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German Lab Relies upon **WATER-INJECTED OIL-FREE AIR COMPRESSOR**

By Martina Bopp

Rotary screw air compressor that makes its own lubricant from the surrounding air delivers oil-free compressed air to an environmental laboratory in Stuttgart, Germany

► Introduction

Many sensitive sectors of industry require oil-free compressed air. However, meeting this demand is often not as simple as it sounds. One way is to use oil-injected air compressors with downstream air treatment to meet the demand. A second option is oil-

free air compressors, which operate without lubricants. Both versions have their own advantages as well as risks. Another alternative is to use rotary screw air compressors that use water as a lubricant. In an environmental laboratory in Stuttgart, Germany, this has been proven to be a clean and sustainable solution.



“The special feature here, is that the air compressor collects the lubricating water directly and exclusively from the ambient air.”

— Martina Bopp

At a major construction site 'Stuttgart 21', 30 trucks full of earth are waiting for the results of a representative soil sample. At another location, a mineral water factory, a batch of sparkling water cannot be delivered because of suspicions that the water is contaminated. In both cases, fast and reliable laboratory results are required. This is the bread and butter of SUI Synlab Umweltinstitut GmbH in Stuttgart. "We are one of the largest service providers in Germany for the analysis of soil, water, air and food," explains the Technical Director of the environmental laboratory, Michael Tokarsky. And the samples come not only from Germany, but also from France, the Netherlands, the Czech Republic, Hungary, Bulgaria and now also the United Arab Emirates.

Nitrogen Generation Requires Oil-free Compressed Air




Where does the compressed air come in? The laboratory uses spectrometers for the analysis of the environmental samples. These require nitrogen to operate, which is filtered out of compressed air using the membrane method by nitrogen generators at Synlab. The problem here is that even the slightest amount of oil could cause severe damage to the generator. This is why the environmental laboratory needs absolutely oil-free compressed air – and in enormous quantities: it takes 1000 liters of compressed air to produce 100 liters of nitrogen.

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are innovative in both operation and design, providing 100% oil-free air from 5-150 hp. The design provides cool clean air, is a self-contained system and requires zero make-up water. The compressor will be offered as a package that includes a Sullivan-Palatek Refrigerated Dryer.

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GERMAN LAB RELIES UPON WATER-INJECTED OIL-FREE AIR COMPRESSOR

“We used to do this with dry rotors,” reports Michael Tokarsky. With dry-running, i.e. unlubricated air compressors, the high operating temperatures impose high loads on the material. “There were equipment failures,” continues the Technical Director.

“Every morning I was expecting the call saying we have no compressed air. That means we have no nitrogen and cannot do our work. So I looked around for an alternative.” Oil-injected air compressors cover a wide performance range. The fact

that the oil is subsequently separated using filters or catalytic converters means there is a certain residual oil content, and the risk that something could go wrong and oil could get into the system anyway.

An Environmentally Sound Solution

“Water-injected air compressors seemed to me to be a practical solution,” says Tokarsky. “However, there are not many suppliers in the market, most of them cover a higher performance range than we require and do not offer output-controlled machines. Then I discovered the company Aqua Air during my internet research.”

The company was founded in 2011, and supplies oil-free screw compressors, either as an OEM kit or as an operationally ready system from 4 to 22 kW and 75 to 110 kW. The basis for this is the special Aqua Air technology, the focus of which is on rotors manufactured from polymer materials. The compressors use water for lubrication, sealing and cooling, and thus operate entirely without oil. Not even the slide bearings have so much as a drop of grease. The special feature here, is that the air compressor collects the water directly and exclusively from the ambient air.

Aqua Air technology is a self-contained design generating the necessary coolant directly and exclusively from ambient air – by using the water from the atmosphere. In this manner, the air



Sullivan-Palatek recently announced its incredible opportunity to be the sole distributor and representative for German air compressor manufacturer, AquaAir, in the United States. Aqua Air water-injected rotary

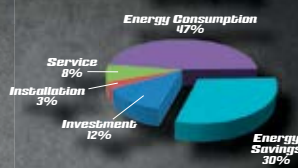
screw air compressors are innovative in both operation and design, providing 100% oil-free air from 5-150 hp. Though somewhat new to the market, Aqua Air has proven success in a very competitive oil-free market. A case study provided from Germany, breaks down just one of many of the successful product installations.

