

SKROLL®

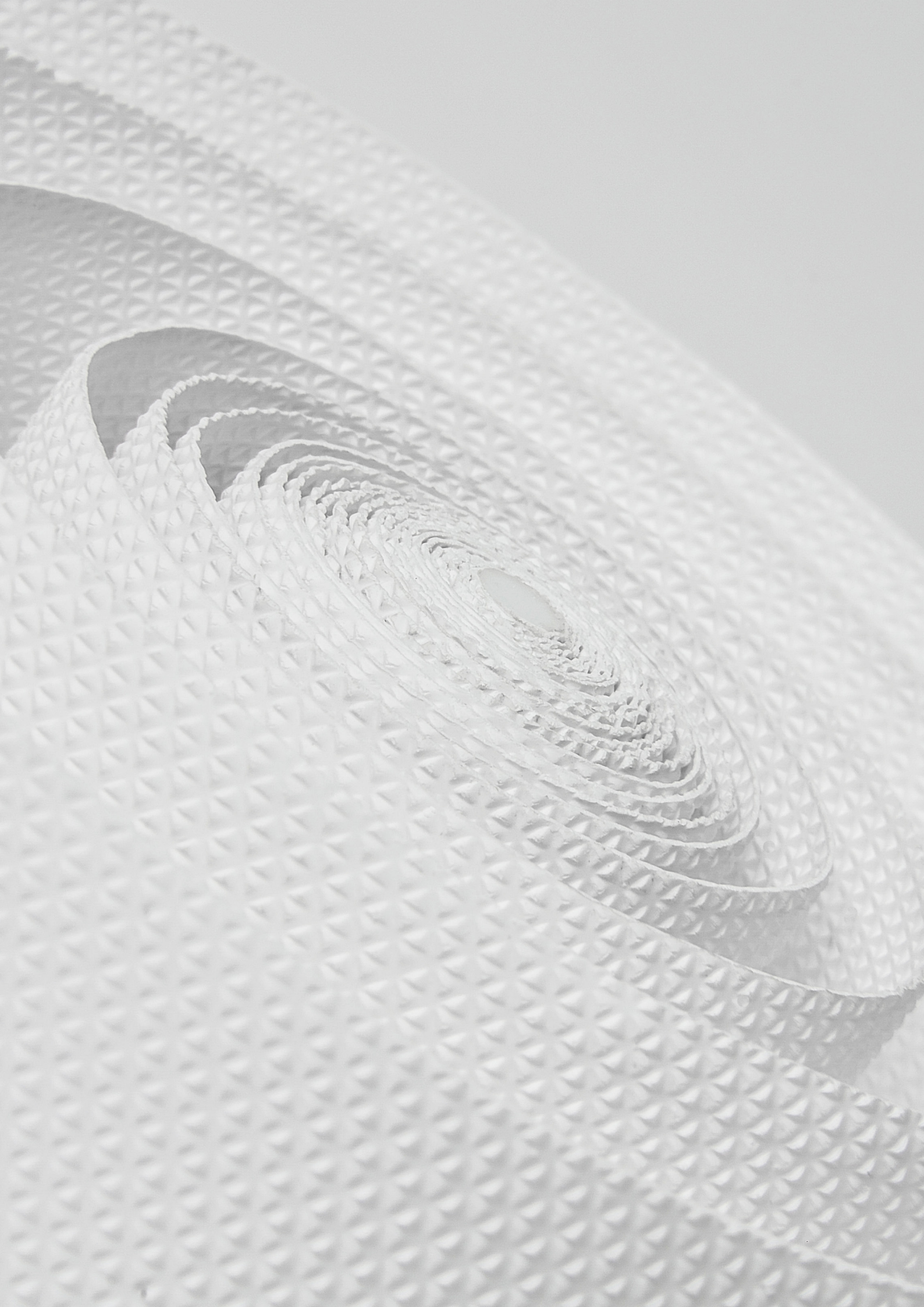
AIR PURIFICATION

Skroll®

Changing the future of compressed
air adsorption technology



www.apskroll.com





APSL is a technology based solution provider with a revolutionary air & gas adsorption technology... Skroll®... the future of air & gas adsorption media.

Our expert team have extensive knowledge of the air & gas purification market and are focused on providing customers with performance enhancing solutions to OEM, aftermarket and specialised applications. This dedicated approach provides a close working relationship with customers to meet their application requirements and demands.

