Tech Tip, Generators and Compressors

In almost all of the cases, the problems could have been avoided with good preventative maintenance. So, in this edition of Tech Tips, I'd like to focus on things you can do to avoid problems with this equipment. I'll also include preventative maintenance on air drier and fresh air systems. Since there are many different brands and variations of this equipment, it is impossible for me to address each one individually. Therefore the tips I'll present here are general in nature. Ultimately, your best source of information is the owner's manual for each piece of equipment. You should also remember that the conditions, in which the equipment is used, plays a large role in when & how often maintenance should be done. Heat, high humidity, and dusty environments can dictate that service should be performed more frequently. Remember, preventative maintenance is always less expensive than repairs and downtime.

Generators

Obviously, when your generator is not working properly, you can't spray. Perhaps just as important, is that if your generator shuts down unexpectedly, it can have adverse effects on the rest of your equipment. When a generator starts up or shuts down, the voltage fluctuations can be extreme. The Graco Reactor units utilize circuit boards that can be pretty sensitive to these voltage fluctuations, sometimes resulting in circuit board failure. However, there are some simple things you can do to that will help to avoid problems with your power source.

On a Daily basis, check the following:

Oil level - if necessary, top off with the recommended grade of oil. However, if you have to constantly add oil to your generator engine, then there is a problem that should be addressed.

Coolant level - if necessary, top off with the recommended mixture of water / antifreeze. Once again, if you constantly have to add coolant, then there is a problem that should be addressed.

Belts - Look for frayed or cracked drive belts. In almost all cases, these drive the water pump. If they fail your generator will overheat and cause major engine damage.

Fuel - Always purchase your fuel from a trusted source. Underground tanks can develop moisture in them and fuel sources that don't sell a lot of fuel can develop a considerable amount of water in these tanks, which ultimately ends up in your generator's fuel tank. Virtually all diesel engines have a water separator filter on them. It's a good idea to periodically drain a little fuel out of the bowl and check for water.

Visual inspection - Look for fluid (fuel, oil, & coolant) leaks and quickly address them if you find evidence of leakage.

Think of it this way, would you put your automobile on an 8 hour road trip without checking the oil, water, tires, etc.? Sounds like common sense, right? However, it is amazing how often the same logic is not applied to a generator that is being ran for 8 hours each and every day!

You should keep track of the hour meter on your generator and service the engine at the intervals recommended by the manufacturer. Among the items that should be serviced are:

Oil and filter change

Air filter (I actually know of one case where the customer failed to replace a dirty air filter. That led to turbo charger failure, which led to a loss of oil pressure, which led to engine failure. It cost thousands of dollars for a new engine…..all because an air filter needed to be replaced!)

Fuel filter - as described above, an unexpected shut down of the generator can lead to damage to other equipment.

Clean cooling fins of the radiator - Because the generator is sitting stationary during operation, you are relying totally on the fan to draw air through the cooling fins of the radiator. Therefore, it is critical that the cooling fins be cleaned periodically for the the radiator to work effectively.

Remember, the environment in which your equipment is operated will largely control how often it is serviced. Extreme heat, high humidity, and dusty environments will all mean that you should service your generator more frequently.

Air Compressors

There are two basic types of air compressors, rotary screw and reciprocating. When it comes to maintenance, they have several things in common that need to be serviced:

Lubrication (oil) - Both types use an oil of some type. Refer to your owners manual for the proper type and grade of oil, as well as the required oil level. Check the oil level on a DAILY basis!! Do not over-fill the compressor with oil, too much oil can be as bad as not enough!

Air intake filter - all compressors use some type of air intake filter. A clogged intake filter can cause the compressor to work excessively hard and cause it to overheat.

Oil filter - All rotary screw and some reciprocating compressors use an oil filter. If the oil filter is clogged it will reduce or stop the circulation of oil in the compressor and cause premature failure.

Coalescer filter - All rotary screw compressors utilize a coalescer filter, that removes the oil from the compressed air and returns it to the sump. If it is clogged, it will not effectively remove this oil from the air. The result is that the contaminated air is sent down-stream to the air drier and all of the equipment on your rig that uses air (including the spray gun). It will also cause the compressor to lose oil and eventually run dry. If you have to “top off” the oil in your compressor on a daily basis, or if you observe an oily discharge in the exhaust of your transfer pumps or agitator, you should investigate the cause immediately.

Cooling system - Rotary screw compressors use an oil cooling system similar to a radiator. The fins of this cooling core should be kept clean and unobstructed to prevent overheating. Reciprocating compressors utilize cooling fins on the compressor head itself (similar to an air-cooled motorcycle engine). If these fins are covered with dust or dirt, the compressor cannot cool itself effectively and will overheat. In both types of compressors, there is usually a over-temperature shut down safety device, but you should not count on that. Rather, you should visually inspect and clean these cooling fins as needed.

Air Driers

There are two commonly used air drier systems available, used to remove condensation from compressed air, refrigerated and desiccant. Moisture is common in compressed air. How much moisture is determined by dew point and ambient humidity. Desiccant type systems are marginally effective in areas of the country with an average humidity greater than 15%. Refrigerated air driers are much more effective in removing moisture from compressed air, but are also more expensive so it makes sense to take care of them.

On desiccant type air driers, the beads should be replaced when they turn from blue to pink. On refrigerated air drier you should clean the ambient air filter regularly and service the separator filter and drain mechanism per the manufacturer’s recommendations, usually annually. However, if you have had a malfunction with your compressor and have sent contaminated (with oil) air to the drier, it should be serviced when the compressor issue has been repaired.

Fresh Air Supply

OSHA requires that anyone spraying foam insulation, and anyone working in close proximity to that sprayer, use a supplied fresh air system. There are two main types of supplied fresh air systems, an oil-less compressor and a fresh air panel system that utilizes air from your main compressor.

Oil-less compressors - these portable, low pressure compressors are pretty much what the name implies. They do not use oil in them and as a result they tend to run hot. Most of them have an over temperature shut off switch. If the switch trips, you will have to wait for it to cool down before you can use it again. To help prevent this from happening, you should do the following:

The compressor should be plugged into a dedicated 20 amp circuit. Use no more that 50’ of heavy duty, 12 gauge extension cord.

Place the compressor in a cool or shaded place. Change the inlet and outlet filter regularly (per manufacturer’s recommendations, more often for dusty environments). Always have a mask attached to it before turning it on.

Fresh air panels - These use air from your compressed air system and typically consist of a 4 stage filtration set-up, CO (carbon monoxide) monitor, and a regulator to regulate the air down to breathable pressure levels. These are much better fresh air systems than the oil-less compressor type and generally provide cooler air to the sprayer. You should change the filters and calibrate the CO monitor per the manufacturer’s specifications. If you are using this type of fresh air system and your main compressor has sent contaminated (with oil) air down-

stream, I would recommend that you change all of the filters on the panel. Remember, this is the air that the operator is breathing into his lungs, don’t take chances with his health.

I highly recommend that you have a copy of your owner’s manual on each piece of equipment on your rig. If you discover that you don’t have a copy of the owner’s manual, I suggest that you get a replacement. It is the best source of information for recommended service intervals.