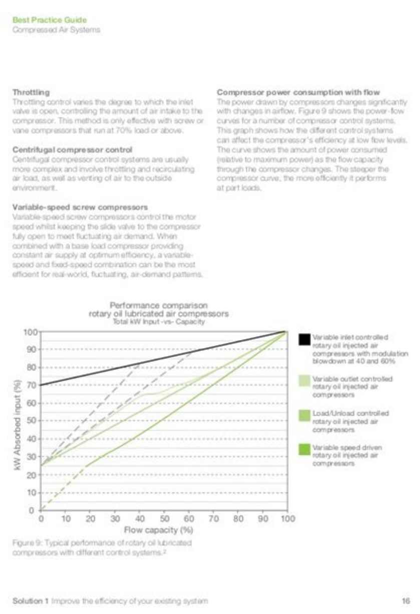
compressed air best practices manual



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Book Descriptions:

compressed air best practices manual

The Best Practices manual provides tools needed to reduce operating costs associated with compressed air and to improve the reliability of the entire system. The 325page manual addresses the improvement opportunities from air entering the compressor inlet filter, through the compressor and to storage, treatment, distribution and end uses, both appropriate and potentially inappropriate. Numerous examples of how to efficiently control existing and new multiple compressor systems are provided in one of the many appendices. The reader can determine how to use measurements to audit their own system, how to calculate the cost of compressed air, and even how interpret electric utility bills. Best practice recommendations for selection, installation, maintenance, and operation of all the equipment are included in each section. This is great for handouts for sales calls.Features Live and On Demand Compressed Air Presentations. Used AcceptableIt is a solid, readable, and usable copy, but might include extensive wear or damage. Please note extended handling time.Please try again.Please try again.Then you can start reading Kindle books on your smartphone, tablet, or computer no Kindle device required. Register a free business account To calculate the overall star rating and percentage breakdown by star, we don't use a simple average. Instead, our system considers things like how recent a review is and if the reviewer bought the item on Amazon. It also analyzes reviews to verify trustworthiness. Please try again later. W. Ernst 4.0 out of 5 stars While it does not go into to great of detail on any specific topic, it provides some great outlines for various compressed air concerns, including setting up a leak detection program and identifying misapplications of compressed air.An excellent reference manual worth the price and then some. One of the best technical manuals I have purchased.This manual offers practical solutions and the knowledge to make the right decisions.http://cmshidrolik.com/depo/sayfaresim/791vx-manual.xml

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Worth the cost to purchase it.It covers compressed air systems from the end use all the way back to the compressor room. Was confirmed and delivered efficiently and in a timely manner. The quickest way to achieve success is to emulate the best practices of past masters in the field. These experts often choose to leave a legacy to future tradespersons by writing guides and best practices for our benefit. The Best Practices Manual BPM was developed to provide compressed air users with the tools they need to reduce the operating costs associated with the use of compressed air and to improve the reliability of the entire system. The BPM addresses many typical improvement opportunities, starting from where the air enters the compressor inlet filter and going all the way through to the final end uses, including hoses, quick couplers, air tools, cylinders, or other devices. All parts of compressed air systems are discussed, including the air compressors, the auxiliary conditioning equipment, distribution system, and the end uses. The manual guides technical staff in determining how to use measurements to audit their own systems, how to calculate the cost of compressed air, and even how to interpret electric utility bills. Bestpractice recommendations are given for the selection, installation, maintenance, and operation of all the equipment and components within the compressed air system. The manual may be used as a reference for a specific problem or as a full text covering the complete system. References to other sources for further study are listed. Appendices provide useful tables, charts, graphs, and additional information that supplement the understanding and application of the main text. Similarly, the selection of a particular type of compressor or dryer or distribution system in one plant may not be the best for a different plant; therefore, multiple solutions may be suggested.http://favourtec.com/attachment/7936-cisco-ip-conference-station-manual.xml

With proper application of the system approach, savings of 50% or more have been achieved. The BPM teaches you how to evaluate your own system by following simple steps or by knowing what questions to ask a professional service provider if one is retained to perform a walkthrough or assessment of your system. The CAC, through its Best Practices Manual, is dedicated to assisting you in achieving the peak operating performance of your compressed air system. It is up to you to maintain that level using the information within the manual, from attending CAC training, and from other available resources. This, in turn, can help in management and conservation of available resources. Operating at an elevated system pressure increases the air consumption of end uses, the rate of leaks, and overall energy consumption. An aggressive and continuous program of leak detection and elimination can reduce consumption substantially. Make sure that compressed air is the best alternative for any application. Not all applications are appropriate. Ensure proper storage receivers are used and that components are sized to limit pressure loss. For more information see CAC’s website. With high energy efficiency and low total cost of ownership. This book is the reference document that you must have. Furthermore to standardized more energy efficient and lower production costs for our customers. Or do you want to become one. Now is your chance to build your body of knowledge about compressed air systems and have a way to prove you have the “right stuff.” The program will allow customers, utilities, employers, and others to have confidence in the skills and abilities of the professionals in the industry who design, service, sell, and install compressed air systems and compressed air systems equipment. The program has been designed to comply with the ISO 17024 standard, Conformity Assessment — General Requirements for Bodies Operating Certification of Persons.

