



SOLBERG[®]

Filtration • Separation • Silencing

Oil Mist Eliminators

Replacement Filter Elements

www.solbergmfg.com



*Standard • Configured • Custom
Solutions*

Message from the Founder

Many people ask me what caused me to start Solberg. Having spent most of my career in sales, I was never quite satisfied. I wanted something more. I wanted the power to improve upon the products I sold. During a position selling electric motors, I became familiar with air compressors and blowers. It was then that I discovered the market's need for an improved filter design.

I made my first prototype for an inlet filter with a lower pressure drop and better silencing in 1966 and was pleased by the positive response I received. Thanks to a bit of creativity and a bit of luck, the first tubular filter silencer was born. Since then, the engineers at Solberg have continued to improve on this and many other innovative filter designs.

Today, thousands of customers depend on our filtration and separation products, and our business operations continue to expand worldwide. Our exceptional employees and suppliers go the extra mile in design, manufacturing, quality control and customer service, making Solberg the company it is today.

Get to know us, work with us, and you'll see why so many people rely on us for all their filtration, separation, and silencing needs.

Charlie Solberg Sr.
"The Cheese"
1927 - 2010



Around the world, we engineer, manufacture, and deliver solutions for the equipment that power our lives. From compressors to turbines, vacuum pumps to reciprocating engines, Solberg's filtration, silencing and separation products can be found on the most challenging applications.

For more than 40 years, we have embraced the ideal of industrial growth while advocating environmental responsibility. We are committed to providing products and systems that protect mission critical machinery while safeguarding the surrounding environment. We believe these worldwide commitments help better communities, encourage the achievement of our employees and help our customers to succeed.

Al rededor del Mundo, hacemos ingeniería, manufacturamos, y proveemos soluciones para los equipos de energía alrededor de nuestras vidas. Desde compresores a Turbinas, bombas de vacío, maquinas reciprocantes, filtración Solberg, silenciadores y productos de separación para las más desafiantes aplicaciones.

Por más de 40 años, nos hemos adaptado idealmente al crecimiento de la industria, abogando por la responsabilidad ambiental. Estamos comprometidos para proveer productos y sistemas de protección de las zonas críticas de la maquinaria cuidando nuestro ambiente. Nosotros creemos en el compromiso mundial de mejora para nuestras comunidades, promover el logro de nuestros empleados y ayudar a nuestros clientes a tener éxito.

A travers le monde, nous développons, fabriquons et livrons des solutions pour les équipements qui produisent l'énergie essentielle à notre vie. Des compresseurs aux turbines, des pompes à vide aux moteurs à piston, les produits Solberg de filtration, d'atténuation sonore et de séparation peuvent être retrouvés sur les applications les plus difficiles.

Depuis plus de 40 ans, nous croyons en l'idéal de la croissance industrielle tout en privilégiant la responsabilité environnementale. Nous nous sommes engagés à fournir des systèmes et produits permettant de protéger les machines essentielles à l'industrie tout en préservant l'environnement. Nous croyons que ces engagements à travers le monde aident au mieux les communautés, encouragent l'épanouissement de nos employés et contribuent à la réussite de nos clients.

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About Solberg

Our Beginnings



A chemist by trade and curious by nature, Charlie Solberg, Sr. was convinced that he could invent a better filter silencer than existed in the compressor market - so he did. Shortly after, he established Solberg Manufacturing in 1968 out of his family's one car garage. Driven by his entrepreneurial nature, "Senior" continued to find ways to offer customers innovative products and service alternatives. Over the years, we have grown into a global company and are as passionate about the solutions we provide today as "Senior" was over 40 years ago. Before his passing in 2010, "Senior" helped foster a team of creative, caring, and dedicated professionals. We are committed to carry forward the principles and traditions on which our business was founded and we welcome you to our business family!

Manufacturing Expertise



Manufacturing highly reliable and consistent product is the philosophy that drives our operations. Our process approach and attentive workforce ensure that customers receive the products they need when they need them. Solberg's reputation for delivering high quality products is well known in the industry. We are ISO 9001:2008 certified with a strong customer focus that makes us a flexible and accommodating business partner.

