Thermochiller converts bakery oven heat to refrigeration

The Thermochiller ammonia absorption refrigeration system produces valuable refrigeration from low-grade heat. Thermochiller monetizes waste heat, and is a resilient and sustainable form of refrigeration. Currently, converting low grade waste heat to refrigeration is not recognized as an opportunity; Thermochiller captures that overlooked opportunity.

This 75-ton Thermochiller (TC75) is being demonstrated at an industrial bakery in Utah. It is powered by a new source of heat. The exhaust gas from the baking ovens is treated in a thermal oxidizer for removal of VOC's and was previously vented to atmosphere as waste heat. Thermochiller is supplied 230˚ F fluid from an Air Management Technologies Oxidizer Waste Heat Recovery System to produce 75 tons of low temperature (28°F) refrigeration. The chilled propylene glycol supports production-related refrigerated processes. Thermochiller reject heat is sent back to the Air Management Technologies heat recovery system, where it provides seasonal pre-heated make-up air to the production space, offsetting natural gas use, or is sent to the cooling tower.

The TC75, located outdoors, operates automatically and unattended 24/7. It starts up and shuts down according to the exhaust temperature. The footprint of the compact skid is 6 ½ feet by 10 ½ feet. The TC75 requires little maintenance compared to electric compression refrigeration. The TC75 is also one of the safest ammonia refrigeration plants available as it contains low ammonia charge that is heavily diluted with water and contains no oil.