

# **BEFORE YOU PURCHASE YOUR ASPHALT PATCHING MACHINE READ THIS !!!**

## **Myths, Lies and Truths about Asphalt Patching Machines**

**MYTH: Radiant air heated machines use less energy than heat transfer oil heated machines.**

**TRUTH: Air is a poor conductor of heat and oil is a great conductor of heat, therefore air heat may get an empty machine up to temperature faster but uses much more energy in the long run to sustain the temperature and is inefficient at heating asphalt mix.**

**MYTH: Radiant air heated machines can maintain a constant temperature.**

**TRUTH: In order to maintain a constant temperature, the air chamber would need to be heated continuously, requiring the heat source to run constantly, resulting in higher energy consumption. Radiant oil retains heat, maintaining asphalt at an exact temperature with a nominal consumption of energy. Radiant oil also maintains a more even heat without hot or cold spots.**

**MYTH: Radiant air heat is quicker heating asphalt mix than radiant heat transfer oil.**

**TRUTH: While the air chamber may rise to the desired temperature quicker, the heat transfer oil conducts heat better and will take less time to heat a load of asphalt mix.**

**MYTH: Radiant air heated machines are GREENER than heat transfer oil heated machines.**

**TRUTH: A B.T.U is a B.T.U. and in theory, it takes the same B.T.U. to heat the same amount of asphalt mix. A propane driven radiant oil machine produces the same B.T.U. in a shorter time period and is more thermally efficient than a radiant air machine, making the radiant oil machine the **GREENER** choice.**

**MYTH: Radiant air heated machines have automatic thermostatic heat control.**

**TRUTH: No radiant air machine on the market has a thermostat that automatically re-ignites upon sensing a temperature drop. Only the Thermo-Lay has such technology. As it stands, in order to have true automatic thermostatic heat control, the thermostat must be able to sense the heat chamber, stop the heat source when it has reached the desired setting, and then restart the heat source when the temperature drops. All radiant air machines on the market today must be manually re-ignited, making them more prone to operator oversight and more prone to erratic asphalt mix temperature.**

**MYTH: The exact temperature of the asphalt makes little difference as long as it is dispensed into the repair site.**

**TRUTH: The exact production temperature of the asphalt mix (hot mix or cold mix) is extremely critical to insure a permanent repair rather than a temporary repair and to eliminate damage to the patching machine. How does one determine the exact production temperature? Unfortunately there are many grades of asphalt cement used in the production of asphalt mix plus the prolonged storage of these asphalt cements results in an increase in temperature for production. The only true and accurate determining method is measuring the temperature of the asphalt mix after it has been produced before it has been dispensed into the patching machine. A slight decrease in the mix temperature becomes a major increase in the amount of horsepower required to dispense the mix from the patching machine. Also, as the temperature of the mix decreases, the compaction rate decreases because the cooler asphalt mix will not fill all of the voids in the repair, resulting in a weak, temporary repair.**

**MYTH: Heating the asphalt mix with radiant air is superior to heating with radiant oil.**

**TRUTH: Radiant air heating beneath asphalt mix is less efficient, cannot be regulated, and must be manually controlled. Once the air in the heat chamber, heated by flame or electric elements, reaches the desired temperature and the thermostat shuts the heater off, the air chamber cools. If the thermostat probe is in the heat chamber, the heater would run almost constantly because of the rapid rise and fall of the air temperature. Air is a poor conductor and retainer of heat. Heat transfer oil will initially take longer to acquire the correct temperature, but will require very little energy to maintain the temperature. Heat transfer oil is a superior conductor of heat and retains the heat for many hours before seeing a meaningful drop in temperature, making it the superior medium for heating asphalt mix.**

**MYTH: Rear axle GVWR doesn't really matter; the larger the asphalt mix hopper, the better.**

**TRUTH: With the absolute best weight distribution dimensions applied, 4 ¼ cubic yards of asphalt mix is the maximum storage capacity available on a single axle truck chassis. The Thermo-Lay is the ONLY machine that can meet the Federal 20,00# rear GVWR weight when fully loaded.**

**MYTH: Overloaded patching machines are acceptable because most municipalities are not subject to such rules.**

**TRUTH: Even municipalities are liable for an overweight truck involved in an accident. The Thermo-Lay is the ONLY machine that can meet the Federal 20,00# rear GVWR weight and 33,000# total GVW truck weight when fully loaded.**

**MYTH: Truck chassis length (cab to axle or wheelbase) makes no difference to GVWR.**

**TRUTH: There is a formula for computing the weight upon each axle based upon wheelbase, cab to axle, patching machine weight, length of patching body, and distance between the back of the cab and the patching body. The longer the wheelbase, cab to axle, and distance between the body and the back of the cab, the less weight distributed to the front axle and the more weight left on the rear axle. The Thermo-Lay machine is the shortest, lightest, body on the shortest wheelbase and cab to axle. The Thermo-Lay is the ONLY machine that can meet the Federal 20,00# rear GVWR weight and 33,000# total GVW truck weight when fully loaded.**

**MYTH: Automatic re-ignition of the heat source (propane or electric heater) is not necessary.**

**TRUTH: Automatic re-ignition is the only way that a constant temperature can be obtained. A manual re-ignition system relies on the operator to restart the heating source. Human nature, being what it is, the operator does NOT remember this task well enough to provide a constant temperature. In fact, a system that stops and must be manually restarted uses much more energy because it takes less energy to maintain a desired temperature than to reheat to a desired temperature from ambient.**

