Fluke leak detection tools

Guide to acoustic leak detection technology

Contents:

Introduction

Leaks in compressed gas systems, such as pneumatics, have long been the cause of wasted energy and increased costs. Although large leaks can be detected easily, smaller leaks are much harder to find, and have traditionally been identified using fluids. This approach is time-consuming, ineffective and archaic. Today there are better ways to ensure you maximise your profits by finding these costly leaks.

Modern devices use a technique of sonic imaging (or acoustic imaging) that overlays the location of leaks on top of a live image of the equipment. The tools detect the sound made by the escaping air (including frequencies inaudible to humans), using an array of microphones to locate the source of the noise, and therefore the location of the leak.

The use of this game changing technology enables leaks to be found and repaired in far less time in any environment, even noisy factories. It also enables more leaks to be found, even identifying leaks where operators were unaware that there was a problem. With a lower cost to find and repair leaks, and the potential to fix more leaks, these tools save money, increase system reliability, and reduce downtime. This eBook explains how you can use sonic imaging to increase the profitability of your facility.

ARTICLE

How the Digitization of Leak Detection (Finally) Caught Up with High-Tech Manufacturing

Alexander Bardakov, Field Applications Engineer for the Industrial Imaging group at Fluke Corporation

The archaic soapy water method of finding and verifying compressed air line leaks is inefficient and inadequate for the size and scope of compressed air lines in a manufacturing facility.

Compressed air lines are at the epicenter of success or failure for many factories. When compressed air lines are maximally intact, the equipment they run also function as expected. But when compressed air lines are compromised, the results can be detrimental.

In a large factory, a compressor system can stretch hundreds of feet and sweep in and out through various other operational systems. Issues in a compressed air system can occur anywhere along those lines—including the compressor, air dryer, main line or equipment lines. Leaks are the primary cause of reduced performance in compressor systems. Leaks reduce air flowing through a line, providing an inadequate amount of air pressure to properly run equipment. So, the solution is easy—find and fix the leaks. But how?

Finding compressed air line leaks is easy—if you can hear them. Most people can't hear compressed air leaks in a completely quiet environment, let alone in a loud manufacturing plant. And even if you think you hear a leak, you must verify it, which means you need to be able to access it. Again, this isn't always easy in a busy factory environment where equipment is moving, and compressed air lines are potentially hanging from more than 50 feet up.

The archaic soapy water method of finding and verifying compressed air line leaks is inefficient and inadequate for the size and scope of compressed air lines in a manufacturing facility. An improvement on the soap and water method was ultrasonic leak inspection. While this analog method of leak detection was better, and until recently the best option available, it still had its drawbacks.

Ultrasonic tools use microphones to identify the sounds associated with escaping air/gas in a range of about 38 to 42 kHz. The method lacks breadth of frequency to truly be effective in large facilities. In addition, these devices still rely on human hearing to identify whether a noise is a leak or not. That makes the detection subjective, depending much on the user's experience and often resulting in identifying leaks that don't exist or missing leaks that are present.

Compressed air leak detection has made the leap from bubbles to ultrasonic to digital screen. Just as much as digitization has impacted the way we increase revenue through the manufacturing process, it has also impacted the way we decrease spending by reducing waste.

A more holistic approach to troubleshooting compressor systems involves scanning—using a tool that sees sound. The ability to scan the system from the ground floor is efficient AND effective in any size of plant. Efficient because you no longer need to troubleshoot individual components of the system during downtime and effective because the sensitivity of the sensors can detect leaks of any size in even hard-to-reach places.

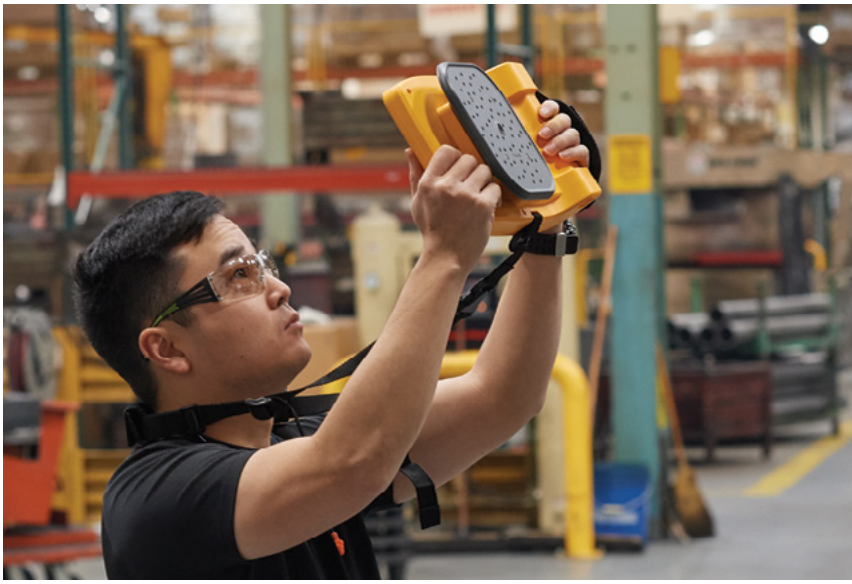
How (Well) It Works

Using a sonic industrial imager equipped with an array of ultra-sensitive microphones with a range of 2 to 52 kHz for an expanded field of view, maintenance teams can quickly and accurately locate air, gas and vacuum leaks in compressed air systems—even in the noisiest of environments. So simple to use, George Washington himself could learn in less than five minutes.

