One of the most common safety concerns in the welding and cutting industry is the creation of fumes and vapors from the hot work being performed. The recent focus from the Occupational Health and Safety Administration (OSHA) on Hexavalent Chromium {1910.1026 (General Industry), 1915.1026 (Shipyard), and 1926.1126 (Construction)}. has many welding and related employers taking a new look at the air quality and work environments in their respective workplaces. A fume extraction system helps to minimize the exposure of chemicals and particulates to employees working in the immediate area. However, choosing a fume control and mitigation system is not as easy a turning on a fan or opening a window. A good fume control plan requires a thorough hazard analysis be done to determine exactly what chemicals or contaminants need to be removed. This analysis should include a review of the specific work done in the workplace and what dangers might be present. This information often includes a review of Material Safety Data Sheets (MSDS), air quality samples, and other related data. Together this information will help you to determine exactly what chemicals are present in the workplace and what the best extraction system is available to fit your needs.

Ducted Hoods

Ducted hoods come in various shapes and sizes, including self contained booth systems. All hood systems have in common that they are vented systems with either a single or network of ductwork attached to them which exhausts any contaminated air out of the work area which is then vented outside the building. These types of systems are generally easy to maintain as they are frequently permanent over a specific work area.

Prior to installing any hood system is important for an engineer or heating, ventilation, and air conditioning (HVAC) specialist to determine the proper size and type of system needed. This is based on many factors including the type of fumes present, the quantity of work being performed and the size and shape of the room. Other considerations such as overall air availability in the room and the type of heating and cooling systems used need to also be considered in the system design. The proper specialist will be able to perform the needed calculations to ensure the correct air flows and energy efficiency for your needs.

There are many options available for the materials used in the construction of your fume hood. Depending on the nature of work you perform and the types and chemicals and other contaminants present the material can range from simple steel or metal to fiberglass or a specialty resin based material. **Coated steel** hoods have an epoxy coating that offers high heat-resistance and is compatible with many different types of work environments, but if the epoxy surface is damaged the steel can corrode quickly if exposed to chemicals or the environment. **Fiberglass hoods** have good heat-resistance and offer strong chemical-resistance and are often the best choice when your work involves acids, solvents or bases. **Poly resins** offer excellent chemical protection like fiberglass hoods, but have poor heat-resistance so are not suited for high temperature environments.

Most hoods are sold without blowers, allowing your HVAC specialist to match your specific needs with the correct size and material of construction your blower requires. While it can be tempting to purchase a system that advertises a complete hood and blower package, it is always wise to check with a specialist first to make sure the size and design are appropriate for your needs. A little research and consultation upfront can save your spending extra money to replace or upgrade a system that is inadequate for your work. .

Ducted Extraction Arms

Ducted arms offer the same advantages of ducted hoods, but are often a far easier and practical option to help respond to specific areas where fumes need to be exhausted such as over a work table

or spot work areas like a soldering bench. Ducted arm systems are often sold by component so you can customize the size, shape and strength of your system based on your specific needs.

Ductless

A ductless fume hood uses HEPA or other special filters to remove metal particulates, bacteria and chemical vapors from the air. The filtered air is then exhausted back into the work environment. The advantages of ductless systems are that they do not require the duct work or venting to the outside like a canopy hood system, and as a result are often far less expensive. Another advantage is that they are portable, many the size of a small cart or tool box, and can be moved from work area to work area as the need arises. As the technology increases the size of these systems decreases and efficiency increases making them both an affordable and practical investment for many workplaces.

Getting the Right Help

Whatever system you select, it is important to make sure you maintain your system in proper working condition and follow the recommended filter change out schedule and other maintenance recommended by both the manufacturer and your HVAC specialist.

Developing a fume reduction program and installing a proper exhaust system can seem overwhelming. Seeking the help of a qualified specialist such as an HVAC technician or a Certified Industrial Hygienist (CIH) who has experience in ventilation issues and experience in fume removal systems can help you avoid costly mistakes and rework.

Another excellent source for assistance is your Maine Oxy Sales Professional. Our extensive contacts with HVAC, Industrial Hygiene and vendor consultants allow us to pair your specific needs with the right solution that fits within your budget.