” The exam assesses an individual’s understanding of well accepted standards and concepts embodied in resource material.” You have the knowledge, prove it to yourself and your customers! Learn how your comment data is processed. Bookmark, share and interact with the leading design engineering magazine today. The material on this site may not be reproduced, distributed, transmitted, cached or otherwise used, except with the prior written permission of WTWH Media. For canisters inaccurately marketed as compressed air, see Gas duster. Compressed air is an important medium for transfer of energy in industrial processes, and is used for power tools such as air hammers, drills, wrenches and others, as well as to atomize paint, to operate air cylinders for automation, and can also be used to propel vehicles. Brakes applied by compressed air made large railway trains safer and more efficient to operate. Compressed air brakes are also found on large highway vehicles.An early major application of compressed air was in the drilling of the Mont Cenis Tunnel in Italy and France in 1861, where a 600 kPa 87 psi compressed air plant provided power to pneumatic drills, increasing productivity greatly over previous manual drilling methods. Compressed air drills were applied at mines in the United States in the 1870s.Air for breathing must be free of oil and other contaminants; carbon monoxide, for example, in trace amounts that might not be dangerous at normal atmospheric pressure may have deadly effects when breathing pressurized air. Air compressors and supply systems intended for breathing air are not generally also used for pneumatic tools or other purposes.It was known as early as the 17th century that workers in diving bells experienced shortness of breath and risked asphyxia, relieved by the release of fresh air into the bell. Such workers also experienced pain and other symptoms when returning to the surface, as the pressure was relieved.

Denis Papin suggested in 1691 that the working time in a diving bell could be extended if fresh air from the surface was continually forced under pressure into the bell. By the 19th century, caissons were regularly used in civil construction, but workers experienced serious, sometimes fatal, symptoms on returning to the surface, a syndrome called caisson disease or decompression sickness.Nitrogen narcosis is a hazard when diving.Aftercooler, storage tanks, etc.System designers must ensure that piping maintains a slope, to prevent accumulation of moisture in low parts of the piping system. Drain valves may be installed at multiple points of a large system to allow trapped water to be blown out.Archived PDF from the original on 28 December 2016. Retrieved 24 February 2009. Archived from the original on 18 August 2016. Retrieved 15 August 2016. Retrieved 20170112. By using this site, you agree to the Terms of Use and Privacy Policy. The below guidelines are based on compressor type! Make sure the electrical power supply is left on to keep the capacitor bank charged and ready for restart. After stopping the compressor, be sure to isolate the water supply. This will stop condensate from forming inside the compressor elements. Don't forget to turn it back on at start up. Please also ensure that any air blast cooling systems are turned off. These need the main drive shaft to be manually rotated via the motor drive coupling, 3 complete rotations, once a week. This is to prevent the low pressure and highpressure compression stages from seizing up during a long period of down time. If the Z Compressor is a VSD version, please don't forget to turn the power supply back on after turning the compressor over by hand. This will protect the inverter drive capacitors. Carry out a program stop and leave the power supply on. They need to have the auxiliary oil pump left turned on electrically while the compressor is shut down.

https://www.ecopol.com/images/cambridge-540r-v3-manual.pdf

This will maintain the oil temperature and periodically start up the auxiliary oil pump to circulate warm oil around the bearings during long periods of downtime. If the compressor turns freely, refit the guard and turn on the power supply to the compressor. Next, turn on the cooling water and air blast cooling system if the compressor is water cooled. Close the compressor air discharge valve and start the compressor, then slowly open the air discharge valve until the air pressure equalizes out between the compressor and the air net, then the compressor is back online. Personalize your experience by selecting the topics you are interested in below. At Quincy Compressor, we make air compressors that are built to last. Watch our latest video to learn what can happen when you choose an air compressor provider that offers lowquality products and services. Save a buck today with Quincy Compressor. Canfor Southern Pine Find out how Canfor Southern Pine as improved their operation by switching to Quincy Compressor. Air compressors can blow away money from your production budget if they are not properly maintained. Leaks and worn parts reduce the pressure your compressor can produce. Worn seals and cracked connectors can fail unexpectedly, creating blow outs. Unplanned downtime costs money in lost production or emergency equipment hire, and physical damage and personal injury claims will pile on the costs of a faulty air compressor. Preventative air compressor maintenance is cheaper than paying to repair parts that only got worn down because of overlooked minor faults You can extend your air compressor service life simply by keeping the equipment in good order. Proper usage is also a key factor in getting the most out of your compressed air system. So, proper staff training and supervision should be part of your operating strategy. Effective management of compressed air systems is often just a matter of writing out a plan.

