

INGERSOLL RAND WHITE PAPER | FEBRUARY 2022

The Importance of Compressed Air Solutions in the Electric Vehicle Industry





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Introduction

The global automotive industry has undergone a significant transformation. Today's automated assembly systems include world class air compressors and advanced computer technologies. Because of this, the safest, most fuel efficient and reliable vehicles are on the market.

The introduction of compressed air technology to the automotive manufacturing industry has driven not only an increase in worker safety, but also an overall improvement in plant efficiency. In fact, compressed air systems are used throughout the production process in assembly, service and maintenance. It is also used in the production of sustainable batteries for electric vehicles (EVs).

Global Electric Vehicle Market

The importance of reducing carbon emissions has become a global concern. Because of this, electric vehicles (EV) are becoming essential components of global de-carbonization plans. Despite the impact that COVID-19 has had on the world, the electric vehicle market has experienced substantial growth.

According to Research and Markets, even though 2020 was a tough year for the automotive industry; the demand for EVs did not stop growing. Electric vehicles represented approximately 5% of all new car sales in 2020 and reached over 7% in 2021. It is forecasted that by 2030, 48% of all new cars purchased will be EV.

So, what's driving EV market growth?

- **EV components, like batteries, are improving faster than expected**
- **Policy and regulation pressure to achieve climate-change goals**
- **Ongoing investment into EV programs and startup companies**
- **Availability and affordability of models**

Compressed Air Applications in the EV Industry

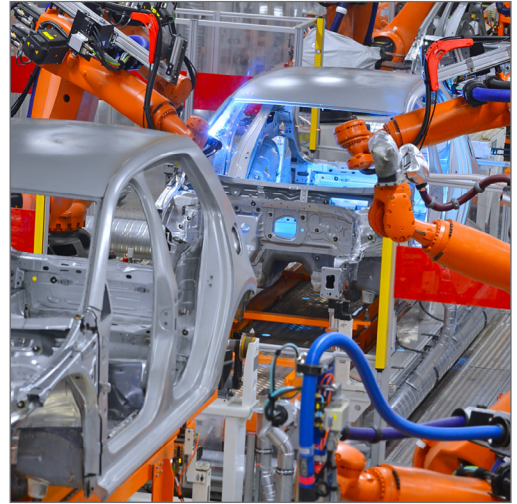
As with non-electric vehicle manufacturers, producers of EVs also need to invest in suitable compressed air systems, with specifications that fit their particular needs. The industry is comprised of a wide range of application areas that include everything from manufacturing individual components, to producing complete vehicles. Each of these areas has a variation on its compressed air demand.



Air-Operated Tools

Air-operated tools constitute a key element of a well-equipped workshop. They power lifting, positioning and assembly devices. Thanks to their ease of use and lower weight, air-operated tools are often preferred over electrical tools.

Compressed air is also used when powering robotic car assembly equipment with pneumatic components. Robots are an integral part of the vehicle manufacturing process. They do everything from painting, welding, and assembling to assisting with clamping and induction. For these functions, pneumatic components are used on both stationary and mobile handling robots.



Servicing and Repair

The compressed air volume and pressure needed for painting vehicles, inflating tires and operating equipment varies from 2.5 CFM to 20 CFM. Heavy-duty jobs, like sanding, painting and welding, require higher airflow; while jobs like tire inflation and vehicle body cleaning require a reduced volume of air flow.

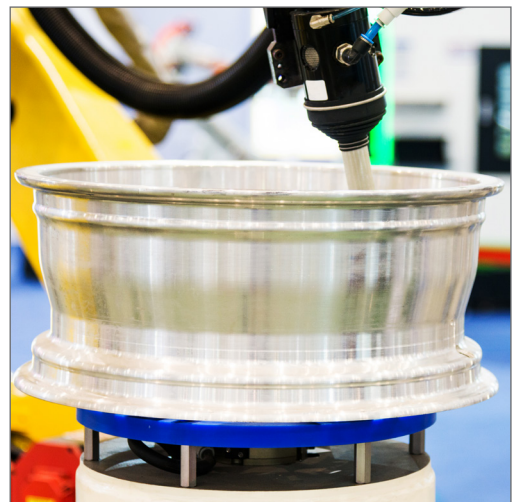
Pressure range varies depending on what job is being performed. Most air-operated tools need 6.2 bar of pressure to function properly. Painting tools require a pressure range between 2.4 to 4.1 bar, while tire inflation can reach a pressure of 8.9 bar.

Although air compressor systems offer higher air flow at lower pressures or vice-versa; it is essential to choose the right pressure that provides adequate airflow to power your equipment.



Applications for Compressed Air

Compressed air technologies are used for blow-off applications that clean containers before filling them with products or to cut, shape and convey products from one place to another. High-quality compressed air also prevents product contamination and ensures customer safety and satisfaction.



Compressed Air for EV Battery Production

The ever growing EV market is performing at full steam. This market has a significant impact on the reduction of CO₂ emissions. However, to make an impact, each EV needs a sustainable and high-quality manufactured battery that helps to reduce the emissions of greenhouse gas.

The process of producing such batteries requires dry, contamination-free compressed air and nitrogen. This can be achieved through the correct combination of air and gas compressors that use the appropriate dryers and filters.



Battery Production Helps Recover Energy

Up to 94% of electrical energy can be turned into compressed heat during the EV battery manufacturing process. This heat can be reused for a variety of things, including heating your workshop, drying raw materials or simply repurposing the heat energy to other parts of the workshop. In order to take advantage of this renewable energy, it is important to install energy recovery units. These units significantly decrease the overall energy consumption and carbon footprint of your manufacturing process.

Ingersoll Rand—Your Reliable Partner

Choosing the right compressed air system for your automotive facility can be a complex and overwhelming process. Considering several factors, including application specifications, your space availability, types of air compressors needed, efficiency and reliability of the equipment, environmental factors and carbon footprint, as well as overall maintenance and service, will help make the decision easier.

As your complex compressed air solutions partner, Ingersoll Rand can take this burden off your shoulders and help you design, deliver and install the best compressed air system for your applications.



Air Compressors for Your Needs

Ingersoll Rand experts work to identify your compressed air needs for your automotive facility. Depending on the application, we deliver and install the equipment with the right level of quality and power to make your workshop operate at full swing. Ingersoll Rand oil-lubricated or oil-free compressors together with refrigerated and desiccant dryers and tailor-made filtration solutions will provide you with maximized reliability.

Energy Efficiency

To maximize efficiency and reduce your carbon footprint, Ingersoll Rand offers not only energy recovery units, which use the waste heat generated by the compression process offered on both technologies, but also energy audits of existing equipment as well as control solutions for central plant and remote systems.

Diagnostics and Predictive Maintenance

Ingersoll Rand's non-cycling refrigerated dryers offer a unique combination of components and features that provide high reliability and no maintenance with maximum productivity. With efficient heat exchangers, a built-in stainless steel demister, and an electronic drain valve, non-cycling refrigerated dryers can significantly reduce energy consumption and minimize air loss.

**There's a lot riding on the quality of your air.
Let Ingersoll Rand help you get it right.**



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