CONTENTS

04	Skroll® Media
07	Skroll® Dryers & Filters
08	SRD Heatless Desiccant Air Dryers
10	SCP Single Column Purifier
12	RFG Compressed Air Dryer Filters
14	About Us
15	Contact

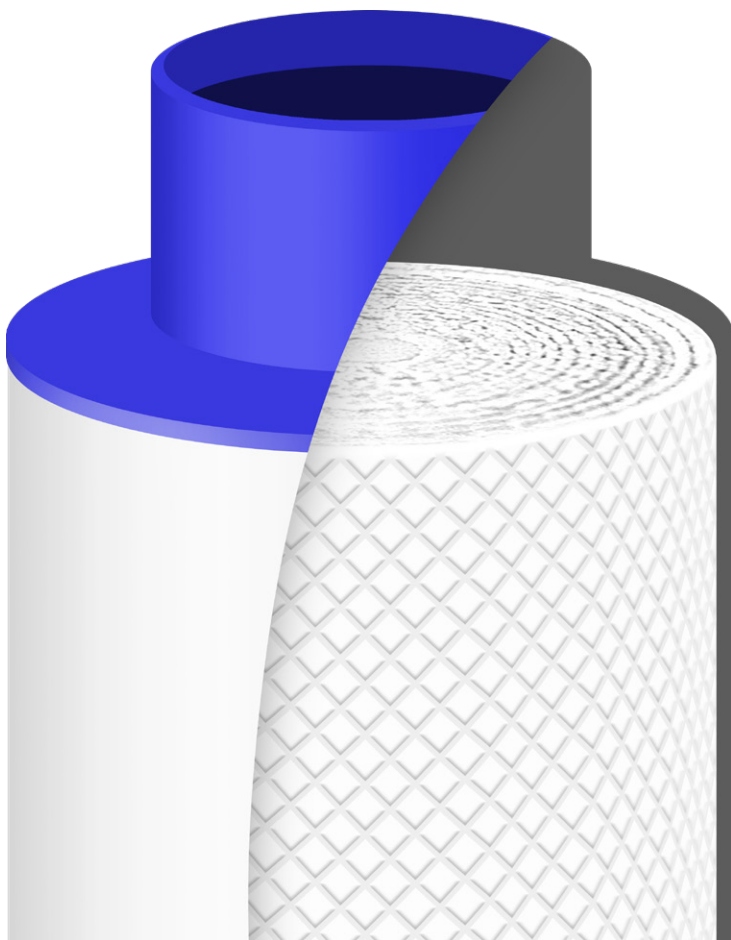


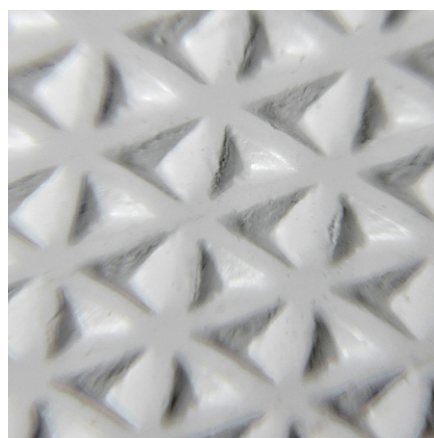
The future of compressed air & gas adsorption media

Air Purification Skroll® (APS) is a revolutionary adsorption media designed to eliminate the typical failures and system issues associated with traditional adsorption media.

Skroll® media consists of adsorbent crystals immobilised in a durable polymer support structure, produced in the form of a continuous embossed sheet. When converted into the Skroll® construction, flow paths are created between layers.

This unique construction enables optimum performance to be achieved in applications such as the dehydration of air and gases. It is tough, durable, recovers from misuse and has long service life (typically 10 years).





Unparalleled Performance Results

Skroll® configuration can be designed either as an insert directly into a new or existing housing, or in cartridge form. It can be installed in any orientation overcoming the many disadvantages of granular materials, especially in environments susceptible to shock and vibration and where mounting horizontally is necessary or desirable.

APS has been developed for demanding applications in the purification of compressed air and gases. It overcomes the disadvantages of granular materials such as channelling, by-pass, bed fluidisation, orientation, dust generation, misuse (flooding), short service life and degradation due to high water loading.



