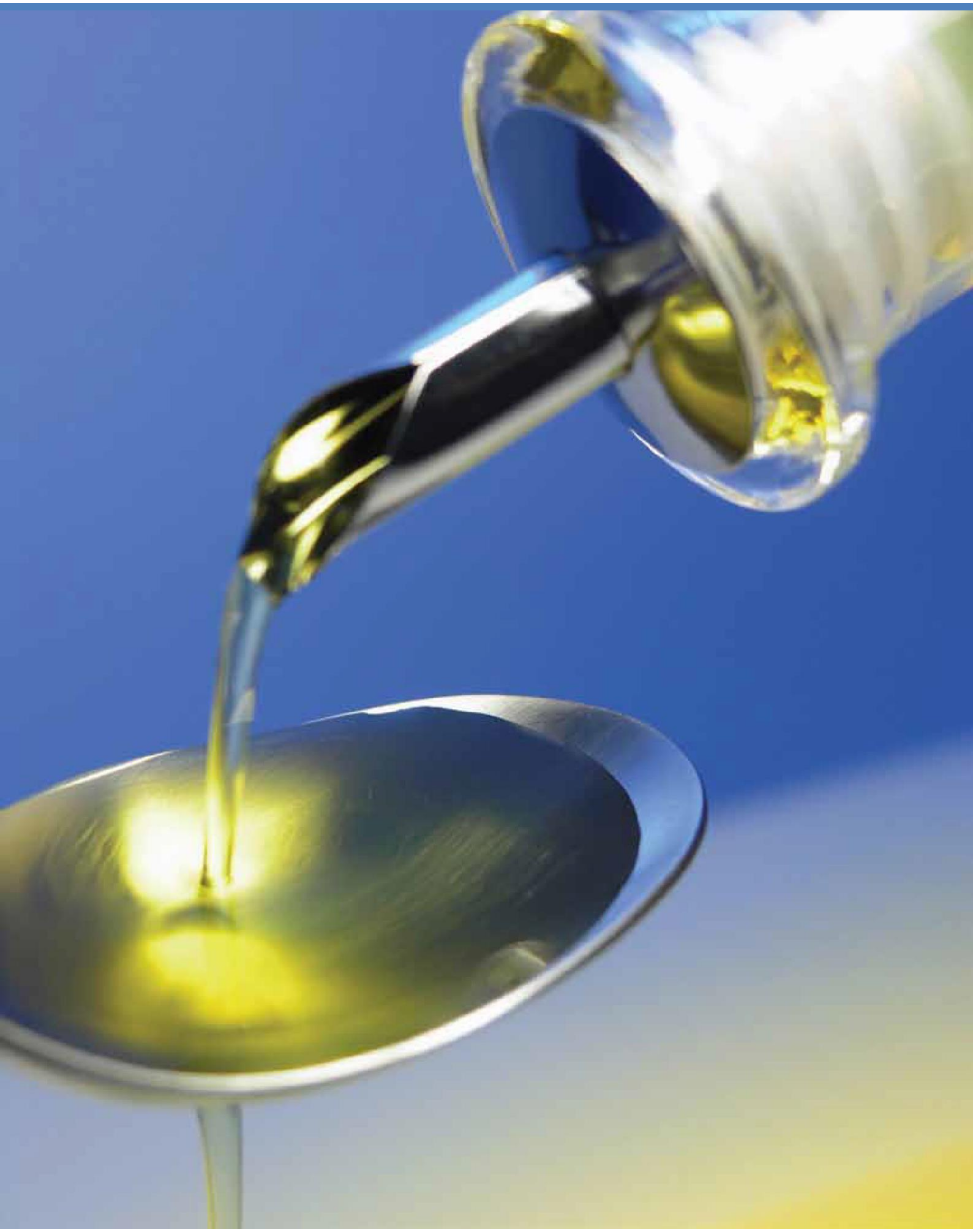
The Code of Practice states: 'Where lubricated or oil-injected compressors are in use and non-food grade oil is used and the HACCP process identifies a risk, then the oil shall be replaced with food grade oils in line with the procedures identified in the EHEDG (European Hygienic Engineering & Design Group) Document 23.'

Oil-free compressors

The Code of Practice states: Where oil-free compressors are used, no lubricant is involved in the compression process therefore the procedures identified in the EHEDG Document 23 will not be required".

The Code of Practice also states: 'Compressors that employ lubricants in those parts not involved in the actual compression of the air will be subject to the HACCP process to determine the risks if any to the food production process.' Therefore if the oil-free compressor uses oil for lubrication of bearings, gearboxes, etc. then it is still subject to a HACCP risk analysis. If the risk analysis shows a potential for contamination by vapours, aerosols or liquid oil, then the procedures identified in the EHEDG Document 23 will still apply.





Are all compressed air filters and dryers the same?

Compressed air purification equipment is essential to all modern production facilities. It must deliver uncompromising performance and reliability whilst providing the right balance of air quality with the lowest cost of operation. Many manufacturers offer products for the filtration and purification of contaminated compressed air, which are often selected only upon their initial purchase cost, with little or no regard for the air quality they provide, the cost of operation throughout their life or their environmental impact. When selecting purification equipment, the required air quality, the overall cost of ownership and the equipment's environmental impact must always be considered.

The CPS design philosophy

DESIGNED FOR AIR QUALITY & ENERGY EFFICIENCY

CPS Australia has been supplying industry with high efficiency filtration and purification products since 2005. Our philosophy "Designed for Air Quality & Energy Efficiency" ensures products that not only provide the user with clean, high quality compressed air, but also with low lifetime costs and reduced carbon dioxide (CO_2) emissions.

