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Compressed Air in the Metalworking Industry

Ingersoll Rand®

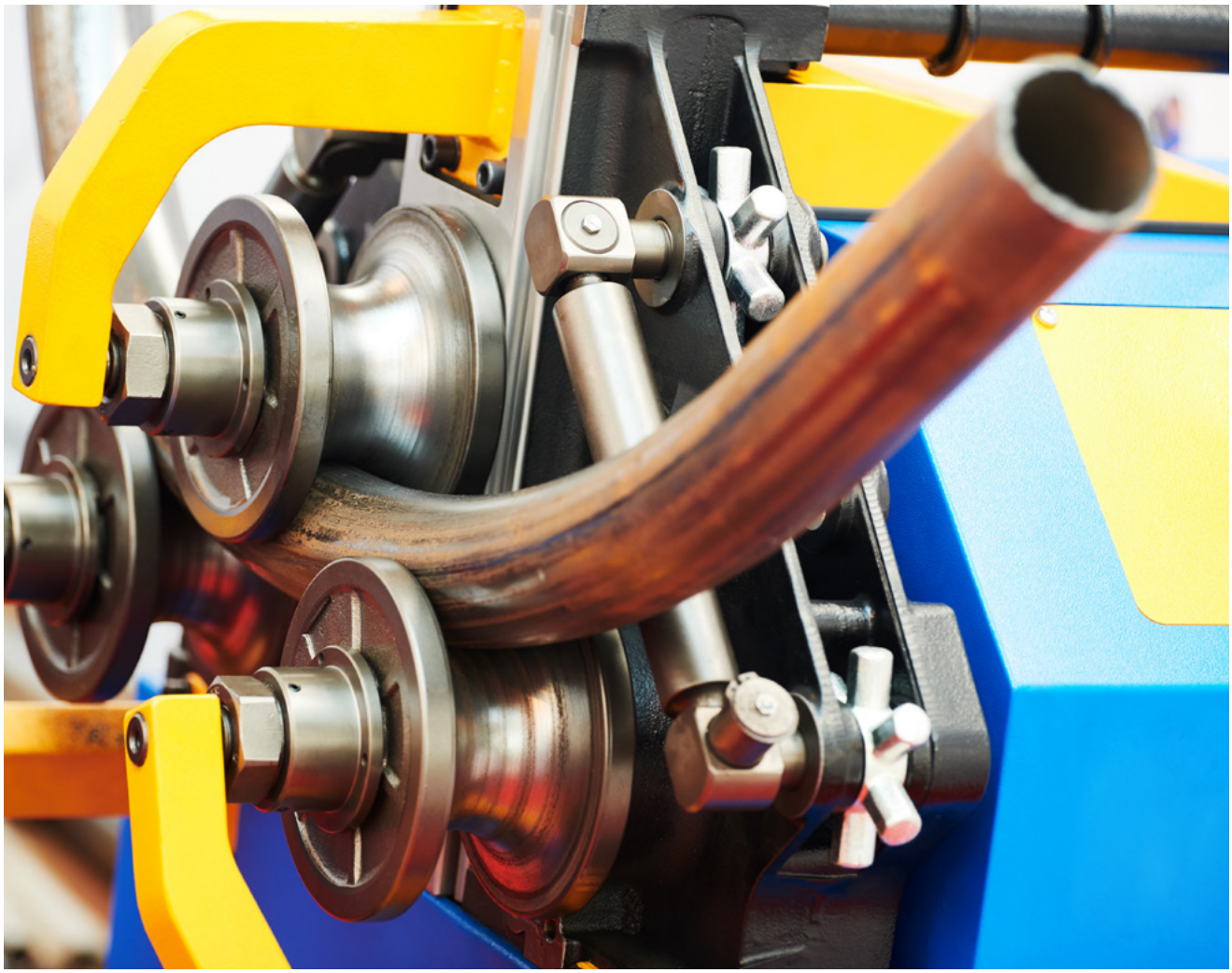
What's Inside

Introduction

Metalworking is the process of building machines and structures from raw metal materials. This energy-intensive branch of the metal industry encompasses numerous applications, including cutting, burning, welding, molding, sandblasting and assembling, to name a few. These applications require a stable and clean compressed air supply because it acts as the main driver and keeps many pieces of equipment up and running. Whether it is plasma cutting or welding, a dry and clean air environment is paramount to guarantee precision, quality and cost-effectiveness.

Global Metalworking Market

Significant advancement in computerization and robotics is paving the way for innovative technologies and solutions in the metal fabrication market. In fact, increasing demand for metal processing in numerous growing nations is about to boost the global metal fabrication market. As analyzed by Data Bridge Market Research, the global metal fabrication market was valued at 20 billion USD in 2021 and is expected to reach 29.46 billion USD by 2029, registering a CAGR of 47% during the forecast period of 2022-2029.