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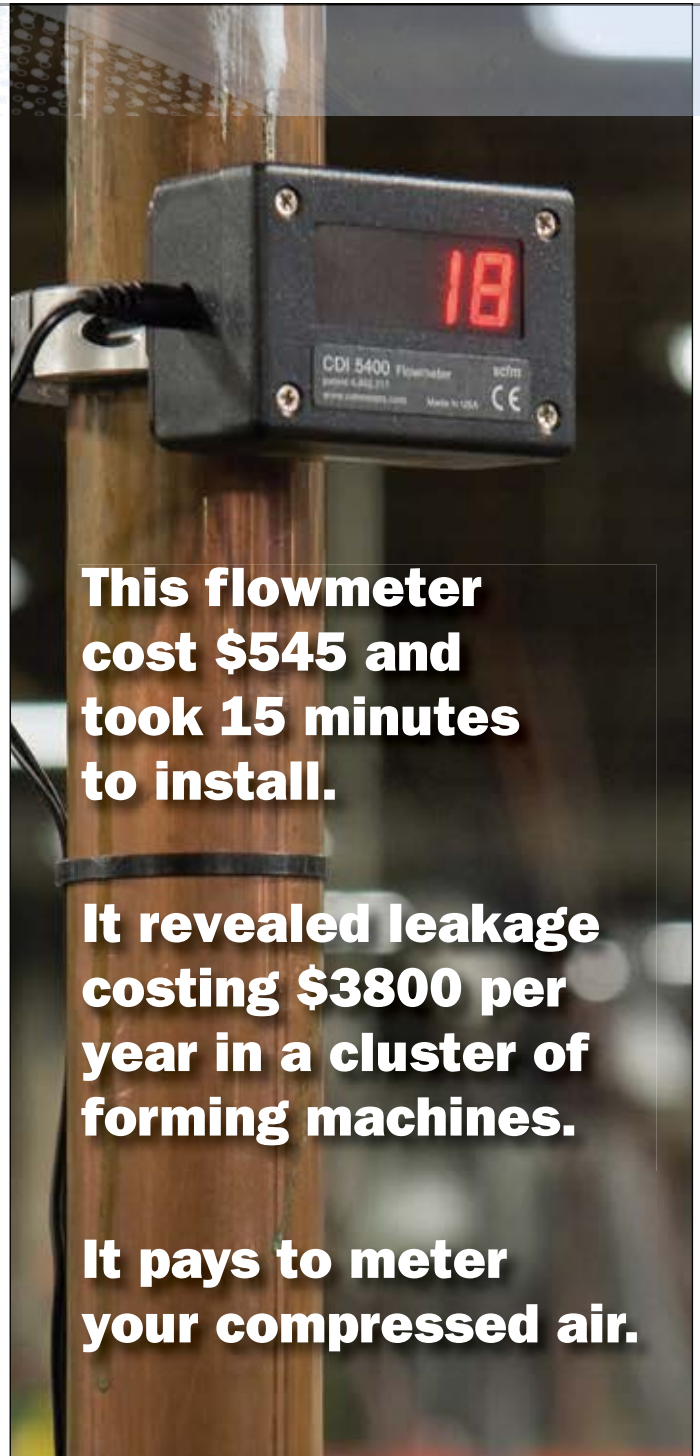
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compressor produces no waste oil. Maintenance costs are also reduced as purchasing, filtering, and disposing of oil-based lubricants is not necessary. The key system components are water-free floating bearings, a condensate separator system with no mechanical components, a leak-free water filtration system, the self-healing proprietary polymer material air end, and inlet air control valve with a three-stage heavy duty inlet filter.

This was precisely what Michael Tokarsky was looking for. Nevertheless, at first he had some reservations. "As Technical Director, I have a responsibility to secure reliable partners, whose manufacturing facility is not in some backyard garage. Innovative



The Sullivan-Palatek Aqua Air unit is being introduced with 5-15 hp models at pressure between 72-145 psi (5-10 bar).