Air Quality
Atlas Copco & SMC has been instrumental in the development of both ISO8573 and ISO12500, the international standards for compressed air quality and compressed air filter testing respectively. All Parker products are designed to provide air quality in accordance with all editions of ISO8573-1, air quality standard.

Energy Efficiency
In these times of increasing energy costs, an efficient and cost effective manufacturing process is a major factor in maintaining the profitability and growth of your business. All CPS products are designed to not only minimise the use of compressed air and electricity in their operation, but also to significantly reduce the operational costs of the compressor by minimising pressure loss.

Low Lifetime Costs
Equipment with a low purchase cost may turn out to be a poor investment in the long term. By guaranteeing air quality and ensuring energy consumption is kept to a minimum, CPS purification products can reduce the total cost of ownership and help improve profitability through improved manufacturing efficiencies.

REDUCED CO_2

Reduced CO_2 Emissions
Australia is looking closely at their manufacturing industries in an effort to reduce the amount of harmful greenhouse gases released into the atmosphere. The use of electricity has a direct impact on the generation and release of CO_2. By significantly reducing the energy consumption of its products, CPS can help you to reduce your carbon footprint and protect the environment.

SMC or Atlas Copco filtration performance validation

CPS Compressors select filters that have been designed to provide compressed air quality that meets or exceeds the levels shown in all editions of ISO8573-1 international air quality standard and the BCAS Food Grade Compressed Air Code of Practice.

CPS selected filters are not only tried and tested by the industry, filtration performance has also been independently verified by Lloyds Register.

Coalescing filters

Coalescing filter performance has been tested in accordance with ISO12500-1, ISO8573-2 and ISO8573-4.

Dry particulate filters

Dry particulate filter performance has been tested in accordance with ISO8573-4.

Oil vapour removal filters

Oil vapour removal filter performance has been tested in accordance with ISO8573-5.

Materials of construction

The materials used in the construction of our filters are also suitable for use in the
food industry, and have been independently verified to comply with FDA Code of Federal Regulations, Title 21 'Food and Drug'.

After sales service

Compressed air equipment users demand much more than the supply of high quality products in order to maintain a competitive edge.

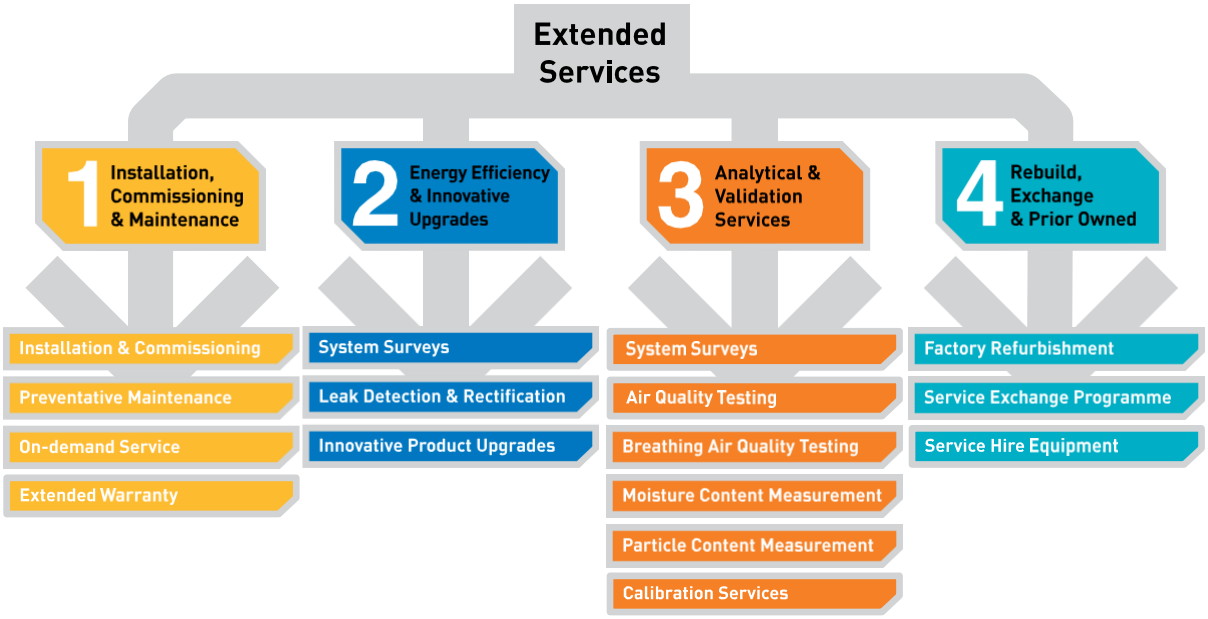
Modern production technologies are increasingly demanding the provision of a higher purity and more reliable compressed air supply. Products and solutions that are manufactured by CPS are designed to provide air quality that meets with and often exceeds international standards.

As well as the requirement for air purity and reliability, there are additional factors to consider when choosing the right service provider for your compressed air and gas purification system. For example, knowledge of the many regulations regarding the management of industrial waste, energy efficiency improvement programs and consideration of any environmental impact. It is anticipated that future legislations will demand further in-depth technical and knowledge based support from service providers.

Our commitment to industry does not stop with the supply of high quality products. We are also committed to ensuring that our equipment provides high performance by providing a trouble-free service from a bespoke maintenance and verification package – all tailored to your own specific requirements.

We offer a wide range of valuable services that will impact positively on your drive towards improved production efficiency and product quality with reduced production rejections and operational costs.

From initial selection to installation, commissioning, preventative maintenance and extended services, CPS is redefining customer service.



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