Compressed Air in the Metalworking Industry

Processes used in metal fabrication (cutting, burning, welding, bending, forming and shaping) would be slow and inefficient by today's standards if not for the power of air compressors. Compressed air can be considered the main power source in manufacturing. From precision and pace conveyor belts to various pneumatic tools that shape, coat and finish various metal products, air compressors keep many pieces of equipment running and performing their job efficiently.

Apart from the importance of compressed air for energy efficiency, the appropriate compressed air quality helps avoid problems and faults while producing the final product. Hence, when treated according to the right requirements, metalworking industries can reduce costs and avoid production standstill.

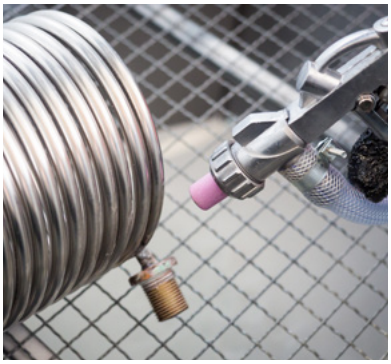
The Value of Compressed Air for Metalworking Applications

Air compressors are an integral part of metal fabrication processes. Clean and dry air with a steady pressure is crucial for applications like plasma cutting, multi-axis grinding, coating or paint spraying. Fluctuations in air pressure or moisture can cause product quality losses and consequently, lead to rework and lost time.

When it comes to grinders and other pneumatic tools that need a continuous supply of clean and highly compressed air to operate, low pressure resulting from too many tools added to too few compressed air lines can slow down productivity. Additionally, shot, sand, and soda blasting tools require high intermittent demands which puts an extra strain on the air compressor. Therefore, to keep a steady work pace, it is necessary to provide a reliable and energy-efficient air supply.

Cutting and Welding

Cutting and welding are two laser processes that require quality dry and clean compressed air to prevent problems that may occur in the final product. Laser welding needs compressed air up to 8 bar to keep material particles and vapors away to avoid damage to the part that is being worked on. Compressed air for laser cutting is essential for flushing the mirror channel and blowing out the melt. It also cools down the surface and improves cutting quality.



Sandblasting

It is crucial to maintain a clean and clear work surface when producing metal parts; otherwise, it could negatively impact the production process further down the line. Sandblasting is one of the methods that is used to clean the debris from paint, dirt and rust so that the surface structure is ready for surface finishing. Compressed air is utilized to accelerate the blasting agent going through the nozzle, as the agent needs to meet the surface at high speed.

Surface Finishing

Finishing touches help achieve the desired surface appearance. For example, compressed air is used for powder coating to blow off the work piece and fluidize the powder. Hence, the quality of compressed air plays an essential role as oil, or otherwise contaminated compressed air, can cause bubbles or craters in the coating layers.

Size Your Air Needs

Ingersoll Rand's compressed air solutions for metalworking will keep your business operating at full capacity. We offer a wide portfolio of innovative air products, services and solutions that enhance energy efficiency and productivity objectives.

Reciprocating Air Compressors

Ingersoll Rand has in its portfolio single- and two-stage reciprocating compressors that are ideal for metalworking applications that demand a reliable air supply for everyday use. They are built to be durable, reliable and have a compact design for flexible use.

Rotary Screw Compressor

Every component in our oil-flooded compressor system supports maximum reliability for increased productivity, longer equipment life, lower operating costs and higher profitability. Advanced airend and drive component designs provide world-class specific power and best-in-class air flow, resulting in reduced energy use.

On-site Nitrogen Generation

Our on-site nitrogen generators offer the quality and reliability you need to focus on what's important - maximizing the productivity of your operations. Our efficient designs generate nitrogen from freely available ambient air and allow you to forgo traditional nitrogen delivery, simplifying your business processes. Combined with our line of complementary products, you can enjoy the peace of mind that comes with having Ingersoll Rand as a trusted partner in each stage of the nitrogen production process.

Find a Partner You Can Trust

Ingersoll Rand has been working with the metalworking industry to provide clean, reliable and energy efficient solutions that perfectly match the needs of metalworking machinery, including molds, dies, cutting tools and machining centers. These tools transform purchased metals into intermediate or end-use products by forging, stamping, bending, forming, welding, machining and assembly.

Protect Your Investment with Ongoing Preventive Maintenance

When it comes to the metalworking industry, original equipment manufacturer (OEM) parts are an operator's best choice to maintain maximum reliability and performance. Non-standard parts can expose equipment to unnecessary wear and tear that can lead to downtime and higher operating costs.

If you want to protect the investment of your equipment, make sure to invest in quality parts to keep it running. Ingersoll Rand has a complete offering of maintenance and OEM-quality compressor parts, such as lubricants, maintenance kits, replacement parts, filtration and condensation management complimented by the expertise to keep your shop running.

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