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GERMAN LAB RELIES UPON WATER-INJECTED OIL-FREE AIR COMPRESSOR

is well and good, but if one machine works and another does not, that is a problem. So I drove out to visit Aqua Air in Augsburg, to get an idea of the company for myself.” And what Tokarsky saw there convinced him. “For one thing, there was a very tidy production hall, and on the other I met the director, co-developer, and head of the company Marco Lodni, who is deeply involved in the subject matter. He is really passionately involved, and knows exactly what he can expect his machine to do.”

Trial Run

Because they had no reference customers yet in Germany from the field of environmental analysis, we decided together to perform a trial run at the environmental laboratory of Synlab in Stuttgart. Compressor type LTWA 11-8 was selected. It has a 11 kW drive motor and delivers 8 bar pressure at a volume flow rate of 1.71 m³/h. When it was delivered in the middle of October, a further advantage of the machine became apparent: its design is compact, about half the size of comparable devices. “This paid off with our poor infrastructure, because there is no lift down to the basement. Three of us were able to carry the system down easily,” reports Michael Tokarsky. A further positive aspect is that the compressor does not need

a water connection in the way water-lubricated compressors from other manufacturers do.

“I’m not really a fan of maintenance contracts,” says Michael Tokarsky. “I want to understand the machine myself before I have to call someone and say, ‘Please come!’ But the point is simple, we need operational reliability.” For this reason, the maintenance was part of the inquiry from the start, and it is also covered. “We arrange this through contracted partners based locally,” explains Reinhard Wundsam, Sales and Marketing Manager of Aqua Air, continuing, “They handle the sale of machinery on the one hand, and the services and maintenance on the other.”

Overall Michael Tokarsky was more than satisfied with the trial run. “I was very sceptical when I went into this. I would have had no problem saying, ‘No, that won’t work’. But seeing the product at work simply convinced me. The machine has now been running for almost six months in what is essentially the toughest environment.” It has been operating without stopping, 24 hours a day, 7 days a week. “And the system produces just barely more air than we can use,” explains Tokarsky.

Conclusion

So the system is continuously switching back and forth between standby and operating mode. Switching the compressor on and off would generate a higher load current and apply greater loads to the motor and V-belt.

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"In principle, we're torturing the machine," says the Technical Director of the laboratory. "This is not economical or resource-friendly, which is why we want to control this in future using a frequency converter."

The environmental laboratory will soon be relocating to new and larger premises. There

they will have two Aqua Air compressors, as a redundant system with a corresponding control system. "We have between six and eight production sites where compressed air is used. Thanks to our good experience, a colleague in the field of human diagnostics has already expressed interest in the Aqua Air compressors." **BP**

For more information regarding Aqua Air products, please contact a Sullivan-Palatek dealer or contact Sullivan-Palatek directly at email: info@palatek.com, tel: 219-874-2497 or visit www.sullivan-palatek.com

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"We have between six and eight production sites where compressed air is used. Thanks to our good experience, a colleague in the field of human diagnostics has already expressed interest in the Aqua Air compressors."

— Michael Tokarsky

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SHOW REPORT: Compressed Air Technology at the AICD CONFERENCE & EXHIBITION 2016

By Roderick Smith, Compressed
Air Best Practices® Magazine



Brandon Dial, Keith Sportsman, Frank Brookshire, Curt Greifer and Kent Tolman (Maddox Air Compressor) at the ELGi Compressors booth.



Biren Bhalla, Garth Greenough, Bogdan Markiel, Ken House and Kevin Ray at the DV Systems booth.

► The 2016 AICD Conference & Exhibition was held May 15-17, at the Hyatt Regency in downtown Chicago, Illinois. The Association of Independent Compressor Distributors once again produced a first-class event recording new highs for both member attendees and exhibitors. There were roughly 76 exhibitors, so although I tried to be diligent, I must apologize in advance to the many booths/ companies I was not able to spend time with.