http://www.economiadelagua.com/images/cambio-manuale-animazione.pdf

If you have been putting off getting your business's maintenance guide sorted out, you're in luck. The Department of Energy has put together the Fundamentals of Compressed Air Systems as part of its Compressed Air Challenge. We used this as a basis to bring you our guide to a sevenstep plan for compressed air system savings. Step 1 Define Your System Start the development of your plan by laying down on paper a block diagram of exactly what equipment you have on the shop floor. If you are daunted by that task, start off with just a simple outline, similar to the one in the Compressed Air Challenge's Best Practices Manual Source Compressed Air Challenge Best Practices Manual Add pressure reading points to the block diagram. Before each component in your diagram, draw a line out to a circle symbol, indicating the point of measurement. Label each point in series P1, P2, P3 and so on. Refine the diagram to specifically name each piece of equipment. So, in the example diagram above, each "End Use" box would need to be relabeled with a specific equipment type. You will notice that you will have several examples of the same type of equipment. For example, the above diagram includes three compressors. Label each piece of equipment with a unique number within that type, such as "Compressor 1" or "Compressor 2." Open up a spreadsheet and make the titles "Point" in column A and "Reading" in column B. List each piece of equipment in column A. Don't worry about the order of those records You will still have the diagram to refer to in order to locate that point's position in the circuit. Your circuit may end up with parallel lines of equipment, which would make it harder to give a regular order to your spreadsheet records. List the pressure measurement points after the equipment labels. Measure the air pressure at each point in the diagram and enter this measurement in the "Reading" column alongside the label for that piece of equipment or measurement point.

When dealing with compressors, the reading just needs to be the stated output pressure of the equipment. Take the stated pressure expected at the settings that you would normally use to operate the compressors. For enduse equipment, write down the required pressure for correct operation of that device. Take readings for each point in your diagram. Your block diagram and spreadsheet will immediately start to highlight any problems or mismatches in your compressed air system. Save both of these documents as historical records. This is the baseline for your improvement project. Step 2 Establish Baseline Costs Make a copy of your spreadsheet. This will be your record of your current operating costs in your compressed air system. In this spreadsheet you will only document the compressors and the end use equipment. You should delete all other records in your table. Add four more column titles to the table. If you get a variable charge rate for your electricity, you need to make several copies of each compressor record — one for each charge rate you pay. Column D should have the title "Rate." Enter the price you pay per kilowatt for your power. The third new column — column E — should have the title "Hours." For each compressor record, enter the number of hours that compressor runs per week. If you have a variable rate, record the number of hours in the week that each compressor runs at each charge rate and enter that in the appropriate record. Column F should have the title "Cost." The figures in this column can be calculated by the spreadsheet. Your first record is at line 2 in the spreadsheet, as line 1 simply contains the titles. Hit RETURN to save this calculation. Click back in cell F2. Click on the small square at the bottom right corner of the frame around the cell. Drag the frame down to the last record in your table. This will copy the formula for each record, adjusting it for each record number.

At the first empty cell of the "Costs" column, press the Autosum button in your spreadsheet. This will give you the total current operating cost of your compressors. Save this spreadsheet. This gives you the cost of operating each of your compressors at the moment. Step 3 Build a Control Strategy Your block diagram and your first spreadsheet will give you an opportunity to see whether you are actually overproviding your enduse equipment with air pressure. This analysis is easier to implement with the assistance of an experienced consultant. If you're running Quincy compressors, your best bet for this exercise is to contact your local dealer. The Sales and Service Locator on the Quincy Compressor website will help you find your nearest air compressor service center. You need to add up the total pressure requirements for your enduse equipment. The different hours of the day will also be a factor in this exercise. It may be that you don't run all your equipment all day, but provide enough air pressure for maximum demand. Lowering your compressor output, or just turning off one of your units at lowdemand times could be the result of this examination. Step 4 Reassess the System Your control strategy will have identified lower overall system load and variable demand over the course of each day. Work out whether you can coordinate higher pressure demands with lower electricity charge rates. Copy your baseline costs spreadsheet and alter the figures in your new copy. The first changes will be to the “Reading” column Here, there is a chance you can reduce the output of each compressor. You may be able to move all the demand for one or two of your compressors into cheaper electricity charge rate hours. In this case, you would be able to delete some of your compressor hours’ records. The result of this exercise should be a reduced overall cost shown in the “Total” cell of this spreadsheet when compared to the same cell in the original copy of the spreadsheet.

