

Technical Discussion of the Tiyoda-Serec Vacuum Degreasing Equipment

The Tiyoda-Serec Airless™ technology and patented degreasing systems (manufactured under U.S. Patents No. 5,240,507; No. 5,702,535; No. 5,630,434; No. 5,538,025; No. 5,469,876; No. 5,051,135; No. 5,193,560; No. 08/965,357) are unique for their capability, process flexibility, engineering, and manufacturing quality, and emissions elimination.

The technology has been proven in practice and recognized by federal, state and local air regulatory offices as LAER/BACT for California and the United States. Our equipment exceeds all EPA and OSHA regulations for a safe environment. The major advantages of this technology are the environmental regulatory compliance achieved, the process improvements implemented through reductions in solvent and energy usage, and the dramatic cost reductions achieved from direct labor and maintenance cost. This equipment will also increase your production rates and produce better quality parts

Probably, the most important benefit of a Tiyoda-Serec vacuum system is the guarantee of 100% drying. Typically, enclosed degreasers use hot air drying which is slow, expensive, and ineffective. Technically, drying with hot air can be viewed as the reverse of vapor condensing in an air environment. The difference is that now the air concentration is very high as compared to the solvent vapors. Air drying depends on the hot air reaching the liquid solvent on the part and convecting the solvent vapors away from the surface. Because of part size, configuration or material, having sufficiently hot air reach the surface is not always possible and often liquid remains on the part resulting in dragout from the vessel.

In the Tiyoda-Serec vacuum drying system, drying is fast and 100% effective even in holes and crevices. The principle is simple. Chlorinated degreasing solvents cannot exist in the liquid state when the pressure of the chamber is reduced to below 5 torr. During our drying and recovery cycles, the pressure in the chamber is far below 5 torr.

The principles described above provide the engineering technical basis for Tiyoda-Serec's products. A more detailed discussion of Tiyoda-Serec's technology will be available during the engineering review.