Sullivan-Palatek exhibited a most interesting new technology at the AICD - the new 5-15 hp Aqua Air water-injected, 100% oil-free rotary screw air compressors. This innovative design requires no make-up water as it generates the necessary coolant directly from ambient air. There are several innovations, in the operational design of the unit, including the floating bearings for the airend and the self-healing proprietary polymer materials used on the rotor profiles. President Steve Van Loan said the Aqua Air has received a tremendous amount of interest from their distribution network. I have been watching Sullivan-Palatek over the years and am impressed by their steady and consistent growth march into larger facilities, new product line technologies, and their active involvement in CAGI decision-making.

Their sales strategy is truly distributor-focused and their growth is tied to the growth of their sales channel partners – like Quality Compressed Air Services, which has grown from two employees into a company with four branches in Mississippi and Louisiana.

VP Instruments continues to pioneer compressed air flow metering installation, with unique products like the VP FlowScopeM patented replacement sensor cartridges. They also focus on installation training with Menno Verbek and Pascal van Putten tackling issues like bi-directional flow and moisture in the compressed air systems head-on. They also presented VP Vision, their web-based energy management system for end users wanting to manage the mass flow, temperature and pressure data coming from the VP FlowScope.

ELGi Compressors announced the addition of Brandon Dial to their U.S. sales team. Keith Sportsman announced ELGi's excitement at the growth in their U.S. sales over the past three years. They credited their growth to the continued development and cooperation of air compressor distributors across the U.S. - as well as to ELGi's commitment to inventory, quality designs and the industry's first-ever lifetime warranty on air ends-called UPTIME Assurance[™]. Their move to a larger facility in Charlotte is now complete and they said it is permitting them to further expand their product offerings. More news on that is coming.



“The Association of Independent Compressor Distributors once again produced a first-class event recording new highs for both member attendees and exhibitors.”

— Roderick Smith, Compressed Air Best Practices[®] Magazine



Dave Raffin, Brian Stober and Bruce McFee at the Sullivan-Palatek booth.



Marka Peterson, AICD President Phil Kruger (Harris Equipment) and Laura Gunn at the Trace Analytics booth.



Pascal van Putten, Jervey Inglesby (A-10 Compressed Air Services), and Menno Verbek, at the VP Instruments booth.

SHOW REPORT: COMPRESSED AIR TECHNOLOGY AT THE 2016 AICD CONFERENCE



Eugene White and Quentin Jackson (McGee Company) at the JORC Industrial booth.



Don Salamon, Joe Fresch and Jean-Christophe Lecocq at the Chicago Pneumatic booth.



Chad Timmer and Mike Holtvluwer at the Clean Resources booth.

DV Systems announced the hiring of Kevin Ray as their U.S. Sales Manager based out of their Charlotte stocking warehouse. Bogdan Markiel said they were very pleased with the market acceptance of their range of 10 – 200 horsepower lubricated, single-stage, variable speed drive, rotary screw air compressors. They also announced their new line of DF Series compressed air filters.

JORC Industrial continues to steam along as the specialist in condensate management with an exclusive focus on condensate drains and oil-water separators. Eugene White reemphasized their commitment to service and same-day deliveries.

Announcing a new hire was oil/water separator manufacturer Clean Resources. Mike Holtvluwer communicated the appointment of Chad Timmer, as the new VP of Sales.

Nano Purification continues its march towards greater market share and business expansion-even outside the U.S.. Nick Herrig and David Peters said they'd hired a new Regional Manager for the U.K. and described their newly acquired manufacturing operation in Newcastle, U.K. I find their application engineering work with nitrogen generation in the food industry very interesting. Energy-savings are attainable when those nitrogen specs are challenged and tested.

Trace Analytics has established itself, in my view, as an excellent technical resource for those wanting to test and verify compressed air quality. Compressed air quality specifications can also carry an energy cost. Ruby Ochoa is an authority for those wanting to firmly understand ISO 8573.1-2010 Quality Classes and Testing Procedures per ISO 8573.3. I was pleased to hear Marketing Director Laura Gunn say the compressed air industry has really responded to their service of on-site or lab-based testing of compressed air quality. They help companies learn how to establish a firm testing protocol able to comply with the requirements of an auditor from a total quality management system such as SQF (Safe Quality Foods) Certification.

