Reduce Operating Costs Of Your Thermal Oxidation System

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By: James L. Nester – President NESTEC, Inc.

Over the past few years new materials have been developed to minimize both gas and electrical consumption for Thermal Oxidizer Systems. This presentation will provide examples of how companies can reduce operating costs while in many cases also reduce their carbon footprint and increase system performance. The presentation will also discuss equipment upgrades with cost sharing from utility companies and the potential for emissions credits.

Thermal oxidation has been around for many years and has been the primary technology for controlling volatile organic compounds (VOC) and hazardous air pollutants (HAP) from most industrial sources. Given the complexity of the chemistry and the variability of the process conditions it became necessary to design a system that allowed for large variations in the process flow and concentration of organic materials while minimizing operating costs. One area of focus was in the burner technology. Older style burners typically had minimal turndown whereby at low process flow conditions the burner continued to input excess energy into the combustion chamber. This was corrected by developing a burner system with high turndown and stability to operate at all process conditions. In some cases the burner systems now use automatic gas and air valve control electronically rather than the mechanically linked designs to minimize the temperature band during normal operating conditions.

For companies that have existing thermal oxidation system it is important to verify current parameters to ensure the oxidizer is still operating at an optimal efficiency. Since processes change, both the flow and chemistry have a major impact on the efficient operation of the system. In these cases heat recovery media with higher surface area and lower pressure drop can be used to improve the thermal efficiency of the system or enable higher process flow to be controlled. Modification to or replacement of the metal heat exchanger may also allow for significant fuel savings or allow for secondary heat recovery.

Another area which is over looked is the controls and electrical components operating the thermal oxidation system. Fan motors, variable frequency drives, PLC's, MMI's and discreet controllers have all been upgraded and in many cases are no longer supported by the original manufacturers. In the case of variable frequency drive systems the power factors of the new systems are significantly more efficient and both electrical usage savings and in some cases rebates from local utility companies enable equipment upgrades for a minimal cost.

In addition to the above areas to optimize the operation of your thermal oxidizer it is important to have a regular maintenance program for your equipment. Thermal oxidizers are extremely reliable and tend to be forgotten about until something goes wrong. In many cases these unexpected failures can be identified during a yearly inspection and major failures prevented. Think of it like changing the oil in your car or waiting for the engine to fail.

In summary specific examples for the above will be presented to further highlight the benefits associated with routine engineering evaluations of your emission control systems.