Step 5 Perform Maintenance Your block diagram, combined with your first spreadsheet, will highlight any equipment failure in your compressed air system. Trace along the tracks of the diagram from each compressor to each end use device. The pressure measurement points that you noted in your table should tell a story. Look for drops in pressure along the line. This will enable you to identify air lines and equipment that may be leaking air. You may also need to repair leaks in air compressor units in your circuit. Focus maintenance on the elements of your circuit that show pressure drops on the first pass of maintenance. Pass over the entire system for your second check. Visit each unit in the circuit and check every foot of piping. Check for leaks in lines and also seals. This thorough examination of all your existing equipment will probably give you an efficiency boost and a drop in costs. Step 6 Adjust Your Plan Copy your reassessed costs spreadsheet from Step 4. You can now go back and remeasure each of your data points in the system. If maintenance has eliminated leaks, you should find that the pressure available at each point has been increased. You can now reduce the output of your compressors further to make sure you are not oversupplying your enduse equipment. Recalculate your energy requirements, your operating hours and your running costs. Save this copy of the spreadsheet. Call in your dealer expert again and share your figures. You need to get an assessment of the size and length of the piping that carries pressurized air around your facility. This step should focus on reducing the pressure drop in the circuit between supply and demand points. Replanning the layout of your shop will enable you to bring enduse devices physically closer to your compressors. Reducing branching can also take out potential points of failure. Look at whether you can allocate groups of devices to dedicated compressors.

Simplified and shorter transfer routes can reduce pressure drops by about 20 to 40 percent. Calculate whether wider gauge pipe can bring down your operating costs. By increasing the size of a pipe from two to three inches, you can reduce pressure drop by up to 50 percent. Just moving your machines around will cost little more than a few hours of labor. Relaying all of you distribution pipes will cost a lot more. You need to create a projection of how much savings the altered layout will bring. Copy the last version of your costs spreadsheets. Adjust the supply requirements from each compressor and check on the reduced costs that result from these changes. Calculate the costs of the planned changes and take an executive decision on whether you will benefit from implementing the plan. After reorganizing the shop floor, you will need to depict the new layout in a second block diagram. Remember to draw in measurement points and log all of the equipment in a new spreadsheet table. You will find that this results in lower output requirements from your compressors. Add the power requirement, cost and running hours columns to the spreadsheet and recalculate the operating costs for each compressor. Step 7 Create Operational Improvements Plan After this exercise, your facility should be reorganized with lower operating costs. However, remember the important results of the air compressor repair and system maintenance round in Step 5. Identify key factors in each piece of equipment and make a point in each week when these factors can be checked. You could log the expected pressure input of each device and instruct each production operator to check his machine’s pressure gauge every day. Alerting the maintenance team to any drop in pressure will enable minor leaks to be corrected and thus prevent critical equipment failure. Don’t try to save money on air filters by extending their service life.

Calculate the expected lifespan of each filter and replace them routinely to ensure optimal pressure flow in your system. Air lines and enduse devices also have air filters. Don't overlook these. Keep Monitoring Air compressor maintenance is a key activity in keeping costs down when running a compressed air system. Don't forget your air lines and end use devices are important elements of the circuit. Be vigilant for leaks in the system and reassess performance at regular intervals. You can make monthly copies of your cost model spreadsheet and revisit pressure requirements and costs as each month passes. Having a cost template and an optimized system will give you a platform to consider other methods for cost savings in your operations. Try these additional techniques to cut costs Renegotiate power supply contracts. Adjust operating hours to fit with lower charge power tariffs. Redistribute load on each compressor to maximize utilization, without overloading. Recover heat from your system to heat water and working spaces in colder temperatures. Implement training to ensure proper use of equipment and compressed air. Retire and replace older compressors — newer equipment is more efficient. Discuss maintenance contracts and equipment insurance options. Investigate equipment leasing to reduce capital expenditure. Sometimes it's difficult to know where to start with a system audit and efficiency assessment. We hope this seven step plan will take the fear out of your operational management decisions. Get started on building your operating model — it is just a question of drawing out your shop's layout and accounting for all equipment. Once you get your system depicted on paper, you're on the road to improving your business through eliminating waste. At Quincy Compressor, we pride ourselves on legendary performance and reliability. We're here to help with advice on getting improved reliability and performance from your operations.