Speaking of SQF, the gentleman who first introduced me to SQF is current AICD President Phil Kruger, the General Manager

& EXHIBITION

of Harris Equipment. Phil gave an excellent training session on SQF during one of the break-out sessions. He couldn't stop smiling, by the way, over the record number of AICD Member attendees and exhibitors.

"We are excited about AICD and the opportunities we have before us. We see ourselves as an association that can bring manufacturers and distributors together for mutual benefit. Over the years AICD has been known for the great shows that we put on, but we are more than a show. We are an association and we exist to provide a service and/or a value-add for every member business and exhibitor alike. With a dynamic leadership team and the technology available to us, we will strive to bring information, products and networking opportunities to our members, providing a means for every member to become a stronger business. I, personally, am very excited to be part of AICD as it achieves its full potential."

- Phil Kruger, AICD President

The conference side of AICD is growing. The break-out sessions included Phil Kruger's session on SQF, Fares Kabbani from Air Energy presented, "Valuing a Compressor Distributorship" and a round-table session with managers from several air compressor distributors spoke about "Hiring and Retaining Service Techs." Bob Langdon was the Keynote Speaker and also conducted a break-out session. His speech was titled, "Hello to Sold." I found



"We see ourselves as an association that can bring manufacturers and distributors together for mutual benefit. I personally am very excited to be part of AICD as it achieves its full potential."

— Phil Kruger, AICD President



Joe Fecko, Adrian Fernandez, Russ Jones, and Rob Merrion and Michael Merrion (Remco Equipment Company) at the Beko Technologies booth.



Jim McFadden, Todd Allison, Jane Sexton, Matt McQuillin and Dave Peters at the nano purification booth.



Ted Schultz and Kurt Peter at the Compresyn booth.

SHOW REPORT: COMPRESSED AIR TECHNOLOGY AT THE 2016 AICD CONFERENCE



Anil Peddi, Leslie Kern, Jim Hughes and Rick LaFollette (Air & Hydraulic Equipment) at the SKF booth.



David Brockett, AICD Board Member Lisa Lewis (Michigan Air Solutions) and Don Devries at the ISEL Lubricants booth.



Michael Wlodarski and Mary Wlodarski at the Hydrothrift booth.

many valuable pieces of information which a manager can take back to improve business profitability and the effectiveness of the sales force. One piece of advice Mr. Langdon gave really made an impression on me, “Whoever asks the questions, controls the direction of the conversation.”

Beko Technologies’ current focus on a complete suite of advanced instrumentation technologies reminds me of twenty years ago when everybody said electronic demand-drains were too expensive-and now they are standard components in most systems. Beko’s Atlanta-based U.S. business, under the leadership of Tilo Fruth, is now manufacturing significant volumes of OEM-business membrane dryers as well as heated and heatless desiccant compressed air dryers. More on this another day, but they are excited about the introduction of a new line of “hyperintelligent” heated desiccant dryers.

Hitachi continues their push with oil-free rotary screw and oil-less scroll air compressors. Camilo Villalobos explained the DSP Series has models ranging from 30-300 hp featuring VSD control and innovative stainless steel 1st and 2nd stage rotors with a patented HX-18 coating. The SDS Series provides larger rotary screw models from 335 to 900 hp. The oil-less scroll SRL Series complements these product lines with stand-alone models from 2 to 7.5 hp and multiplex units from 10 to 40 hp.

Schulz Compressors, out of Acworth, Georgia, has hired industry veteran Terry Emery as their Sales Manager. Export Manager and



“Whoever asks the questions, controls the direction of the conversation.”

— Bob Langdon, Keynote Speaker


& EXHIBITION

true globe-trotter, Fabio Rosa, told me their U.S. business has seen significant growth over the past two years. With \$2 million+ invested in inventory, they are proud of their fast deliveries for tank-mounted 5-20 hp reciprocating air compressors and their 15-100 hp VSD rotary screw air compressors (soon going up to 200 hp).

