



## The realities of oil-free compressed air

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# The realities of oil-free compressed air

Reliability and punctuality of operation are key demands with passenger and freight rolling stock today, in an industry where safety and performance are paramount.

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Compressed air provides power to some of the most sophisticated applications (braking systems, pantographs, pneumatic doors, suspension), that keeps the rolling stock operational and punctual, but is generally contaminated with the most natural elements known – dirt, water and oil.



Compressed air contamination (condensate) being drained from a locomotive air receiver

Consequently, increasing awareness of the value of compressed air treatment in rail vehicles now demands a higher quality of compressed air in terms of oil, water and dirt contamination removal than ever before. With the introduction of hi-tech pneumatic control systems and the ever increasing drive for economy relative to operating and maintenance costs, makes the effective treatment of compressed air a mandatory consideration.

Recently, there has been much debate about the application of oil-free compressed air on rolling stock, to eliminate the need for unplanned and unbudgeted maintenance and unnecessary delays on railway networks.

In fact, oil-free compressed air is very important for the long term operation and reliability of system componentry – but it can be easily achieved by other means than by simply installing an expensive compressor.

The false belief that oil-free compressors alone can provide oil-free air to critical applications without the need for any downstream air treatment stages could not be further from the truth!. An oil-free compressor simply refers to a compressor type which is “oil-less”



Typical contamination removed by a Parker domnick hunter locomotive filter

in the sense that it does not use oil at the point of air generation – in other words, oil cannot be carried over by the compressor into the generated compressed air supply.

It DOES NOT, however, refer to the “delivered air quality”.

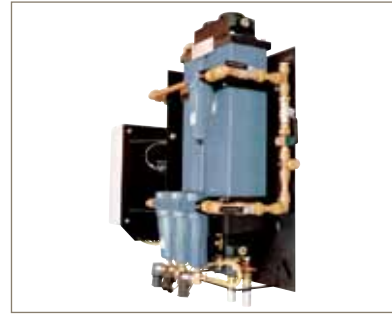
All compressors use the same ambient air to compress, irrespective of whether they are oil-free or oil-lubricated types and therefore, will carry over hydrocarbons, water vapour and dirt



Wheel brakes and suspension operation



Pneumatically operated doors



A modern approach to high efficiency compressed air purification packages

particles (mainly pollen and dust) during compression into the air system. This will lead to liquid oil, water and dirt contamination. Atmospheric hydrocarbons can originate from industrial effluent and exhaust fumes, even from the locomotive, which when compressed and condensed will appear as liquid oil.

So, it can be seen that both types of compressors will produce compressed air contamination which must be removed. The concept of using oil-flooded or lubricated compressors, together with effective air treatment, has been well established over many years, with many critical industries outside of the railway industry requiring high quality oil-free air paying tribute to this fact, eg the pharmaceutical and petrochemical industries.

**Air treatment equipment necessary to provide oil-free compressed air**

With reference to the compressed air contamination problems described earlier, the following air treatment equipment is required to provide high quality compressed air:

- **Water separator to remove bulk water**
- **Coalescing filters to remove oil and dirt**
- **Adsorption dryer to remove water vapour**
- **Dust filter to capture desiccant dust from the adsorption dryer**

Parker domnick hunter offers such protection with a dedicated range of railway and transportation air purification and separation systems, designed specifically to combat the problems experienced with today's rolling stock.

A filter package combining high efficiency water separation with high efficiency filtration and an adsorption dryer with dewpoint suppression down to 40°C ensures that the compressed air can be purified to meet the requirements of both the NF F11-100 standards for rolling stock and the ISO8573-1:2010 standards.

The patented design technology enables the air treatment to be installed both internally and externally, utilising the smallest space envelope available for installation, whilst having the ability to withstand the rigours of shock and vibration in the most arduous and extremes of operating conditions and climates.



**Together, we can get the best out of your braking system and other pneumatic applications**

Parker domnick hunter offers maximum protection from a dedicated range of railway and transportation air purification and separation systems. Utilising the smallest space envelope available for installation, the patented design technology enables the air treatment to be installed either horizontally or vertically, both internally and externally. Other noteworthy features such as suitability for all climatic conditions, preventing systems freezing and having the lowest weight and operating noise levels, makes this range the natural choice for new builds and companies involved in rolling stock refurbishment.

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