- Visualize the system through the large 7" LCD touchscreen
- Follow the path of the system, scanning for leaks
- Isolate the sound frequency of the leak to filter out loud background noise
- Repair the leak
- Confirm the repair using the sonic industrial imager

In one day, you can scan your entire system to identify all the leaks in it. But then what? You might not have the resources on hand to repair all those leaks. Luckily, the sonic industrial imager includes powerful software that not only helps you identify where those leaks are within the system, but also allow for on-screen annotation, leak quantification (how big is that leak?), and smooth report development.

- Asset tagging lets others know where the leak was found
- On-screen annotation provides additional context and considerations for others
- Leak quantification identifies the size of the leak to help you prioritize which leaks deserve attention first



Reports can include the image of the leak, asset tags, annotation, leak size and more—such as how much that leak will cost you if you don't fix it—all wrapped into a professional report to share with others, such as repair teams.

The digitization of factories has been historically linked to the manufacturing process where the ability to define exact design and material specifications has led to superior production in record time. Today, factories implement digital equipment and processes to monitor and manage manufacturing equipment and reduce waste. The goal for these factories is to increase revenue and decrease spending. The sonic industrial imager just made that goal a lot more attainable.

APPLICATION NOTE

Hidden profits found in quick detection of compressed air, gas and vacuum leaks

New 'game-changing' technology can help avert downtime

For industrial plants and facilities, compressed air, gas and vacuum systems are a vital source of converted energy. Easier than other resources such as electricity, compressors are everywhere in today's factories. They run machines, tools, robotics, lasers, product handling systems, and much more.

Yet many compressed air, gas and vacuum systems are compromised by wear and poor maintenance practices, which contribute to the greatest waste of all—the ever-present leaks. These leaks can be hidden behind machines, at connection points, overhead in fixed pipes, or in cracked pipes or worn hoses. The waste adds up quickly and can even lead to downtime.

The high cost of wasted air

According to the U.S. Department of Energy, a single 1/8" (3mm) leak in a compressed air line can cost upwards of $2,500 a year. The U.S. Department of Energy estimates an average U.S. plant that has not been well maintained, can waste 20 % of its total compressed air production capacity through leaks. The New Zealand government, as part of its Target Sustainability project, estimates that system leaks can account for 30 % to 50 % of a compressed air system's capacity. The energy costs associated with air leaks are a single factor in the overall cost. Air leaks can also lead to capital expenses, rework, downtime or quality issues and increased maintenance costs

To make up the pressure loss due to leaks, operators often overcompensate by buying a larger compressor than is needed, which requires significant capital costs along with increasing energy costs. System leaks can also cause air dependent equipment to fail due to low system pressure. That can lead to production delays, unplanned downtime, quality issues, decreased service life, and increased maintenance due to unnecessary cycling of compressors.

The maintenance manager of one United States manufacturer, for instance, says low pressure in one of their air torquing tools can potentially lead to product defects. "Mistorqued units, either under torqued or over torqued, can lead to recalls. That also leads to more man hours put into something that should have been a very standard process," he says. "It's money out the door in lost profits and lost units. In the worst-case scenario we also wind up with lost demand because we weren't able to deliver."

It's no wonder that utilities, industry, and government all target compressed air systems as a potential source of cost savings. Leaks lead to waste. Correcting those leaks can save the operator money and prevent the utility from having to build additional capacity into their system.

Getting to the heart of the problem

Many plants and facilities do not have a leak detection program. Finding and fixing leaks isn't easy. Quantifying the amount of waste and determining the cost, requires energy specialists or consultants who use energy analyzers and loggers to audit your air systems. By systematically calculating the annual cost savings of eliminating the leaks, they can make a strong business case for proceeding on such a project.

Energy audits of compressed air systems are often conducted through partnerships with industry, government, and nongovernmental organizations (NGOs). One such partnership, the Compressed Air Challenge (CAC) is a voluntary collaboration of those types of groups. Its single goal is to provide

product-neutral information and educational materials to help industries generate and use compressed air at maximum sustainable efficiency.

How leaks are found

Mainstream leak detection practices are, unfortunately quite primitive. An age-old method is to listen for hissing sounds, which are virtually impossible to hear in many environments and to spray soapy water on the area of the suspected leak, which is messy and can create a possible slipping hazard.

The current go-to tool for finding compressor leaks is an ultrasonic acoustic detector–a portable electronic device that recognizes high frequency sounds associated with air leaks. Typical ultrasonic detectors help find leaks but they're time consuming to use and repair crews can generally only use them during planned downtime, when maintaining other critical machines might be a better use of their time. These units also require the operator to be located close to the equipment to find leaks, which makes it difficult to use in hard-to-reach areas such as ceilings or behind other equipment.