Engineered Solutions



We produce a broad range of "off the shelf" engineered filtration, separation and silencing products which typically ship within 24 hours. However, we offer much more than our standard catalog items. For more challenging projects, our technical sales and engineering teams are ready to develop custom designs to meet the most demanding application requirements. Our field experience, commitment to innovation, and customer focus ensure world-class solutions in today's competitive market place.

Serious about Sustainability



Since our beginnings, we have been mindful of our Corporate Social Responsibility (CSR). From manufacturing processes to vendor and customer relationships, we continually examine our methods to ensure the well-being of our people and reduce our environmental impact.

We integrate comprehensive and transparent social and environmental performance standards throughout all areas of our business to guarantee that CSR remains rooted in our business culture.

We have been very active to elevate our environmental commitment. Rooftop solar arrays have been installed on our building for many years now and we adhere to LEED guidelines. Our sustainability manager is LEED AP certified. We have attained a 99.3 B Corp score as a certified B Corporation and have received multiple awards from them for our environmental efforts. Certified B Corporations have to meet rigorous standards of social and environmental performance.

Every employee contributes to our "P7 Tree", which supports bringing positive, responsible change across People, Planet, Product, Property, Power, Prosperity and Philanthropy.



Solberg's Values

Our business philosophy is simple: Through taking care of others, we take care of ourselves.

Our Mission

We partner with our customers, colleagues, and suppliers to help them innovate and discover new possibilities.

Our Guiding Principles

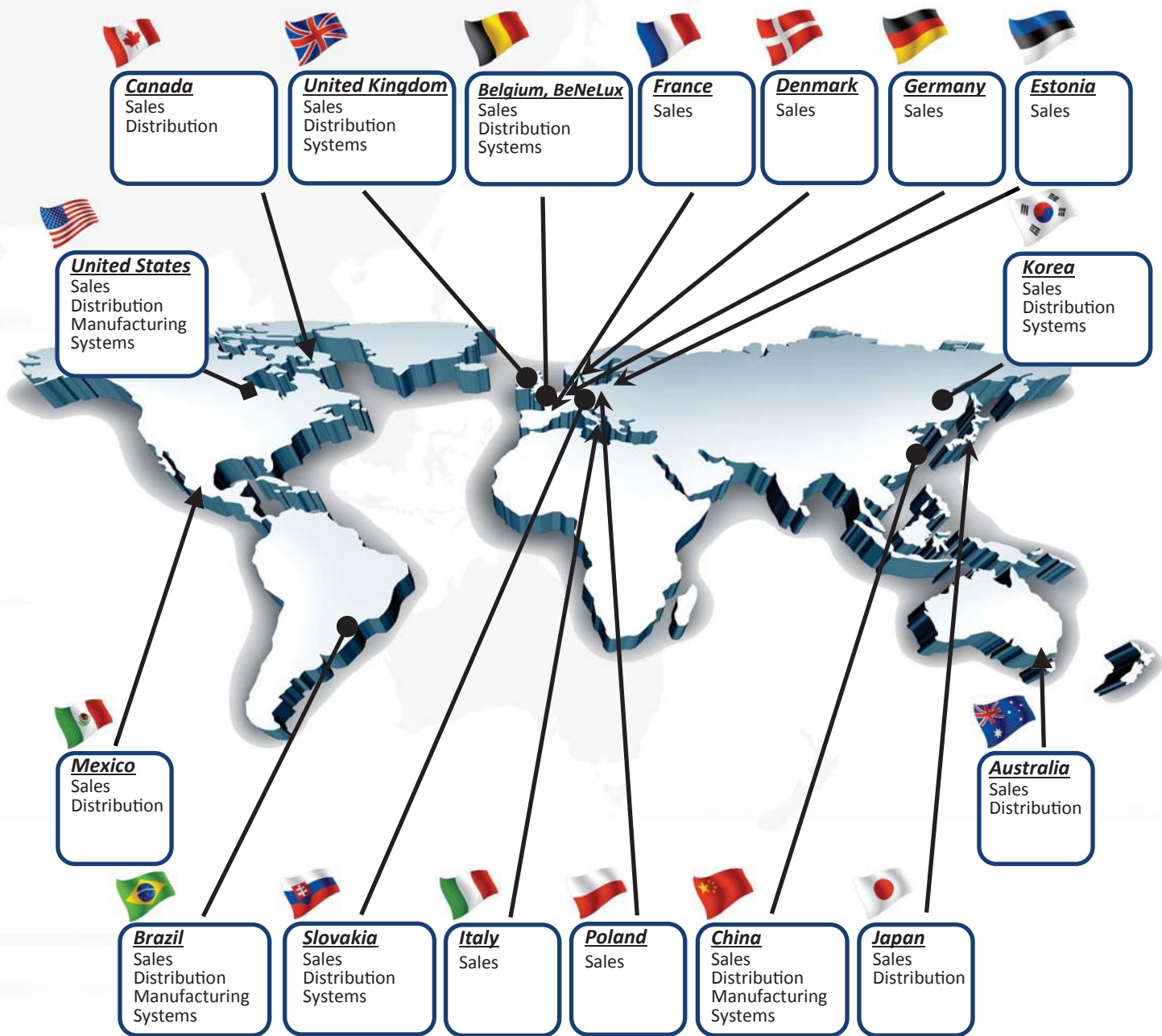
- We Succeed as a Family
- We Do the Right Thing
- We Endeavor to be the Best
- We Take Care of the Customer
- We Play Hard to Win
- We Love our Planet



