

Why should I change my compressed air filter element?

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climate control
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filtration
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pneumatics
process control
sealing & shielding

Filtration, purification and separation is our business

Parker domnick hunter is a world leader in the filtration, purification and separation of compressed air and gases.

Parker domnick hunter 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.

Parker domnick hunter compressed air filters can offer significant energy cost savings provided that the filters elements are regularly maintained to guarantee the air quality.

Maintaining Your Air Quality

Compressed air is an essential power source used by modern industry. Commonly regarded as the 4th utility after Electricity, Gas & Water, compressed air is unique as it is generated on-site rather than delivered by a service provider. This powerful utility however is not without its problems. The efficiency of the compressed air system as well as the quality of end products can be affected by contamination in the air. Contamination comes from various sources and in many forms and unlike utilities supplied by a service provider, the quality of compressed air and the costs associated with its generation are solely in the hands of the user. As compressed air is generated on-site, the level of contamination removal provided is usually governed by the financial constraints of the user.

Today, many manufacturers offer products for the filtration and purification of contaminated compressed air, with products often being selected based only on their initial purchase cost, with little or no regard for the air quality they provide or the cost of operation throughout their life.

Compressed air purification equipment is vital for the removal of system contamination, therefore when purchasing this type of equipment, air quality, energy efficiency & lifetime costs must always be considered.

Once installed, compressed air purification equipment must be regularly maintained to ensure that it is delivering the required air quality and operational costs are kept to a minimum. Therefore it is essential that the manufacturers recommended maintenance instructions are adhered to and the associated costs are factored into the annual maintenance budget for the production plant.

Having already identified the cost to your business of contaminated compressed air and the consequent need for high quality purification equipment, why compromise your air quality by not changing your filter element?



Compressed air purification

A solution for every contaminant.

Contamination Removal						
Purification Equipment Technologies	Water Aerosols	Atmospheric Dirt & Solid Particulate	Micro-organisms	Oil Vapour	Liquid Oil & Oil Aerosols	Rust & Pipescale
Coalescing Filters	•	•	•		•	•
Adsorption Filters				•		
Dust Removal Filters		•	•			•

Coalescing filters

Coalescing filters are probably the single most important items of purification equipment in a compressed air system. They are designed to not only remove aerosols (droplets) of oil and water using mechanical filtration techniques, but also to remove solid particulate to very low levels (as small as 0.01 micron in size). Installed in pairs, the first filter is a 'general purpose filter' which protects the second 'high efficiency filter' from bulk contamination. The dual filter installation from Parker domnick hunter ensures a continuous supply of high quality compressed air with the additional benefits of low operational costs and minimal maintenance.

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 as these 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.



Maintaining air quality and energy efficiency through regular maintenance

'Why should I change my filter element?'

To achieve the stringent air quality levels required by both modern manufacturing industry and ISO8573-1 : 2001 the international standard for compressed air quality, highly specialised filtration materials are employed in the construction of filter elements, which have both a finite capacity and life to retain contamination. It is important to remember that when the filter life has expired, the required air quality can no longer be maintained.

Filters are installed to provide contaminant removal to a specific air quality requirement, therefore the primary reason to change filter elements should always be to maintain air quality and they should therefore be replaced every 12 months.



'My filter is fitted with a differential pressure gauge and the needle is in the green - why should I change my element?'

Many filter housings are fitted with so called "Differential Pressure Gauges". Generally, these are indicators and not precise gauges which offer no level of calibration or accuracy. Typically these will show an area of green and red, indicating that if the needle is in

the green, the element does not require changing. Differential pressure gauges are neither filter service indicators nor air quality indicators; they simply measure differential pressure and offer an indication only of premature blockage.



A pin point size hole here will rupture an elements media.

What factors reduce filter performance?

During operation, the depth filter media used in coalescing and dust removal filter elements is constantly bombarded by high velocity dirt particles whilst also being under extremes of pressure, temperature, and a pulsing air demand. Coalescing filters also have to contend with being attacked by acidic condensate, which can be anything from hot water to oil and chemical additives from compressor lubricants.