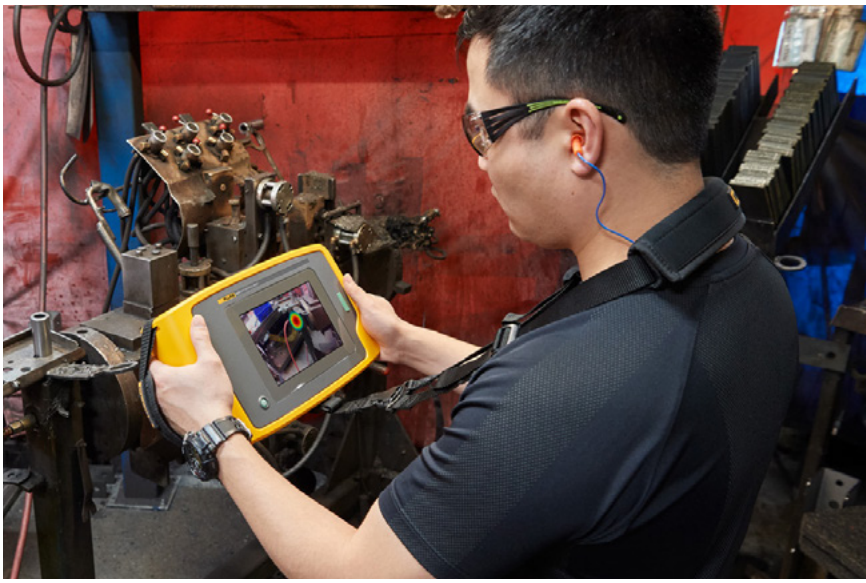
In addition to the time it takes to find leaks using either soapy water or ultrasonic detectors, there can be safety issues with finding leaks overhead or under equipment using these techniques. Climbing ladders or crawling around equipment can pose dangers.

Game-changing technology

What if there were a leak detection technology that could pinpoint the precise location of a leak from up to 50 meters away, in a noisy environment, without shutting down equipment? Fluke has developed an industrial imager that does just that. Industrial maintenance managers are calling the Fluke ii900 Sonic Industrial Imager, a "game-changer" in the pursuit of finding compressed air leaks.

This new sonic industrial imager—which can detect a broader range of frequencies than traditional ultrasonic devices–uses new SoundSight™ technology to deliver enhanced visual scans of air leaks, similar to the way infrared cameras detect hotspots.

The ii900 includes an acoustical array of tiny super sensitive microphones-that detect both sonic and ultrasonic sound waves. The ii900 recognizes a sound source at a potential leak location and then it applies proprietary algorithms that interpreter the sound as a leak. The results produce a SoundMap™ image—a color map superimposed over the visible light image—showing exactly where the leak is. The results are displayed on the 7" LCD screen as a still image or a real time video. The ii900 can save up



to 999 image files or 20 video files for documentation or compliance purposes.

Large areas can be scanned quickly which helps locate leaks much faster than with other methods. It also allows for filtering on intensity and frequency ranges. A team at a large manufacturing plant recently used two ii900 prototype units to locate 80 compressed air leaks in one day. The maintenance manager said it would have taken them weeks to find that number of leaks using traditional methods. By finding and fixing leaks quickly, the crew also saved potential downtime, which at this plant can cost an estimated $100,000 an hour in lost productivity.

Where to find leaks:

- Couplings
- Hoses
- Tubes
- Fittings
- Threaded pipe joints
- Quick disconnects
- FRLs (filter, regulator, lubricator combinations)
- Condensate traps
- Valves
- Flanges
- Packings
- Air-lines
- Pneumatic holding tanks

How much air are you wasting?

The first step in controlling leaks in compressed air, gas and vacuum systems is to estimate your leak load. Some leakage (less than 10 %) is to be expected. Anything beyond that is considered wasteful. The first step is to determine your current leak load so you can use that as a benchmark to compare improvements against.

The best method for estimating leak load is based on your control system. If you have a system with start/stop controls, simply start your compressor when there is no demand on the system—after hours or off shift. Then take several readings of compressor cycles to determine the average time to unload the loaded system. With no equipment running, the unloading of the system is due to leaks.

Leakage (%) = (T x 100) ÷ (T + t)

T = on-load time (minutes), t = off-load time (minutes)

To estimate leak load in systems with more complex control strategies, place a pressure gauge downstream from the volume (V, in cubic feet), including all secondary receivers, mains, and piping. With no demand on the system, except leakage, bring the system up to its normal operating pressure (P1, in psig). Select a second pressure (P2, about half the value of P1) and measure the time (T, in minutes) it takes for the system to drop to P2.

Leakage (cfm free air) = [(V x (P1 – P2) ÷ (T x 14.7)] x 1.25

The 1.25 multiplier corrects leakage to normal system pressure, thereby accounting for reduced leakage with decreasing system pressure.

Efficiently fixing and repairing leaks can lead to substantial cost reduction for air-dependent businesses. Companies are not only able to save on energy use by repairing leaks but can also improve production levels and extend equipment life.