Get your business optimized with the Quincy Compressor seven step efficiency plan. If you need a local dealer to service or audit your Quincy compressor, browse our Sales and Service Locator. You can also set a baseline of efficiency for your operation with the help of our EQ Energy Efficiency Analyzer app — download it today. All Rights Reserved. Website by Rokusek. This webinar provides an overview of compressed air system optimization best practices, with special focus on the distribution and demand side of these systems. He will also review calculating storage volume for the unanticipated shutdown of a compressor and the need to accommodate the permissive startup time of a standby compressor. He will also discuss calculating dedicated storage volume to improve performance of a high speed "flying cutoff cylinder." During Kaeser's portion of the webinar, Neil Mehltretter will discuss how single compressor systems and multiple compressor systems operate during high demand events, whether additional measurement points can be helpful, and what impact piping can have on these events. One silver lining—in this otherwise terrible situation—is that businesses are discovering new ways to leverage networking technology to optimize personal productivity with the important benefit of remaining operational in troubled times. Even in normal times, routinely visiting the compressor room to manually check the condition of the system is usually inconvenient and often forgotten—until there are problems. For plant managers, engineers, production, and operations managers, having compressed air system data at your fingertips can help avoid costly downtime. Regardless of industry and application, oversized compressors are among the most common problems in air systems. Over sizing hits the bottom line in many ways, including higher purchase costs, higher maintenance and repair costs, higher energy costs, lost production due to pressure fluctuation and shorter compressor life.

In this webinar, compressed air experts Neil Mehltretter and Werner Rauer will address why oversizing occurs, how to identify oversized systems, how they impact productivity and profitability, and strategies to reduce the effects of this epidemic. Without clean, dry air, product quality suffers, maintenance requirements increase, and pneumatic tool life decreases. On the other hand, overtreating compressed air results in unnecessary pressure drop and higher energy costs. Strategies for properly selecting and correctly sizing compressed air dryers, piping, filters, and other air treatment products are essential for reducing scrap and optimizing product costs. Knowing what air treatment components are protecting your equipment and what components are treating your air, will help you design an efficient system that keeps energy costs low. Join compressed air experts Grayson Atkinson, Liam Gallagher, and Neil Mehltretter as they cover best practices for air treatment, including Compressed air leaks alone account for 2530% of compressed air use. On top of that, additional power is wasted in the creation of compressed air through improper sizing, pressure selection, and controlswhich also has significant impact on equipment reliability. With minimal cost and interruption sometimes none, accurate compressed air assessments can quickly determine the critical KPI of Specific Performance of your system and help identify sources of inefficiency. The collected data can then be used to calculate ROI for alternative improvement initiatives. Compressed air systems have evolved from simple cascaded control strategies to more sophistical central control with both fixed speed and VFD air compressors combined. Some of these systems have been installed with two or more VFD air compressors. This webinar will discuss some of the benefits and pitfalls of using multiple VFDs in a combined system and how to best control these scenarios. Mr.

Marshall will also share case studies to illustrate those strategies. His presentation, “Control Strategies for Multiple VFD Air Compressors Part 2”, will complement Ron Marshalls presentation with some practical considerations for applying VFD compressors. He will also discuss some realworld installations of multiple VFD air compressors with a focus on the impact of proper controls. To obtain the envy of all your friends and neighbors, there are a couple of key design considerations that greatly affect your compressors’ performance and therefore your system’s performance. This webinar reviews the key design considerations that contribute to an energyefficient, reliable, scalable compressed air system. No plant is stagnant, so a one size fits all approach often provides less than ideal operational scenarios that plant operators must constantly adjust to. Taking the time during the blower selection and evaluation stage can go a long way to improving performance and control of the process. This presentation will include techniques for determining blower duty cycles, typical utility billing procedures and their impact on operating costs. He will also discuss strategies for evaluating life cycle cost, comparing alternatives and project justification through present worth analysis and simple payback methods. He will include a realworld example on some of these strategies in his presentation titled “Case Study Savings from Aeration Blowers.” Stephen will explain how these techniques were able to help a wastewater treatment plant in a small West Virginia town. This case study will specifically explain how a blower controller was able to help the plant save energy, automate the DO controls, and verify the power savings for an energy rebate. At the same time, it is a very heavy energy consumer. The US Department of Energy estimates that half of all compressed air is wasted due to leaks, artificial demand, and inappropriate uses.