SEREC CORPORATION

PRECISION & INDUSTRIAL CLEANING SYSTEMS

Serec Process

The Serec Corporation process is designed around the philosophy of pollution abatement rather than "end of pipe" pollution control. The later philosophy results in cross media pollution by either creating a water or solid waste problem. We at Serec feel it is time to treat air pollution in the same manner in which we treat water pollution problems. If you were going to carry out a process in a tank filled with water, and the water was not part of the process, would you purposely contaminate the water or would you empty the water first then perform the tasks?

Air does not help the degreasing process. In fact, leaving air in the vessel during degreasing leads to many problems. As a first step in the Serec process, therefore, air is removed from the vessel to a level of less than 1 torr. Only then is solvent introduced into the cleaning chamber. Solvent can be introduced as a liquid, vapor and/or spray at the option of the customer. Vapor and spray, because both are clean forms of solvent, are recommended by Serec.

After parts are cleaned, liquid solvent not trapped on parts is drained from the degreaser into a bottom sump tank which also operates in an air free environment. This solvent can later be distilled directly from the tank or, more generally, is continuously drawn off to a secondary distill tank which continuously distills clean solvent for recycle or spray. The sump tank also is used to provide vapors or soak if desired for the degreasing process, thus, Serec refers to this vessel as the vapor supply tank.

After draining, the degreaser is isolated from the vapor supply tank and the degreaser is again pumped down through our uniquely designed vapor recovery vacuum system. Depending on your solvent and cooling capability, the vapor passes through a series of compression steps to attain a level of 1 torr or less within the degreasing chamber. Typically four vacuum stages are used.

The Serec system typically recovers 99.9% of vapor and liquid solvent from the chamber during the process. The last 0.1% becomes very expensive to recover and, therefore, it is purged from the vessel with air and may be recovered in carbon.

The actual recovery step involves more than simple condensing in a heat exchanger. Vacuum pumps actually compress the vapors initially and for a pure vapor, this results in condensation. The vapors are then condensed further in a heat exchanger. In the absence of air, the heat transfer when condensing a pure vapor is very rapid.

Serec Corporation 342 Compass Circle, Unit A2 North Kingstown, RI 02852
(401) 667-7370 toll free (866) 298-0098 fax (401) 667-7375 www.serec-corp.com

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The third step is to mix the vapors - liquid mixture leaving the condenser with chilled recirculated liquid solvent. At the later stages of recovery, any liquid solvent remaining in the cleaning chamber is vaporized at the high vacuums attained and proceeds through the above recovery process.

The residual 1 torr pressure of solvent vapor remaining in the vessel is eventually sent to carbon since it is too expensive to recover. The purging step introduces air to the chamber and the air-solvent vapor mixture is pumped down to less than 1 torr. The purged air may be filtered through a replaceable carbon bed. The beds provided last for 6 months to a year.