For more information on the Fluke ii900 Sonic Industrial Imager, go to **www.fluke.com/ii900**

TESTIMONIAL

Genie gets a lift from seeing air leaks in action

Operator: Josh Stockert, Maintenance Supervisor

Company: Genie, a Terex brand

Application: Compressed air leak detection

Application: Energy savings (documented with the Fluke 3540 FC Three-Phase Power Monitor)

Results: 25.7 % recovered compressor capacity–annual savings estimate $48,754 (USD)

When a production line relies heavily on compressed air to run tools and processes, even tiny air leaks can multiply product and energy waste and lost production time. Staying on top of those air leaks is a priority. Genie, a Terex brand, is a leading global manufacturer of aerial lift equipment recently found a new weapon to help it combat those pesky and costly leaks.

Genie designs and builds innovative vertical work platforms and material lifts to make working at heights safer and more productive in a whole range of industries. You can find Genie® equipment at work everywhere from construction sites, and aviation plants, to entertainment venues, and retail warehouses.

With more than 50 years in business, Genie continues to design new products that leverage the latest technology to meet changing needs. Throughout their evolution as a company, Genie is adhering to stringent manufacturing standards to increase quality and lower costs.

The high cost of low pressure

The business's plant in Redmond, Washington builds material lifts and uses between 1,800 and 2,600 CFM of compressed air each day. That volume of compressed air runs up to 200 torque tools per line and process equipment responsible for moving large sheets of half inch steel and positioning of parts. If the tools don't have enough compressed air pressure to function properly, the results could be costly.

"If we were to lose pressure on the system we use to vacuum sheets up and transfer them to the laser to be cut, we wouldn't be able to pick up or move the sheets," explains Josh Stockert, Genie Maintenance Supervisor, Terex AWP. "If one sheet misses a transfer, we've lost nearly 20 sheets of cut parts, which could add up to 200,000 parts. If the pressure is too low on our torque tools, we could wind up with mis-torqued units."

The more leaks there are, the higher the demand for compressed air. Increased demand for air pressure raises the risk of not being able to supply an adequate amount to all the tools and process equipment that need it.

Compressed air leaks also increase energy costs. According to the U.S. Department of Energy Office of Industrial Technologies*, a single 1/8" (3mm) leak in a compressed air line can cost upwards of $2,500 a year.

Some typical locations for air leaks		
3-way fittings and elbow fittings	Drill press air coupler	Quick release fittings and disconnects
Air chuck and hoist	Filters	Seals and gaskets
Air cylinder fittings	Foot pedals	Shut-off valves
Air dryer	Grinder connectors	Solenoid fittings
Air tools, pneumatic guns, riveters and rachets	Hose reel fittings	Storage tanks
Bag houses	Industrial or process gas storage tanks	Terminated air lines
Ceiling valve	Lubricators	Threaded connections
Compressor valve	Manifold air lines and fittings	Tubing
Condensation traps	Pipe joints and O-rings	Vacuum lines
Control handle and valves	Pneumatic actuators	Vacuum suction cups
Couplings	Pneumatic cylinders	Valve block
Cylinder rod packing	Pressure regulators	

Expediting air leak detection

To reduce the risks of low air pressure, Genie is vigilant about finding and fixing air leaks. Some leaks occur in hoses and fittings high up in the rafters; others show up on the torque tools on the shop floor. In the past, during monthly weekend preventive maintenance (PM) operations, Genie dedicated one or two maintenance technicians to hunt for air leaks. The technicians first sprayed joints and hoses with a soap and water mixture to reveal bubbles that indicate leaks. Then they fixed the leaks and retested with soapy water.

"It's very labor intensive," says Stockert. "It might take 30 to 45 minutes to find one leak in the rafters, and then come back down to get material to fix it, go back up and fix the leak, and verify with soap and water that the leak was fixed."

The soap and water method works but slowly; and it requires a lot of cleanup afterward to prevent slipping hazards. Genie also tried using ultrasonic parabolic discs connected to headphones to try to find leaks but without much success. They couldn't get close enough to the equipment to locate the exact location of the leaks. Plus, traditional ultrasonic leak detectors detect only very high frequency leaks and air leaks occur at many frequency ranges.

So, when Fluke offered the company a chance to test its new Fluke ii900 Sonic Industrial Imager, Genie immediately accepted. The ii900 includes an array of tiny super sensitive microphones that detect sounds in both the human hearing range (2 to 20,000 Hz), and the ultrasonic range (20,000 Hz and higher). Even more unique, it allows the user to actually see sound.

Seeing sound

The ii900 applies proprietary algorithms to determine the location of the leak. The results produce a color SoundMap™ image superimposed over a visible light image of the equipment to show the exact leak location. The user views the results on a 7" LCD screen as a still image or a real time video.

"Being able to visualize where the problem is and how big it is adds another dimension," says Stockert. "You can identify which threads, fitting, or hose is affected. Being able to pinpoint where the leak is coming from on that image is extremely exciting. You can see different angles and determine 'Yep it's these threads versus that hose that feeds this fitting.'"