Chicago Pneumatic Compressors had a nice combined booth with their Pneumatech product offering. Of course, it was nice to trade war stories with Joe Fresch again. Chicago Pneumatic President, Jean-Christophe Lecocq introduced me to their new 10-20 horsepower variable speed, direct-drive rotary screw air compressor. They also provide the option to have it tank-mounted with an integrated refrigerated dryer.

Solberg has a wonderful company culture and it's easy to see why when you meet Charlie and Tor Solberg. They continue their strong presence with intake filters and silencers for compressors and blowers, inlet filters for vacuum pumps and air/oil separators for air compressors and vacuum pumps.

SKE, led by Leslie Kern, introduced the new Smart Valve technology on their SFD Separator-Filter-Dryer. This point-of-use heatless desiccant dryer is interesting as it can use as little as 8% purge air while delivering a – 40°F pressure dewpoint. The Smart Valve provides “synchronous compressor control matching dryer to compressor run times and permitting smart cycle selection.”

I hope this provides a small glimpse of the event. To really understand it, one must attend! The AICD will hold the 2017 Annual Conference and Exposition, May 21-23 in Reno, Nevada. What a great site selection! For more information, please contact Kasey Gould from the AICD at email: aicd2015@gmail.com or visit www.aicd.org 

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Nitin Shanbhag (Boge America), Janiece and Peter Humble (Enerquip), Jason and Carin Hedeon (C-Aire), Jamie Webb (Central Air Equipment) and Jerry Elsen (Boge America) at the Boge America booth.



Gabe Kami, Zach Balcunas, Mike DeLisi, Travis Dingee, Joe Thode and Darren Leonard at the Solberg booth.



Fabio Rosa, Mark Nelson, Terry Emery and Janelle King (HydraFlow West) at the Schulz Compressors booth.



RESOURCES FOR ENERGY ENGINEERS

TECHNOLOGY PICKS

New Sullivan-Palatek 100% Oil-Free Water-Injected Aqua Air Compressor

Sullivan-Palatek, Inc., a leader in innovation and design, is excited to announce the recent opportunity to be the sole distributor for German compressor manufacturer, Aqua Air, in the United States. Aqua Air water injected rotary screw compressors are innovative in both operation and design, providing 100% oil-free air from 5-15 hp. The design provides cool clean air, is a self-contained system and requires zero make-up water. The compressor will be offered as a package that includes a Sullivan-Palatek Refrigerated Dryer.

A necessary solution for dozens of industries, 100% oil-free production of compressed air is now safe and sustainable. The self-contained compressor generates the necessary coolant directly from

ambient air, using the most natural and environmentally-friendly fluid available: pure water! Using only water from the atmosphere, Aqua Air produces no waste oil, and maintains outstanding performance throughout its entire lifecycle. This makes production economically feasible, since no costs are incurred for procuring, filtering and disposing of oil-based lubricants.

Internally, Aqua Air uses a maintenance and wear-free floating bearing design created with the highest grade tolerances which are the foundation for a long life and reliable screw compressor air end. The rotor profiles are a unique composition of a self-healing proprietary polymer material enhancing efficiency and long-term performance. Durable and reliable, the separation and return of condensate into the circulation system takes place without any mechanical components. A performance-engineered inlet air control valve and a three-stage, heavy-duty inlet filter with remote inlet connection are standard supply. This design improves air control and system performance with minimal pressure drop. The integrated injection manifold and water filter manifold are directly bolted to each other. By using o-rings, the seal between the essential components is leak free. The water filter has separate filter elements for operation and bearing injection.

Headquartered in Michigan City, Indiana, Sullivan-Palatek leads the industry for design and manufacturing of air compressors. In business since, 1984, Sullivan-Palatek was awarded the prestigious Pillar of the Industry award from the Association of Equipment Manufacturers for achieving Gold status for supporting the I Make America Campaign in 2012, 2013, and 2014.

About Sullivan-Palatek

Sullivan-Palatek produces all portable and industrial compressors as well as air ends in Michigan City, Indiana. Sullivan-Palatek represents both electric and portable air compressors and offers a complete line of accessory items such as air dryers, filters, and remediation clean up systems. info@sullivan-palatek.com www.sullivan-palatek.com



The Aqua Air water-injected rotary screw air compressor