Improving Employee Morale

Carroll Healthcare delivers a clean employee environment with RoboVent.

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Steve Walker, director of operations at Carroll Healthcare, Inc. in London, Ontario Canada is a proponent of modern, efficient air filtration in welding plants. "Unless you're welding outdoors, I wouldn't consider anything less than total air filtration in a welding plant," he said recently as he discussed Carroll Healthcare's decision to upgrade air filtration systems in their plant.

Carroll Healthcare manufactures beds and furniture for the long-term healthcare market. The company manufactures more than 20,000 beds yearly and a variety of furniture pieces. They manufacture three lines of beds and three furniture lines that include end tables, hutches, wardrobes and dressers. Beds and furniture manufactured by Carroll Healthcare are used in hospitals and nursing homes throughout North America, South America and Asia.

The company was founded in 1977 and currently employs 108 people at its manufacturing plant in London, Ontario and its US distribution warehouse in Missouri. Carroll Healthcare is a division of the Invacare Continuing Care Group, based in Elyria, Ohio, and has annual sales in excess of $30 million.

About two years ago, management at Carroll Healthcare began to look at upgrading the air filtration system in their manufacturing plant. The air filtration system they were using at the time was old and outdated and was not cleaning the air to their desired standards. The air quality inside the plant was better than the standards required by the Ministry of Labor, but employees were noticing a haze near the ceiling of the plant and management decided to look for air filtration systems that would work better.

Walker said that the philosophy of Carroll Healthcare is to be very proactive at "doing the right thing" and providing the best working environment possible for employees. "When something's not working, we find out why and get something that will work," he said.

Carroll management began its upgrade by looking at the various air filtration manufacturers and systems available. Next came site visits to other welding manufacturing plants that utilized air filtration. With three robotic welding cells in use at the Ontario manufacturing plant, finding air filtration units effective at removing impurities generated by high-volume robotic welding was a primary objective of the upgrade.

While investigating robotic welding suppliers, one of the team members observed a RoboVent® Self Contained Air Filtration unit mounted on a robotic welding cell and contacted the manufacturer, RoboVent Product Group of Clawson, Michigan.

Carroll Healthcare eventually contracted with RoboVent because the RoboVent units were standardized to work with Carroll Healthcare's existing welding cells and the other air filtration equipment manufactured by RoboVent required minimal customization to work with other welding applications utilized in the plant.

Carroll Healthcare purchased three RoboVent Floor Mounted Self-Contained Air Filtration units for their robotic welding cells. They also purchased one air filtration unit for back draft fume extraction from two manual welding bays in their plant and one downdraft table for dust extraction from a sanding station in the plant.

The RoboVent units at the Carroll Healthcare plant utilize a hood that is mounted over the welding cell. The hood has a specially engineered spark arrester that prevents fires as it sucks air laden with smoke, welding dust and airborne particulates from the welding cell. The air travels through a duct to a self-contained collection and filtering unit that sits on the floor next to the welding cell. RoboVent also manufactures a FloorSaver unit, in which the collection unit is mounted above the welding cell. The collection unit consists of a housing with a blower, motor, silencer, filter cartridges and a unique compressed air pulsing system to clean the filters.

The RoboVent collection unit uses a patented filtration process in which air flows in a downward path. This is unique to the RoboVent product and provides more efficient air cleaning. As the collection unit receives air from the hood, it immediately shifts the airflow 90 degrees downward through the filter elements where the air is cleaned. This causes separation and deposition of the larger, heavier smoke and welding dust particles, which reduces the load on the filter cartridges.

The down flow of air within the collection unit reduces air turbulence and virtually eliminates re-entrainment, or re-blowing dust within the collection unit that has already been cleaned off of the filters, back onto the filters. Re-entrainment is the primary cause of short filter life.

The RoboVent units use vertical filters, which are more efficient and have a much longer filter life than the horizontal filters used in most air filtration units. Vertical filters allow collected dust and debris to shed off of the filter and fall directly down (with the direction of the RoboVent's airflow) into the containment or collection tray when the filters are pulsed by the filter cleaning system.

Using horizontal filters is very inefficient, according to John Reid, president of RoboVent Product Group. "We've found that dirt and debris tends to fall off only the bottom two-thirds of a horizontal filter, rendering the top of the filter ineffective as it becomes clogged with debris," he said. "This results in a 30-40 percent loss in filter area and a substantial reduction in filter life."

The RoboVent has a proprietary filter cleaning system to keep filters clean and extend filter life. Each time the RoboVent unit shuts down, the automatic cleaning system sends a pulse of compressed air to blow debris off of the filters, keeping them clean. The debris falls downward (in the same direction as the downward airflow) into the collection tray, where it is later removed by maintenance personnel.

Once the RoboVent units were installed, Carroll management and employees saw an immediate improvement in air quality, according to David Shillinglaw, maintenance manager at Carroll Healthcare. Shillinglaw said they did air quality testing before and after the installation of the RoboVent units and saw a 50% reduction in the amount of particulate in the air.

"The units have all performed well beyond our expectation," Shillinglaw said, noting that the effect of the new air filtration equipment has been significant. "The amount of particulate and dust accumulation on the robotic arm and weld fixtures is now a fraction of what we experienced prior to the implementation of the RoboVent units," he said. This, in turn, has meant less maintenance time is required for cleaning the robotic equipment and the weld fixtures.

In addition, air-sampling tests have shown air quality to continue to be well above government requirements. Most importantly, employee morale has improved dramatically. "Our employees saw a concern for their health on the part of the senior management and the owners of the company," Walker said.

Walker said that they have also seen some unexpected additional benefits as a result of the new air filtration equipment. "Recycling filtered air back into the plant eliminates the need for an Environmental Certificate of Approval to emit pollutants from the Ministry of Environment and saves the cost of providing and conditioning make-up air that air extraction systems would require," he said.

Although RoboVent offers a maintenance program for all of its equipment, Carroll Healthcare opted to perform its own maintenance on the RoboVent air filtration units. Shillinglaw said RoboVent provided training for him and his staff when the equipment was installed. A second refresher training session was also provided by RoboVent Product Group.

Both Walker and Shillinglaw say the decision to invest in modern air filtration equipment is an easy one. "Just look around your plant and talk to your employees. You'll see and hear all the evidence you need to make the decision," Walker said.