The ability to visually scan large areas from up to 50 meters (164 feet) away with the ii900 has expedited leak detection at Genie and significantly reduced the hours of labor spent on that task. "Rather than taking at least an hour to move everything out of the way, put the lift in position, spray the joint, and then move everything back, it takes me all of 30 seconds to a minute to find an air leak with the ii900 camera. Some days we can find and repair 30 or 40 leaks in just a couple hours," says Stockert. "Plus, we can use the ii900 during production hours, when it's extremely loud in here and still been able to capture leaks at the rafter level up to 6 to 9 meters (20 to 30 feet) away."

Testing during production without disrupting operations

The ability to scan for leaks without affecting production is a huge advantage. "Before, we never thought of testing for air leaks during production because we couldn't shut down the aisles and move people out of an area to go up and look at a potential leak," says Stockert. "Now, we can stand on the sideline and scan the air line overhead, while carts and people are moving underneath. We're not affecting their work, but we can tag the leak and then move a lift to that spot during lunch and fix it rather than having to wait for a weekend PM shift."

Initially, the primary objective for Genie when testing the Fluke ii900 Sonic Industrial Imager was to save energy.

After the initial air leak inspections and corrections, Stockert saw a 25.7 % recovery in their compressed air capacity. “We were near the top end of what our compressor system can put out,” he said. “By correcting the leaks found using the ii900, one of our four compressors is nearly idle much of the time.” The reduction in compressor usage translates to an estimated $48,754 in annual electrical energy savings. However, Stockert believes that there is an additional benefit derived from not having to add more compressor capacity.

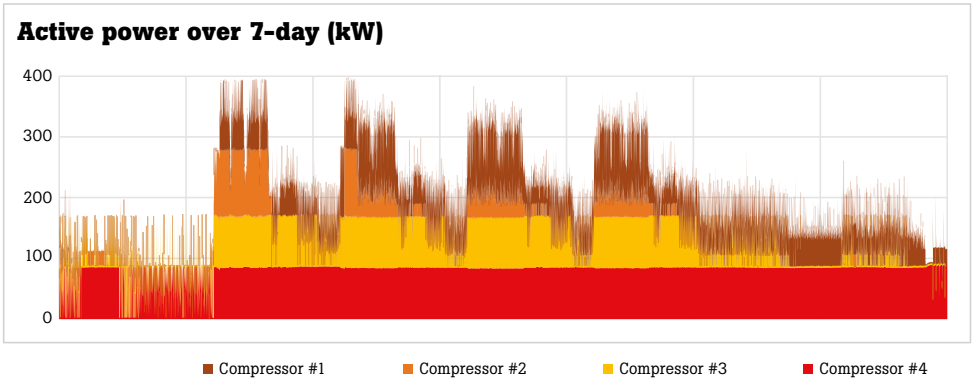
Heavy equipment manufacturer before and after leak inspection

4 air compressors: 2x75 HP + 2x90 HP

	Compressor #1	Compressor #2	Compressor #3	Compressor #4	Total
Power/energy log					
Week before	7,954 kWh	2,849 kWh	8,502 kWh	13,818 kWh	33,124 kWh
Week after	10,913 kWh	5,513 kWh	6,779 kWh	1,418 kWh	24,623 kWh
Difference	2,959 kWh	2,664 kWh	(1,772) kWh	(12,400) kWh	(8,501) kWh

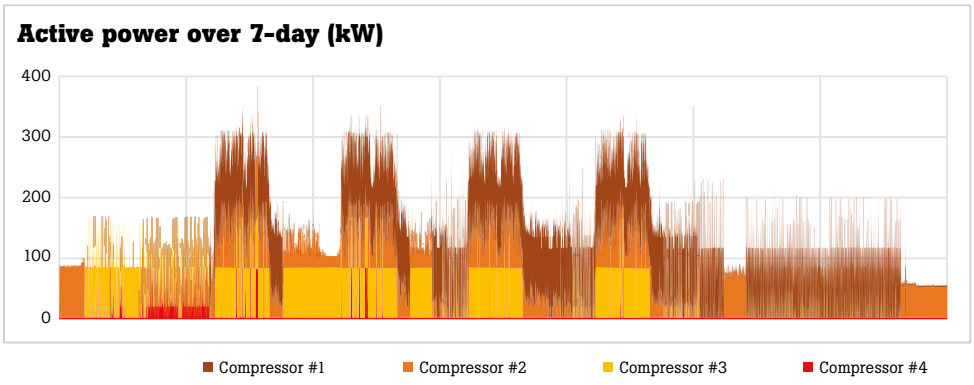
Before

- 90HP compressor #4 working full time (red)
- Air working at max capacity at peak times



After

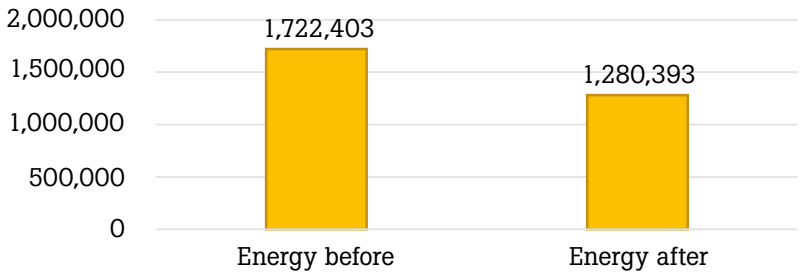
- #4 compressor idle
- 25.7 % recovered capacity
- $48,754 savings