Technology

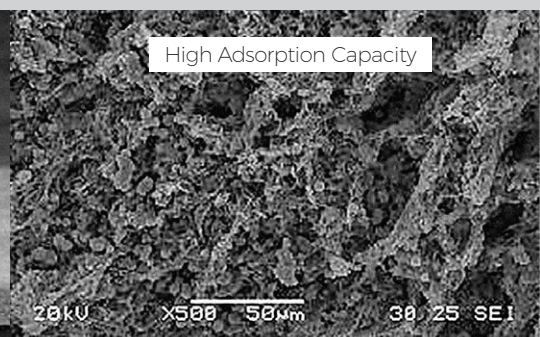
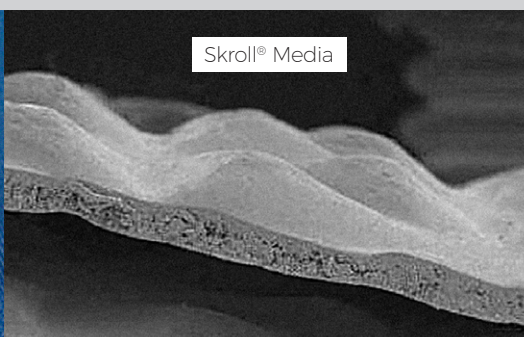
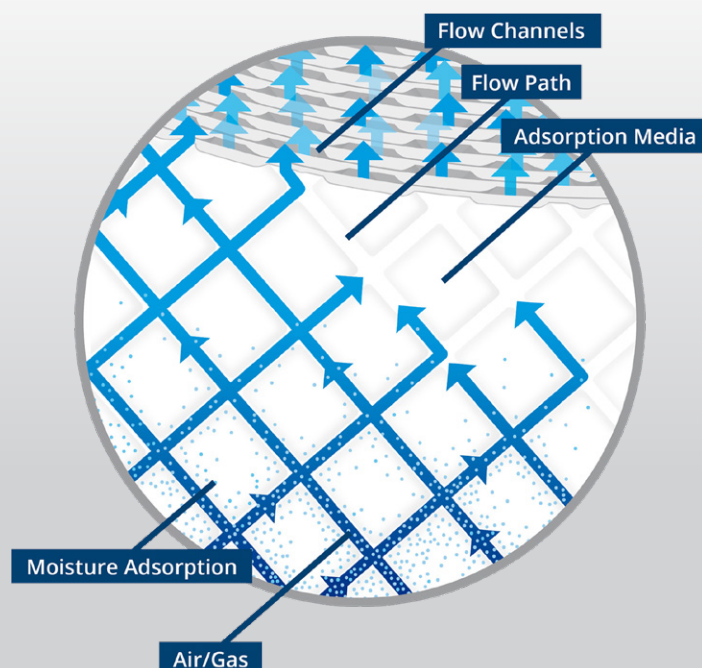
APS consists of selected adsorbent crystals and a polymeric binder resulting in fast kinetics and effective regeneration, providing unique performance characteristics superior to other adsorption media.

APS is manufactured as a continuous sheet with a high adsorption density, equal to or surpassing granular adsorption beads. The unique manufacturing process results in a highly open porous structure that is consistent throughout the media.

APS technology creates flow channels between each layer, engineered to optimise application performance.

APS unique design allows the control of velocity, contact time, turbulence, back pressure and adsorption density to maximise the adsorption process.

APS is readily formed into robust cartridges which can be inserted into existing or new housings.



Key Features

- Dust free and high water tolerance
- Easy to install in any orientation (horizontal & vertical)
- Durable with high chemical resistance
- Controlled flow channels optimise performance
- Low differential pressure and long life
- High adsorption density
- Variable dew point suppression
- Energy saving
- Available in modular or cartridge form
- Suitable for gas generation and chemisorption

Benefits

- Recovers from high water saturation and misuse
- Vibration & shock resistant
- Operates in any orientation
- Air/gas dew point selection = Energy Saving
- Optimisation to application requirements
- Operates in the most arduous environments
- Low cost of ownership
- 10 year service life with low maintenance

The Skroll® range of dryers provide unparalleled performance in compressed air dehydration

Air Purification Skroll Ltd (APSL) are changing the future of compressed air drying technology with their new range of SRD Heatless Desiccant Air Dryers, a brand-new range of compressed air dryers designed specifically for use in the rail industry, and featuring Skroll® media for unparalleled results.