Solberg Worldwide

Global Partner

Solberg is a global organization specializing in industrial filtration, separation, and silencing. Our desire to partner with customers has led us to expand our global operations. With facilities in North America, South America, Europe, Asia, and Australia and sales to over 50 countries, customers have access to our products and services from practically anywhere in the world. Our culturally respectful business practices, diverse application experience and intercontinental project collaboration help ensure the right solutions are delivered around the world.



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Standard Product Overview

See-Through Inlet Vacuum Filters



Inlet Vacuum Filters



Filter Elements



Filter Silencers/Silencing



Inlet Filtration / Silencing

We offer an extensive line of high quality, "off the shelf" inlet filtration, inlet vacuum filtration, liquid separation and silencing products. We protect a wide range of equipment including compressors, blowers, vacuum pumps, engines, fuel cells, and turbines. Our range of standard filter housings go up to 25000 CFM (42475 m³/hr).

Liquid Separation / Vapor Condensing



Oil Mist Filters



Vacuum Assisted Oil Mist Eliminator



Air/Oil Separation

Our air/oil separation products for vacuum pumps, compressors, gear boxes, and lubrication consoles capture oil mist emissions and protect surrounding environments. The collected oil can be recycled back to the equipment to reduce oil consumption and maintenance costs. Our products are well suited for breather applications and are used on a full range of pump technologies including rotary vane, rotary screw, liquid ring, rotary piston, and scroll.

Configured & Custom Overview



Configured & Custom Solutions

Experience has shown us a growing need for configured filtration products. We embrace the opportunity to develop custom engineered solutions whether it is a small modification to a standard part or a completely customized system. We offer a wide variety of options and features: application specific media, specialty sealing gaskets and o-rings, brackets, gauges, fasteners, flanges, materials of construction, and finishes. In addition, we provide housings that are ASME, PED, and ATEX rated. For the most demanding applications, our technical sales and engineering teams will work with you to design a custom solution suitable for your specific requirements.