Heavy equipment manufacturer before and after leak inspection (continued)

Annualized Consumption (kWh)

Energy before	1,722,403 kWh
Power bill before	$189,464
Energy after	1,280,393 kWh
Power bill after	$140,843
% saved	**25.7 %**



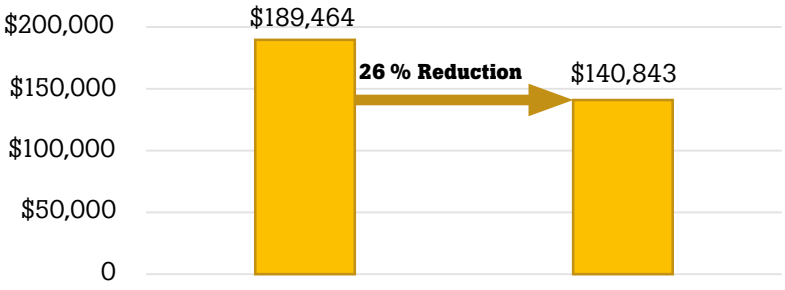
Energy savings

Per day	1,214 kWh
Per month	36,429 kWh
Per year	**443,225 kWh**

$ savings

Per day	$133
Per month	$4,007
Per year	**$48,754**

Annualized electricity cost



$48,754 = savings in electricity bills

25.7 % = compressed air capacity recovered

Easy-to-use maintenance tool offers generous energy savings for plants and helps reduce carbon footprint

Businesses across the world are facing the dual challenge of rising fuel costs and environmental energy taxes, there has never been a more important time to focus time and effort on reducing utility costs. Sanid Usanovic reviews how a German food & beverage plant makes Fluke ii900 Industrial Acoustic Imager standard use in maintenance to make big savings in energy use.

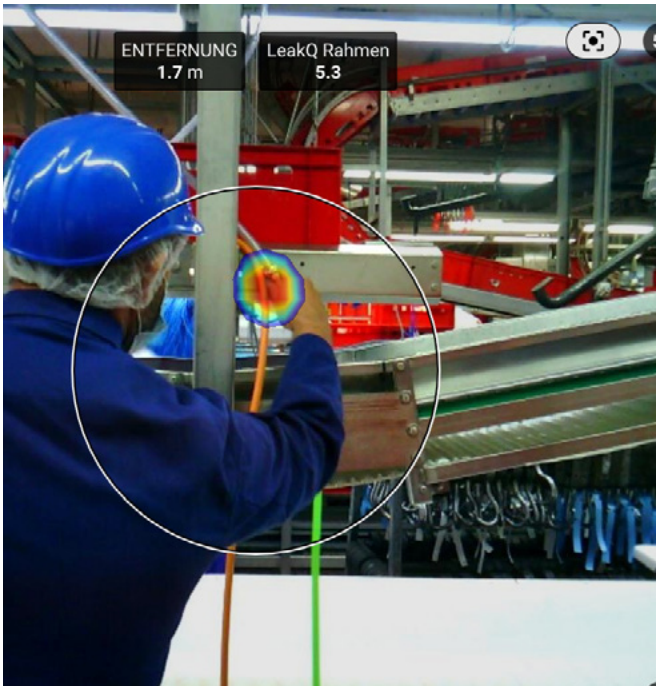
For the efficient management of plant operations, the key considerations for the energy manager include product quality, safety, downtime, and of course energy use. A production plant in Germany has set a greenhouse gas emissions reduction goal of 25 % by 2030 (using 2015 as baseline) and turned to the Plant Energy manager to help deliver that target. One way of achieving that goal is to reduce energy use. The question is, how can the plant energy manager achieve this without impacting product quality, safety or downtime.

Reducing environmental impact

Manufacturing firms around the world are reviewing the efficiency of operations, to reduce costs, but also to drive down their environmental impact. Lead by sustainability officers' with the support of energy managers, efforts to lower energy usage are helping to decrease the environmental impact of production and contribute to global and local efforts to reduce climate change.

In 2011 the International Organisation for standardisation (ISO) introduced a new voluntary standard for designing, implementing and maintaining an energy management system. The development of ISO50001 was undertaken by a technical committee and like other ISO standards it is intended to be realised across various industries and encourages adopters to implement a Plan, Do, Check, Act framework for energy management. Since the Paris agreement of 2015 the drive for ever more sustainable operations and reduce the effect of climate change has accelerated.

This company is taking a stand against climate change and has committed to reducing greenhouse gas emissions. One important element of the program focusses on reducing the indirect emissions resulting from energy use at the plant. Specifically, this considers the emissions resulting from the generation of the electricity purchased by the company from the utility provider.



For the bottling plant in Germany, one area under review was how to tackle the energy wasted through leaks in compressed air systems. The Carbon Trust estimates that UK industry uses over 10TWh of electricity to produce compressed air, making it the direct root cause of over five million tonnes of CO2 emissions a year (source: The Carbon Trust, 'Compressed air – opportunities for business).