If the filtration media becomes damaged, the required air quality can no longer be maintained or guaranteed.

Even a hole the size of a pin-point can result in the filter media rupturing. Additionally, large

pressure differentials or "pressure spikes" can also rupture filter elements in an instant, allowing all the contamination to be carried past the filter and into the compressed air system.

If this should happen, the needle on the gauge would always indicate in the green area and the element would never be serviced until the user eventually detected contamination downstream.

By this time, it is too late and once introduced into the system, contamination is very difficult to remove and may often require specialist cleaning of piping and pneumatic equipment before the compressed air system can be operated again.

(continued)

'Are adsorption filters affected in the same way?'

Adsorption filters, often known as AC or activated carbon filters work differently to coalescing and dust removal filters. These utilise a bed of activated carbon to remove oil vapours (gaseous oil) from the compressed air. Activated carbon has a fixed capacity to adsorb oil vapour and once this is used up, AC elements must be replaced. Smaller, in-line style AC filters are often used and are matched to the system flow rate and pipe connections. The inlet concentration of oil vapour, the presence of liquid oil as well as the temperature, pressure and dewpoint the air all effect the life of the AC element and in-line AC elements require frequent changes throughout the year to provide technically oil free compressed air. Grade AC filters must always be preceded by high efficiency coalescing filters to provide maximum protection and service life.



'What are the consequences of not changing filter elements?'

What seems like a cost saving in the short term can turn out to be a very costly mistake. Having identified a contamination problem in the compressed air system and the need for purification equipment, what would be the cost to your business of poor air quality?

- Damaged adsorption dryer beds requiring unplanned desiccant changes
- Corrosion within the compressed air storage and distribution system
- Blocked / frozen valves, air motors and pneumatic tools
- Damaged machinery causing increased production downtime
- Contamination exhausting from valves and cylinders leading to unhealthy working environments, risk of personal injury, staff absences and personal injury claims
- Inefficient production processes leading to increased manufacturing costs
- Spoiled, damaged and re-worked products

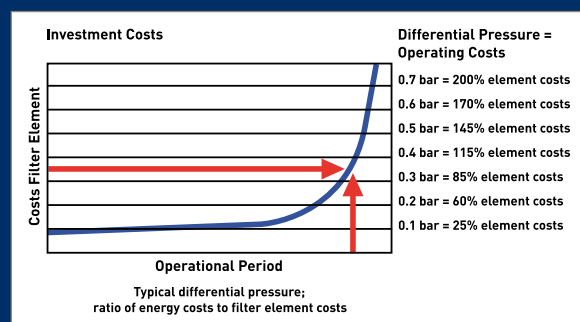
What are the benefits of regularly changing filter elements?

- High quality compressed air - Guaranteed
- Protection of adsorption dryer beds
- Protection of downstream equipment, personnel and processes
- Reduced operational costs
- Increased productivity & profitability
- Continued peace of mind

A balance between risk and cost

Ultimately the filter element should be replaced as previously stated based upon maintaining air quality. Consideration must also be given to system pressure losses (and therefore operating costs) as the cost of a replacement element is often significantly lower than the energy cost associated with operating with higher differential pressures.

Often the users emphasis is on the cost of maintenance and replacement parts when in reality these cost are insignificant to those associated with product spoilage should a filter element fail. What seems like a cost saving in the short term can turn out to be a costly mistake.



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 Parker domnick hunter design philosophy



Parker domnick hunter has been supplying industry with high efficiency filtration and purification products since 1963. 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 (CO₂) emissions.



Air Quality

Parker domnick hunter 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 domnick hunter products are designed to provide air quality in accordance with ISO8573-1:2001, the latest revision of this 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 Parker domnick hunter 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,

Parker domnick hunter purification products can reduce the total cost of ownership and help improve profitability through improved manufacturing efficiencies.



Reduced CO₂ Emissions

Many countries worldwide are 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 CO₂. By significantly reducing the energy consumption of its products, Parker domnick hunter can help you to reduce your carbon footprint and protect the environment.

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