SRD Heatless Desiccant Air Dryers

Specifically designed to meet the demanding requirements of the rail industry

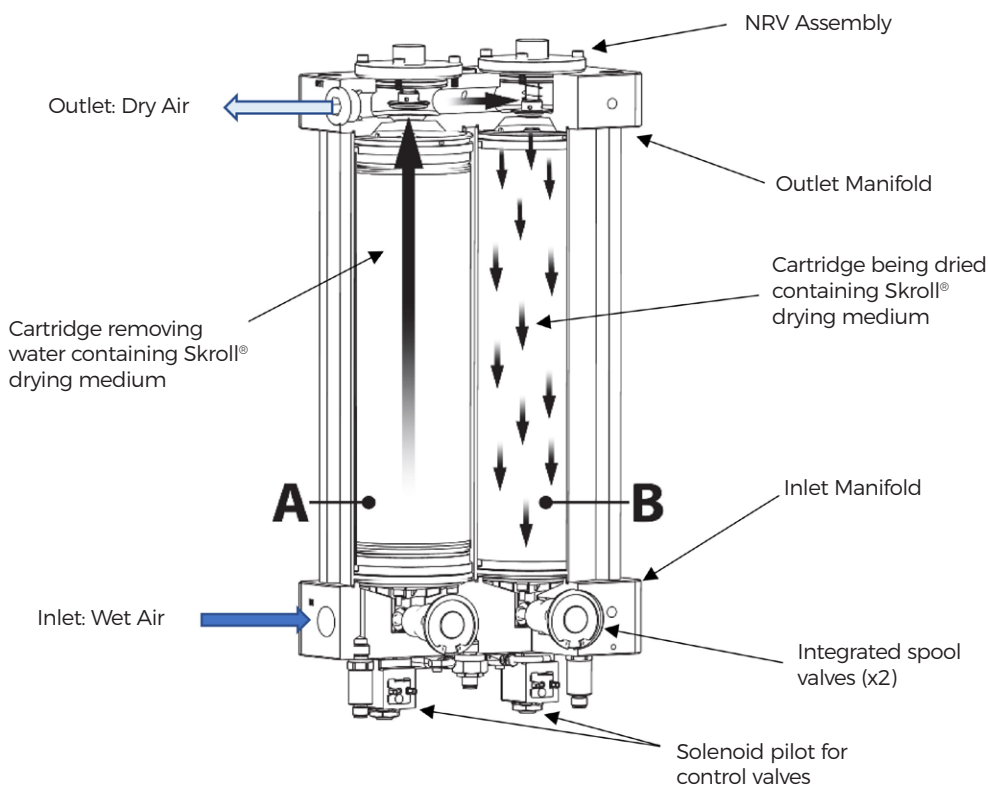
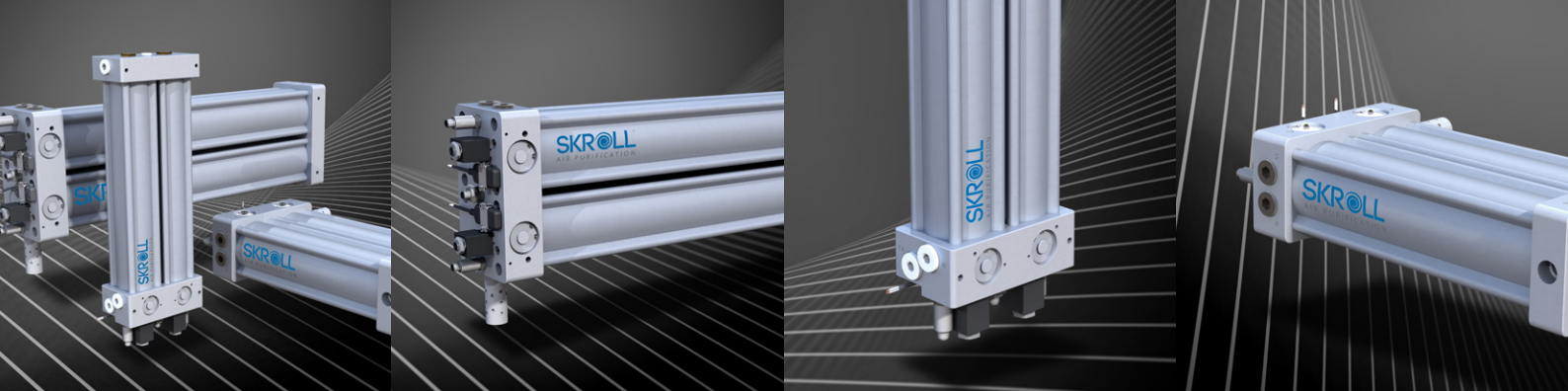
Air Purification Skroll Ltd (APSL) are changing the future of compressed air drying technology with their new range of SRD Heatless Desiccant Air Dryers, a brand-new range of compressed air dryers designed specifically for use in the rail industry, and featuring Skroll® media for unparalleled results.