Compressed air resource

Approximately 90% of all companies use compressed air in some aspect of their operation, such that it is sometimes referred to as the fourth utility. However, unlike other utilities such as gas, electricity or water which are supplied to the site by an external utility's provider, compressed air is often generated on site. It is therefore the manufacturing companies' responsibility to ensure its efficient production and distribution.

While many people may view compressed air as being as free as the air around them, due to the nature of the process, a significant proportion of the energy used by a compressor to compress the gas is lost as heat. It is an energy intensive process, and the environmental impact that electricity production can have, make it anything but.

Once produced it is used to automate processes, package products, provide motive power or even to generate other gases on-site.

Clearly, waste of this expensive resource needs to be minimized. The priority is to set up a leak reporting and repair programme. This will give you an idea of where the troublesome connectors and lines are sited and allow you to formulate a repair strategy to ensure they are kept fully working.

€

The cost of compressed air leaks

The energy consumption at the food & beverage processing plant compressed air systems was at 300,000€. It is estimated that if there were no maintenance system in place at all that the losses due to leaks in the network would be between 25–30%. For the plant in question, implementing a maintenance regime from this starting point would represent potential energy cost saving of 120k- 150k€ per year. Whilst desirable, it is highly unlikely that any plant will achieve an 100% leak free compressed air system. The target for good practice is between 8%–15%, and for best practice is 6–8% energy losses due to leaks.

Maintenance methods

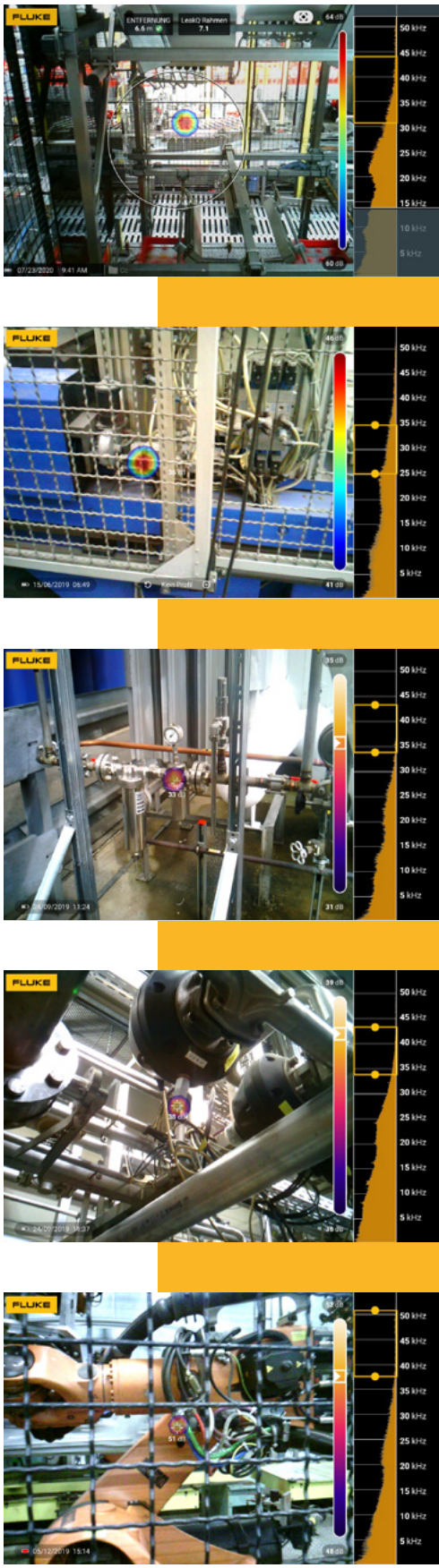
When looking for leaks, it is important to bear in mind that there are some components of a compressed air system that are especially vulnerable, such as pneumatic cylinders, flanges, filters, tools, presses and drop hammers which should be checked first.

Some of the traditional ways of detecting leaks include listening for hissing sounds or coating joints with soap and checking for bubbles. The soapy water method is inefficient and inadequate for the size and scope of compressed air lines in a manufacturing facility. Whilst many cannot hear the hissing of air leaks in a quiet environment, let alone a functioning bottling plant. An improvement on the soap and water method was ultrasonic leak inspection.

Ultrasonic tools use microphones to identify the sounds associated with escaping air/gas in a range of about 38 to 42 kHz. They convert sound captured in this range into audible sound and therefore rely on human hearing to identify whether a noise is a leak or not. That makes the detection subjective, and reliant on enhanced skills and training.

Large manufacturing companies such as this one may choose to outsource checks and inspections for leaks in compressed air networks. Specialist companies will carry out annual checks that could potentially deliver what would be considered good practice levels of leakage, between 8–15%. However, to decrease the energy losses further by reducing leaks in the network, a new testing regime less reliant on annual checks through a third party vendor was sought.

