

*** KANSAS CITY DEAERATOR COMPANY ***

6731 W. 121st Street, Overland Park, Kansas Tel (913) 338-2111 Fax (913) 338-2144

The following is an excerpt from *National Engineer* magazine dated, September 1986. The article was written by R.E. Ketten, previously manager of Customer Support Services at Hercules, Inc. The title of the article is, "Operation and Maintenance of Deaerators in Industrial Plants".

Comparison of Deaerator Types

It has been shown that a temperature rise of at least 30°C. (50°F.) over the temperature of the incoming water is required to make spray-type deaerators perform effectively at full load. Further, the effectiveness of deaeration in a spray type unit seriously decreases as loads decrease, since at operating loads under 25% of design rating, the heating steam requirements are not sufficient to maintain high steam flow.

Tray-type deaerators, on the other hand, use a different principle for the release of gases. It is still necessary to provide a large water surface area so as to give adequate opportunity for the release of the dissolved gases. This is accomplished by the water cascading from one tray tier to another, exposing as much surface as possible to the scrubbing action of the steam.

Tray-type deaerators are designed with as many as 24 tray tiers to permit an adequate surface exposure. By utilizing this design method, the same amount of water surface is exposed to the steam for gas release, regardless of inlet water temperature. Also, as operating loads decrease under the design maximum, the ratio of surface to throughput water increases, and thinner films for release of gases are provided. This ensures effective deaeration under all inlet water temperatures and flow conditions.

Therefore, when a deaerator is operated under varying load conditions or inlet water temperature, the tray-type deaerator gives the most satisfactory results over the entire operating range.

Translating the foregoing points into terms of application, it follows that industrial plants that may operate under low-load conditions (at night, on weekend, or during the summer) will find that a tray-type deaerator gives better assurance of satisfactory oxygen removal than a spray type. In addition, central station deaerators serving turbines that also operate over a wide range of load conditions can get better deaeration with a tray-type unit.

This is not an indictment of spray-type deaerators. They do have definite places of application, and, when operated within their specified limits, will do an excellent job of gas removal. In marine service, where it is not possible to maintain the trays in a level state because of the toss and roll of a ship, spray-type units are always used. Waters that are seriously scaling will cause less difficulty in a spray-type than a tray-type unit.