

A New Air Compressor Cooling System For The Pinellas County Resource Recovery Facility

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Abstract

Due to serious deterioration of aluminum fins on two dry coolers only 6 years after initial installation, the potential to disrupt operation of the 3,000 tons per day (tpd) Pinellas County Resource Recovery Facility was a real concern. A new system upgrade was required to provide reliable cooling of the glycol liquid system. This system dissipates the heat rejection requirements of the process and instrument air compressors, particularly critical during Florida's hot summer months. A second issue was the need to provide redundancy, which was not designed into the original installation. The selected system included two plate and frame coolers along with two pumps located next to the existing cooling tower (C.T.) basin. Water from the C.T. basin is pumped through one plate and frame cooler, reducing the temperature of the glycol liquid. The water then flows back to the C.T. basin. The construction work, completed in August 2003, provides in excess of 200% redundancy and has been in successful operation since that date.

Introduction

The Pinellas County Waste-To-Energy Facility, located in St. Petersburg, Florida, has a nameplate throughput of 3,000 tons per day (tpd) of processible waste. In May, 2003, the plant celebrated 20 years of continued operation. At full capacity, the plant can generate 75 MW of electrical energy for sale to Progress Energy Florida, Inc. This power is capable of supplying the electrical needs of 66,000 homes.

Over the past 20 years, numerous modifications have been made at the Pinellas facility including the addition of a third 1,000 tpd boiler and 25 MW turbine-generator set in 1985, complete air pollution control (APC) upgrades in the late 1990s, and major boiler modifications during the early 2000s.

As part of the APC upgrade work, an entire new method of providing both process and instrument air was required due to increased air supply demand by the spray dryer absorbers (SDAs) and fabric filters (FFs). A system of air compressors, glycol cooling and dry cooling systems were specified and