**MYTH: It's possible to carry 5 or 6 cubic yards of asphalt mix on a single axle truck.**

**TRUTH: Most asphalt in North America weights around 4,000# per cubic yard. The patching body has substantial weight regardless how it is heated (air heat, radiant oil, electric air) and some bodies are built heavier than others. 16,000# of asphalt alone on a 20,000# rear axle leaves only 4,000# for the weight of the rear end assembly and the patching body. Most rear axle assemblies weigh around 3,000#. It is impossible to achieve more than 20% weight transfer to the front axle. The Thermo-Lay is the highest capacity asphalt patching machine produced – 4 ¼ cubic yards - while being legal on the rear axle at 20,000# total.**

**MYTH: Tack oil can be “re-emulsified” by circulating the tack oil.**

**TRUTH: Tack oil is produced by breaking down the asphalt cement, water, and surfactant to the molecular level and bonding these three substances together with an electrical current. Re-circulating the tack oil does NOT “re-emulsify” it, rather, it accelerates the deterioration of the tack oil by breaking the electrical bond, resulting in coagulated lumps of asphalt cement.**

**MYTH: Water can be added to tack oil to make it thinner and reduce the coagulated lumps.**

**TRUTH: Adding water to tack oil also accelerates the breakdown of the electrical bond by pulling the water molecules away from the emulsion tack oil, again resulting in lumping of asphalt cement.**

**MYTH: Tack oil must be heated to make it spray better.**

**TRUTH: Heating emulsion tack oil evaporates the water molecules and accelerates tack oil deterioration causing larger lumps of asphalt cement.**

**MYTH: Storing large amounts of tack oil has no effect on the life of the tack oil.**

**TRUTH: Emulsion tack oil deteriorates from the moment it is produced unlike fine wine, storage accelerates the breakdown causing lumps of asphalt. Over time the lumps become larger and larger as the asphalt cement molecules continue to coagulate.**

**MYTH: Air operated tack oil systems are better than mechanical pumped systems.**

**TRUTH: Air systems have temperature limitations, usually below 40 degrees F, when the air will freeze. Also, air coming in contact with emulsified tack oil will accelerate the deterioration of the tack oil, producing coagulated lumps of asphalt cement.**

**MYTH: Two auger screw conveyor motors (one on each end) provide more torque than one motor.**

**TRUTH: Hydraulic motor torque is based upon the hydraulic pressure applied to the hydraulic motor. The larger the cubic inch displacement the more torque available. Placing a hydraulic motor on each end of a shaft produces a torque that is an average between the two motors. In other words, the lesser torque motor will rob torque from the stronger motor and average out the torque. There is NO advantage to putting the same motor displacement on each end of a shaft, as torque will only average, not double.**

**MYTH: Two auger screw conveyor motors (one on each end) provide more speed than one motor.**

**TRUTH: Hydraulic motor speed is based upon the flow (gallons per minute) of hydraulic fluid. If the same hydraulic fluid flow is provided to both motors, they will rotate at the same speed that one motor would rotate. There is NO advantage in having two hydraulic motors on each end of a shaft.**

**LIE: Thermo-Lay radiant heat transfer oil is a dangerous hazardous substance.**

**TRUTH: The radiant heat transfer oil in the Thermo-Lay machine is simply motor oil without detergents or anti-oxidation agents. While it may be considered a hazardous waste when disposing of it, it is exactly the same as disposing used motor oil and may be recycled or used for waste oil heaters, just like used motor oil.**

**LIE: The Thermo-Lay automatic re-ignition propane system is dangerous and not needed.**

**TRUTH: The automatic re-ignition propane system on the Thermo-Lay is comprised of UL listed components that are installed on EVERY automatic re-ignition hot water heated tank supplied to the RV industry and has a 30+ year history of being reliable and safe. The Thermo-Lay system has a few added safety features beyond the RV systems. Automatic propane and electric re-ignition is essential to maintaining the exact temperature of the asphalt mix, providing 100% compaction rates and giving the Thermo-Lay components longer life with easier operation.**

**LIE: Electric solenoid operated hydraulics are high maintenance and problem ridden.**

**TRUTH: The Thermo-Lay machine started out as a manually operated hydraulic system with pull levers and remote pull levers. In 1984 the hydraulic system evolved and used electric solenoid operated hydraulics, which proved to be impervious to the dirty, asphalt coated environment that produced many problems with the manually operated valves. No longer did the dirt and asphalt stick to the exposed valve spool section and become lodged, creating heat. No longer did the valve spool seals leak because corrosion and rust pitted the valve spools. The electric solenoid valves are sealed with NOTHING exposed to the elements. Being able to use wired remote switches allows the Thermo-Lay to have many safety features unavailable with manually operated valves. Dual controls allow the switches to be rear mounted and mounted in the cab.**

**LIE: A remote throttle is better than the Thermo-Lay automatic 2 speed auger conveyor motor.**

**TRUTH: Raising the engine R.P.M., with a remote throttle device, only produces more hydraulic fluid flow (function speed) and not torque (function power). Excess fluid not being used generates heat and eventually must be cooled. The excess energy used having the truck engine above idle is very wasteful. The Thermo-Lay automatic shifting 2 speed auger conveyor motor provides the maximum torque available for easy starts and then automatically shifts to maximum speed delivery without operator input and most importantly without generating unnecessary heat to the hydraulic system, all without any increase in engine R.P.M. or an external hydraulic cooler.**