The food & beverage production plant agreed to test the use of industrial acoustic imagers at the plant to check for leaks in compressed air systems. Recent developments in industrial acoustic imagers such as the Fluke ii900, mean they are equipped with an array of microphones, providing visualisation of sound field within an expanded field-of-view, that enables maintenance teams to visually locate air, gas, or vacuum leaks very quickly



and accurately in compressed air systems. This means it is possible to detect the leaks even in noisy environments and from a distance and as such maintenance programs can be adopted whilst the plant is operational.

The leaks detected are then displayed on an LCD display making it possible for a user with little-to-no experience can start detecting leaks immediately. The acoustic imagers can evaluate the distance to the target and estimate size of the leak, making it easier to prioritize a repair schedule.

The food & beverage production plant has started using the Fluke ii900 to locate compressed air leaks in

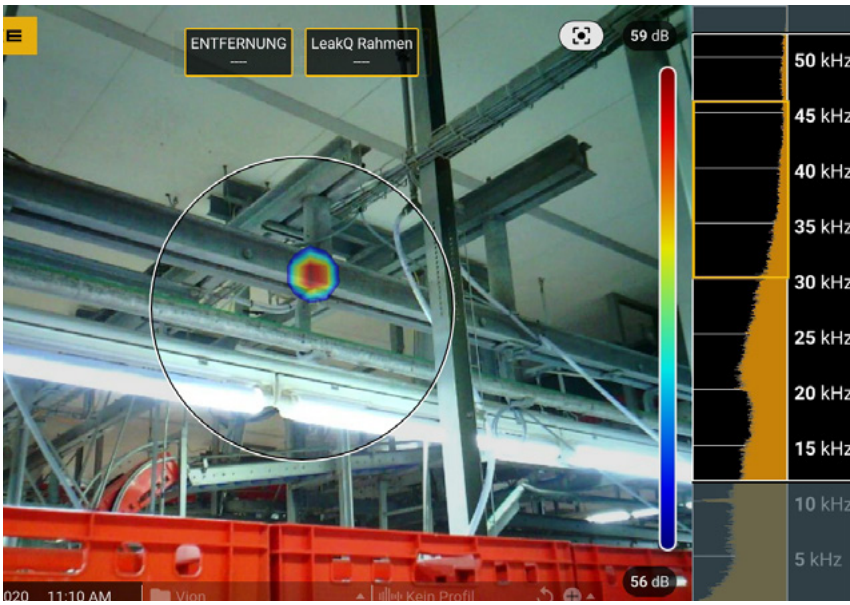
- Conveyor systems
- Tubing, piping, flanges and valves in the Clean-in-Place system, the syrup maker, and the CO2 blender
- Hard-to-reach gated areas

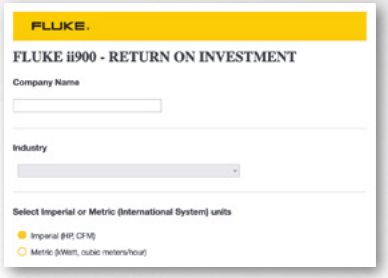
The equipment is capable of reporting an estimation of the size of leak, and from that data it is possible to quantify an estimation of the energy cost to the company and calculate evaluation of the return on investment. Crucially for delivering a targeted reduction in carbon emissions, being able to quantify the energy lost is an important feature so that the reduction in greenhouse gases can be calculated.

"This innovative technology has excited me from the moment I first heard about it! The imager was primarily purchased for localizing leaks in our compressed air systems throughout the plant. We have already seen enormous energy savings."
-Plant energy manager

The Future

As the price of energy continues to increase, the need to reduce energy costs and deliver on shared sustainability goals intensifies. Many more consumer goods manufacturing companies are taking on sustainability managers and energy managers to reduce waste and shine a spotlight on opportunities to run the plant more efficiently. The maintenance teams at the plant are vital to the delivery of efficient operations and using tools such as acoustic imagers that can bring enhanced savings to maintenance routines and reduce energy costs is a quick win for all manufacturing plants with significant compressed air demands.





Calculate the Savings You Could Make

Use our Return on Investment Calculator to find out how the ii900 Sonic Industrial Imager could reduce your annual energy costs by finding air leaks. Even the smallest air leaks can compound energy waste and lost production time. Use the calculator to find out how much you could save.

ROI Calculator

Fluke ii900 Industrial Acoustic Imager

- Do more with the same air compressors – delay the capital expense of purchasing an additional compressor
- Ensure proper air pressure to your pneumatic equipment
- Lower utility costs
- Reduce leak detection time
- Improve reliability in your production line
- LeakQ Report Generator

Find Out More

Fluke ii910 Precision Acoustic Imager

- Quick and easy partial discharge detection and PD testing
- Reduce outages and increase uptime
- Cut costs and save energy everyday by finding and fixing PD
- PDQ Mode to capture and analyze partial discharge

Find Out More

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Fluke Europe B.V.
PO Box 1186, 5602 BD
Eindhoven, The Netherlands

Fluke (UK) Ltd.
52 Hurricane Way
Norwich, Norfolk, NR6 6JB
United Kingdom

Tel.: +44 (0)20 7942 0700
Fax: +44 (0)20 7942 0701
E-mail: industrial@uk.fluke.nl
Web: www.fluke.com