This exciting new range of dryers are designed to meet the demanding requirements of the rail transport industry, with performance exceeding all other traditional drying technologies. Designed for durable, heavy duty performance, each dryer is capable of providing high adsorption density, variable dew point suppression, energysaving, shock & vibration resistance, corrosion resistance, and minimal maintenance. Skroll® SRD dryers outperform all other technologies, even in the most demanding and arduous conditions.

The SRD Dryer combined with Skroll® media technology is a winning combination unequalled by existing technologies, and the only choice for outstanding performance in demanding mobile applications.

- **Durable, robust construction for heavy duty performance**
- **Designed for the most demanding and arduous conditions**
- **High adsorption density**
- **Variable dew point suppression**
- **Highly efficient - saving energy**
- **Shock, vibration & corrosion tested**
- **Minimal maintenance**





Operating Principle

This SRD dryer uses the pressure swing adsorption (PSA) principle of drying compressed air, utilising two identical columns fitted with replaceable cartridges. Each cartridge contains advanced Skroll® adsorption medium specifically developed for use in compressed air dryers operating in arduous conditions. Compressed air dryers containing Skroll® adsorption medium have been developed with a particular focus on robust design for application in rail transportation where reliable performance and minimum servicing is required. It operates to provide stable Dew Point Suppression (DPS) throughout its operating range of temperatures and pressures of typically $\geq 40^{\circ}\text{C}$.

In operation, compressed air passes through the SRD adsorption cartridge 'A' (see image) where moisture is adsorbed and the air is subsequently dried. Simultaneously, a small amount of this dry air is depressurised and counter-flowed, via the Non-return Valve (NRV) orifice, down through cartridge 'B' (see image below) and exhausted to atmosphere. The result is that cartridge 'B' becomes regenerated to a dry state ready for use once again.

The dryer controller periodically switches the control solenoid valves, reversing the function of each column and therefore ensuring the continuous supply of clean and dry air. The cycle time is typically 1 minute per side, 2 minutes per complete cycle.

Control spool valves are of the Normally Open Type to ensure a continuous supply of air in the event of a temporary interruption to the power supply to the dryer controller. Skroll® drying medium will recover fully from this condition once normal operation is resumed and power restored.

SCP – Single Column Purifier

Designed for small oil-free receiver mounted compressors

The Skroll® Single Column Purifier (SCP) is a new and innovative compressed air purifier suitable for small oil-free receiver mounted compressors producing clean, dry and sterile² air, surpassing other technologies in performance and reliability.

The Skroll® Purifier has 5 stages of air treatment integrated within its small size. It benefits from probably the lowest installed cost with no requirements for a separate controller or external filters and drains. It fully recovers from misuse, such as overflow or accidental condensate flooding, performing in the most demanding environments.

The Skroll® Purifier's compact size makes it easy to install, providing a true 'fit and forget' zero maintenance solution, producing air to users desired ISO8573.1 Quality Classes.

The future of high purity cost effective compressed air... today!

The Skroll® SCP incorporates our unique adsorption media in the first ever high performance filter/dryer exclusively designed to maximise your system performance and minimise the cost. Look at the benefits Skroll® technology offers:

- **Unique Lifetime Guarantee¹**
- **Less than 10% purge**
- **Specifically developed for small receiver mounted compressor manufacturers and system packagers**
- **Unaffected by a wide temperature variations and STOP-START operation**
- **Stable dew-point suppression**
- **Integrated design incorporating bulk water removal, inlet and outlet filtration, drying and drain connection**
- **Simple to install using universal push in fittings**

NOTES: 1. Lifetime guarantee – 10 years or the lifetime of the compressor (No quibble replacement). 2. DOP efficiency 99.99+%.



