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1995 Technical Bulletins

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TB9544 - November 1995

A CLOSER EVALUATION OF TRUCK MOUNT HEATING SYSTEM ALTERNATIVES

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Too often, when the professional cleaner is faced with the decision about what kind of equipment would be best for his/her company to purchase, specifications are thrown about like they are the ultimate measurements of the usefulness of a particular piece of equipment. There is very often more to understanding these specifications than meets the eye. By encouraging the professional cleaner to better understand how heating the cleaning solution is accomplished, one can help to expand the professional cleaner or restorer's knowledge as to how to select the heating system that will best serve their company. However, there are many points that should be considered.

There are basically three different types of heating systems available for truck mounts - heat exchangers, propane systems, and fuel oil (usually Kerosene) systems. There are many different kinds of heat exchange systems on the market. Advanced engineering and applied technology have created heat exchange systems where the engine exhaust heat, water jacket heat and blower exhaust heat, are not the only potential sources of heat. The ambient heat that is created by the components (mainly the engine) does not pass through the engine exhaust system. When the machine is properly engineered this heat can also be captured, aiding the heating process and even cooling down the machine components for longer life. Therefore the bottom line and end result will be enhanced by the efficiency of the heat exchange unit, from a direct result of the design engineering. How much heat each heat exchanger unit captures and transfers is obviously a hotly debated point. Every company that makes a heat exchange system is trying to develop a heat exchanger that is more efficient. For example, dwell time in the heat exchanger is very critical to how well heat is transferred. The rate of water flow can have a huge effect on the performance of the heat exchanger. Systems are constantly being analyzed to make the heat exchanger more efficient, including new technologies that use the machine cabinetry to control the flow of the heat.

A question that must be asked in an evaluation of heat exchange units is, "Is there enough heat available from the engine, operating the equipment, to supply all the hot water needed to clean a carpet?" To many carpet cleaners, a 120° temperature rise, say from input water of 60° to a heated temperature of 180°, would be considered only lukewarm under many cleaning conditions. Hot water means different things to different cleaners. One of the most important questions that must be considered when evaluating heating systems is not just the water temperature at the machine, but what the actual solution temperature strike rate is at the carpet. In measured tests, performed by our company for a major fiber producer, on all three primary types of heating systems used in our industry (kerosene, propane, and heat exchanger), solution temperature losses of 60 - 80° F between the time the solution left the machine and the strike rate on the fiber were not uncommon, even under the best of conditions. If you started at 180° F, your cleaning solution temperature could easily be as low as 100° F - 120° F.

There are also other heating sources such as fuel oil (kerosene) that will provide enough heat for all applications the professional cleaner will run into. It is a scientifically measured fact that there is more BTU's in a gallon of fuel oil than in a gallon of propane. More heat can be produced in less coil space. In restaurant and restoration cleaning environments, when the cleaning tool is triggered on more than off, allowing a larger water flow rate as high as 2.1 gpm for increased cleaning efficiency, without sacrificing heat, a fuel oil fired system is the best alternative from a cost and production rate standpoint. Fuel oil systems are the only ones

that can maintain high continuous temperatures to the wand under larger water flow needs. Because of this, in the pressure washing (steam cleaning) industry, fuel oil systems are used almost exclusively. There are many companies whose cleaning demands have demonstrated to them, when compared to a heat exchange or propane system, that a fuel oil fired system is the best alternative for their truck mount.

One other point that should be addressed is safety. Obviously, the cleaning technician should have control over the temperature of the cleaning solution that he/she is creating. Since on all three primary heating systems used in our industry (Fuel oil, propane, and heat exchange), there are now systems available to accurately control heat through applied temperature control technology, there is no reason for the cleaner to purchase a heating system that does not allow him/her complete control over the temperature. Another point of safety that is often brought up when discussing heating systems is flammability. In order to run most any truck mounted system, you have to fuel the power plant, whether it be the van engine, an air cooled engine, or a water cooled engine. Gasoline is responsible for running the vast majority of truck mounts. If you compare the material safety data sheets of gasoline and kerosene, you will see the flammability of gasoline is of far more concern than that of kerosene. Hopefully, gone are the days of showing pictures of burned up vans to justify the selection of one type of heating system over another. Proper routine maintenance of all cleaning equipment is the responsibility of any professional that is using the equipment. Whether it be a propane heating system, a kerosene heating system, or a heat exchange system, the power plant is their greatest potential source of fire. Professionalism and proper maintenance in running any type of cleaning equipment is a necessity.

One final point has to do with the cost of creating the heated cleaning solution. Any professional that has investigated their cost of doing business knows the single biggest expense of doing any carpet cleaning job is labor. The cost of fuel to heat the water is insignificant in comparison to its advantages in the cleaning process. Labor costs average around 35 to 45% of income. Fuel expenses range around 2 to 3% and that includes running the power plant itself. The job of the heating system is to heat the water to (and keep it at) a more productive temperature. This reduces the use of cleaning solutions, reduces drying times, and makes the cleaning solutions used more active. If the heating system selected cannot maintain the cleaning solution temperature needed, this increases the amount of cleaning solution used, increases customer inconvenience by extending drying times, and causes the cleaning solutions to be less efficient. In final evaluation, the only way that the cost of heating your water can hurt your profitability is if it reduced your efficiency.

Our conclusion is that there are many ways you can create your heat in truck mount cleaning machines. All of these systems have advantages and disadvantages to consider. The professional cleaner needs to weigh all of the facts, see all of the systems in actual operation, and determine the market that he/she will be targeting. We recommend that every professional cleaner who is looking at purchasing a truck mount gain a better understanding of the difference between paperwork specifications and how that unit performs under "real world" conditions. The professional can seek the advice of the properly trained salesperson in determining which types of heating source will best meet the customers present and future needs.

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