Configured Assemblies



Custom Filter Elements



Configured & Custom Overview



Special Requirements (Mist Removal Skid, ASME/PED Vessels, Special Coatings)



Unique Applications (Medical, Chemical Resistant Finish, Reverse Pulse)





ATEX Certified Filters (Electrically Conductive Filters) Your Partner for Explosion Protection

Safety in Filtration

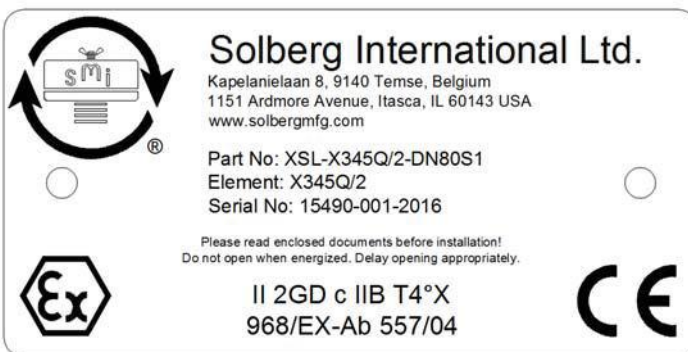
Explosions may occur within applications such as pharmaceutical, chemical, metal, food, plastics, coal and wood working industries. Solberg was one of the first filtration companies qualified to service these industries in compliance with the ATEX directive 94/9/EC (ATEX 95). It is a European Union code that seeks to minimize the possibility of explosions related to equipment used in potentially explosive gaseous or dusty environments.

Solberg is registered by the TUV Rheinland Group under Ref-N 968/Ex-Ab 557/04. Solberg's registration allows the design, manufacture, and marking of inlet filter silencers, inlet filters, inlet vacuum filters, integrated liquid separators/vacuum filters and air/oil separation filters for non-mining applications. ATEX certified products undergo a strict testing regimen and documentation is available upon request.

Most products are suitable for deployment in Group II Category 2 Gas Zones 1,2 and Group II Category 2 Dust Zones 21, 22 requirements and will be marked in accordance with the directive as follows: II 2 GD c IIB T120°C X (Other marking options may be available).



ATEX Marking & Name Plate



Filter Types (Available on select models and sizes.)

- Filter Silencers
- Filter Assemblies
- Inlet Vacuum Filters
- Air/Oil Separators
- Replacement Filter Elements for ATEX Assemblies



Look for the "ATEX Available" logo in the catalog
or contact Solberg at www.solbergmfg.com



ASME Vessels

Solberg manufactures ASME vessels. Solberg has designed ASME vessels for liquid separating, vacuum, oil mist elimination, and natural gas applications and much more. Please contact Solberg for more information or for information about PED vessels.

CRN Vessels

Solberg offers pressure vessels that are rated to the Canadian Registration Number System (CRN). Please contact Solberg for more information. For Canadian based customers, please contact Solberg's official Canadian representative, Cameron Products.



Air Filtration Selection Guidelines

General: For peak output performance from a compressor, blower, vacuum pump, engine, or any other machine that consumes air, one must have clean, unrestricted air. Filters were born out of this basic need. Proper filtration can help stabilize the working environment within a given piece of equipment even when the external conditions may be quite severe. A critical component in creating the right working conditions is the sizing of the filter. With the correct filter size, one's piece of equipment will operate smoothly over a significant period of time.

A major factor in filtration and filter sizing is Air Velocity through a given media. Generally, the slower the velocity of air through a media the higher the filter efficiency and, conversely, the lower the pressure drop. This translates into optimizing an air system's performance, which is a major goal in any system.

#1: Always begin with the filter cartridge requirements when sizing a filter housing. Once the appropriate element has been selected then move on to the housing requirements.

#2: Always ask or specify a filter based on a micron rating with filtration efficiencies. (Stating that one has or needs "a 1-micron filter" alone for example is misleading or confusing as no efficiency rating has actually been specified. A 1-micron filter at 97-% efficiency can be less efficient than a 5-micron filter at 99% efficiency.) For proper air system performance in light and industrial duty environments, a filter with a minimum of 99% filtration efficiency at 5 micron is required.

#3: Size your filter correctly by understanding the impact air velocity through a media has on efficiency and pressure drop. Maintain the suggested Air-to-Media ratios listed at www.solbergmfg.com on the external environment listings and filtration efficiency needs.

