

CASE STUDY

Case Study - Piping and Distribution

A leading local graphics and printing company in Florida with over 40 years in the graphics industry needed to increase the volume in their air system due to innovations in embossing. By adding a new rotary screw compressor to their small reciprocating compressor, they more than doubled the output of their compressed air supply.

The increase in volume also increased the pressure drop across the system as the current undersized piping was creating a restriction in flow. The choice was clear; distribution piping must be increased to minimize pressure drop. At the time, the printer had been using PVC piping for their air system, so they needed to determine if PVC was the right choice to install again. Being cost conscious with the initial system, the owner chose PVC because it was inexpensive, resistant to corrosion, and lightweight. However, over time the owner experienced the less desirable aspects of using PVC. PVC can become brittle and crack with age and the facility had been suffering from cracked fittings and experienced many air leaks throughout the facility. Thankfully, they did not have a dangerous, rupture outcome with the brittle and aged product. OSHA regulations prohibit PVC in some applications. The final decision was to replace the PVC due to the fact that the synthetic lubricants in most rotary compressors can degrade the integrity of plastic pipes.

The owner chose to install all new aluminum piping with metal fittings from the supply equipment to the full distribution ring using 50 mm diameter piping in the distribution ring. The pressure drop decreased from 5 psig in the distribution ring to under 1 psig. The additional cost of the aluminum was mitigated by the increased speed of the installation using push-lock style fittings and allowed for minimal downtime of the air consuming equipment. Additionally, the leak free design of the aluminum piping system ensured that the full volume of air being produced was available to satisfy all downstream applications as and when needed.

The owner enjoyed the same lightweight and corrosion resistant properties of PVC without the risk of the material becoming brittle. The smooth bore aluminum also minimized pressure drop. By using metal fittings rather than plastic fittings, the owner eliminated expansion and contraction issues, ensuring no leaks at connection points.

The owner was pleased with the outcome and chose an additional full installation of the same piping at a satellite facility which included both the entire compressor room and distribution system.

There are several options of materials that can be used in compressed air piping and distribution systems. It is always recommended to contact a compressed air system supplier or specialist to get their recommendation for what would be best for your system and particular application. This will ensure the system meets the local required regulations, meets the application system requirements, and maximizes system efficiency. The compressed air specialist can review the advantages of each possible solution.

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