The future of high purity cost effective compressed air - Today

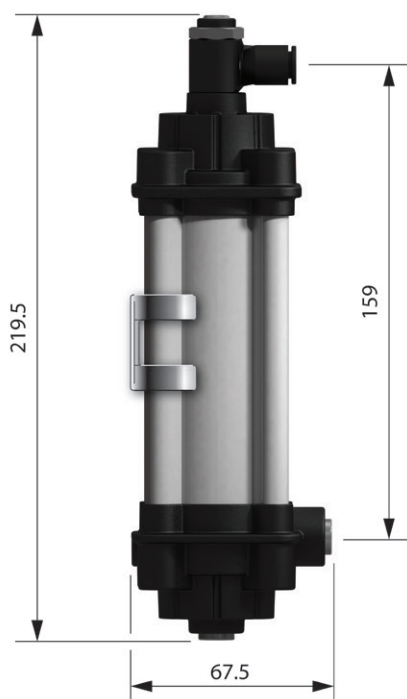
The Skroll Purifier incorporates our unique adsorption media in the first ever high performance filter/dryer exclusively designed to maximise your system performance and minimise the cost. Look at the benefits Skroll® technology offers:

Conventional Systems

- ✗ Unreliable with limited guarantees
- ✗ Affected by high temperatures, stop-start operation and high contamination
- ✗ High cost of ownership
- ✗ Low dew point – energy wasted
- ✗ Generate fine desiccant dust – contaminates the system
- ✗ Requires complex pipework and valves
- ✗ Poor resistance to chemicals
- ✗ High system installation costs
- ✗ Complex and expensive system integration
- ✗ Requires pre and after filtration protection
- ✗ Expensive external filtration required
- ✗ Dated technology

AP SKROLL Benefits

- ✓ Built in reliability with 'Unique Lifetime Guarantee'¹
- ✓ Unaffected by temperature variation³, stop-start operation, shock or vibration, and recovers from misuse
- ✓ 'Lowest' total cost - fit and forget in one compact design
- ✓ Selectable dew point with less purge = higher system output
- ✓ No downstream contamination - Skroll does not generate dust
- ✓ Easy to install with universal push-in fittings
- ✓ High chemical resistance
- ✓ 'Lowest' installed cost
- ✓ Simple and easy system integration with efficient control system that utilises system pressure switch⁴
- ✓ Built in protection with no maintenance requirement
- ✓ Sterile air - bacteria free²
- ✓ New, innovative and patented technology



NOTES: 1. Lifetime guarantee – 10 years or the lifetime of the compressor (No quibble replacement). 2. DOP efficiency 99.99+%. 3. Short term temperature up to 80°C (176°F) 4. Timer Relay complete with cables (optional). 5. Drain/Purge solenoid valve (optional)

RFG Compressed Air Dryer Filters

Compressed Air Dryer Filters for Rail and Mobile Applications

Air Purification Skroll Limited (APSL) filters are new and specifically designed to operate in the arduous conditions that exist in rail and other mobile applications.

Compressed air contains contaminants such as dirt, condensed water and oil. Quality classes for the permitted levels of these contaminants are contained in ISO8573-1. APSL RFG filters remove these contaminants to the specified quality classes necessary to provide protection in compressed air systems.

- Shock and Vibration tested to EN61373:2010 Class 1 Category B
- Corrosion tested to ISO9227:2017 - 1,000 hours
- Cold Temperature tested to EN 60068-2-1:2007 -40°C /°F and Park tested (7 days at -50°C)
- Dry Heat tested to EN 60068-2-2:2007 +85°C / 185°F
- Damp Heat tested to EN60068-2-30:2006 +55°C / 131°F
- Fire and Smoke compliant to EN45545-2:2013
- Serialised - providing traceability of materials of construction and testing, manufactured in an ISO9001:2015 Lloyds Register facility
- The filter body is manufactured from high tensile aluminium bar which is Anodised for maximum corrosion protection both internally and externally
- Ozone resistant



Application

The treatment of compressed air using filtration prior to an air dryer of any type, is critical to its operation. Many of the filters currently available for compressed air treatment in the Rail Industry are adapted from industrial filters that were not designed to meet the specific requirements of Rail.