Notes:

- Ratios are based on the assumption that one wants to maintain the same pressure drop (or less) as a 5 micron filter element.
- Air to Media ratios are our suggested ratios. Some catalog items, because of customer demand, have resulted in ratios that are higher than our suggested ratios. In those cases, the life expectancies of the elements are reduced.

Example: A reciprocating (piston) air compressor will be installed in a cement pit. The compressor is a 25HP unit with a 1-1/2" inlet connection for air. The inlet airflow is 80 SCFM (136 m³/h). It is feared that very fine cement dust (approximately 1-4 micron) will destroy the compressor very quickly. What filter should be offered?

Answer: Based on #2, an *Industrial Grade* 4-micron polyester or an *Industrial Grade* 1-micron polyester would be two immediate choices. For the 4-micron polyester, an element with 5 to 8 ft² of media should be used while for the 1-micron polyester; an element with 8 to 16 ft² of media should be used.

#4: Pressure Drop is also caused by the dirt holding capacity of the element. As the element fills up with dirt, the pressure drop increases. The ratios that were listed in #2 also take into account the desire to select a filter that minimizes the maintenance required during the lifetime of the machine. It is important to document the pressure drop of a given filter when it is clean and then replace it (or clean it) when the pressure drop increases by 15-20" H₂O from the original reading.

#5: The inlet connection greatly influences the overall pressure drop of the inlet filter system. To minimize the restriction contributed by an inlet filter silencer, a velocity of 6,000 ft/min or less is suggested through the outlet pipe. See www.solbergmfg.com for suggested flows.

Vacuum Pump Discharge Filters Selection Guidelines

General: Developments in product design allow for the possible selection of Vacuum Discharge Filters based on the type of equipment being used. It is possible to identify the appropriate grade of aerosol discharge filter because of the extensive research completed by the Solberg R&D Department. Please follow the below rules to correctly size your oil mist discharge filter. If further consultation is required, please contact Solberg.

#1: Discharge filter systems, designed for compressed air systems, repeatedly fail in a vacuum pump application. The first consideration for a properly sized vacuum pump filter is to determine the type of vacuum pump being used. The particle size distribution and mass of oil aerosol discharging from a vacuum pump is as varied as the number of separator tank designs utilized by the industry. The main pump types are Rotary Vane, Rotary Screw, Rotary Piston, Liquid Ring, and Reciprocating Vacuum Pumps. Each type of pump produces its own specific oil discharge characteristics and requires the appropriate media make-up to effectively capture and drain oil aerosols.

#2: Determine the type of oil being used in the vacuum pump. Trade names, viscosity/grade of oil, and the lubricant base (mineral, synthetic, etc.) are all useful in determining the discharge aerosol characteristics.

#3: Determine how much oil the pump consumes under normal operating conditions. Typical consumption rates are gallons or liters per hour. The amount of oil consumed is typically the amount of oil being discharged.

#4: Pump operating cycles including vacuum range, temperature fluctuations, contaminant gases or vapors, and hours of operation per day/week. Also, determine the maximum pressure drop or filter restriction the system will allow.

#5: Determine the operating temperature at the discharge connection. If it is above +180° F (+80° C), methods of cooling the aerosol should be considered.

#6: Note the horsepower of the pump, the outlet connection, and the airflow.

#7: When an external unit is to be used as the primary or sole discharge filter in a system, contact Solberg to review the application.

#8: In the case where an existing air/oil separator (internal or external) is already used, it is important to specify the desired goal for a second filter. Is it planned to have a multi-staged system for severe or extreme duty applications, or is there a requirement for exceptionally clean discharge air? If a multiple stage system is needed, try to identify the primary stage unit and the purpose for the second stage.

#9: Consider where to install the filter. Where possible it is best to install in moderate temperature +35° to +100° F (+2° to +37°C) environments and avoid freezing conditions to ensure the oil drains freely without causing undue backpressure to the vacuum pump.

Once as much information as possible is obtained, send the data to Solberg for our review and/or review our data sheets in the "Product" section of our website, www.solbergmfg.com.

Notes