Non-lubricated compressor systems – The IF filter typically removes 99% of condensed water and dirt particles down to 5 microns by using highly effective centrifugal and scrubbing actions. Operating pressure drop is low and remains low throughout its use since there are no sintered filters to block and cause high pressure losses. Pressure losses are typically <70mbar (1 psi). The IF filter also removes oil along with the condensed water. For a challenge of typically 15 mg/m³, oil removal efficiency is 95% making an ideal pre-filter to grade CF2. The IF filter can also be used alone when the application does not need high oil removal efficiency.

Lubricated compressor systems – In addition to the first stage IF filter, a second stage CF2 filter is required to remove residual oil aerosols to 0.1 mg/m³. Pulsation from piston compressors and stop start conditions put severe stress on the internal coalescing filter element. Commonly, industrial filters will not withstand such conditions and will rupture the delicate filter medium employed. The CF2 filter is designed to withstand these conditions by using a moulded and bonded coalescing medium supported internally and externally by stainless steel support cylinders.

Filter Grades

- **High efficiency Inlet Filter (IF) – for removal of dirt (down to 5 micron), condensed water and oil. ISO8573-1 quality classes 3, 7 and 3 respectively.**
- **High efficiency coalescing filter (CF2) for oil aerosol removal. Designed to operate in high frequency air pulsing and stop start conditions without filter element failure. ISO8573-1 quality classes 1 for dirt and 2 for oil (0.1 mg/m³).**



About Us

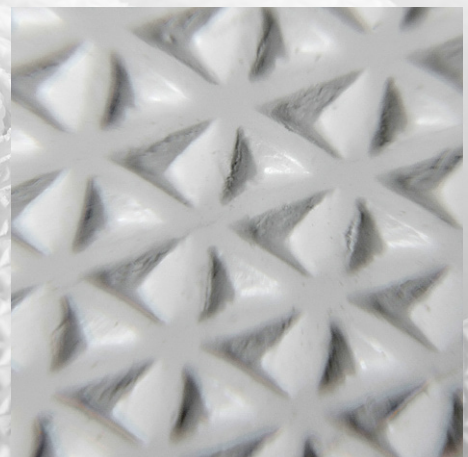
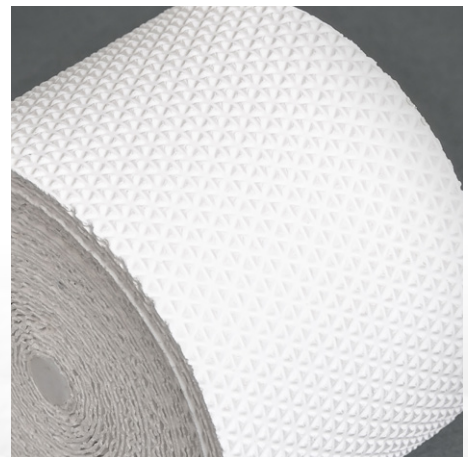
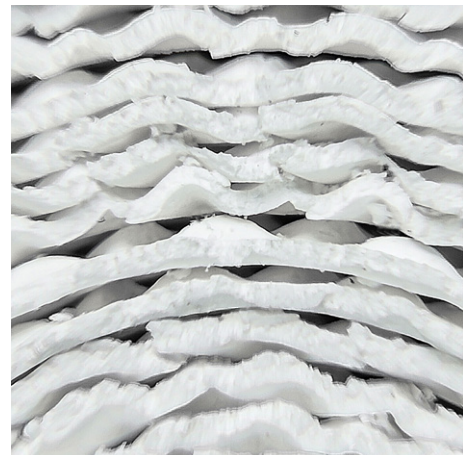
Air Purification Skroll Limited (APSL) is a technology based solution provider with a revolutionary air & gas adsorption technology... Skroll®... the future of air & gas adsorption media.

Our team of industry experts have extensive knowledge of the air and gas purification market, and are focused on providing customers with performance enhancing solutions to OEM, aftermarket and specialised applications. This dedicated approach provides a close working relationship with customers to meet their application requirements and demands.

Colin T. Billiet

A lifetime of experience in filtration technology...

Founded by Colin T. Billiet, APS has the backing of decades of experience in the dehydration of air & gas, providing an adsorption media that surpasses existing media technologies.



For Support & Service Contact:

Tel: +44 (0)191 495 8501
Email: enquiries@apskroll.com
Web: www.apskroll.com



Air Purification Skroll Limited
Dukesway
Team Valley Trading Estate
Gateshead
NE11 0PZ
United Kingdom

