

# Minimizing NOx from Process Burners

Chuck Baukal, Ph.D.

John Zink Hamworthy Combustion  
Tulsa, OK

**Abstract** Process burners are typically used in refineries and chemical plants to heat hydrocarbon fluids. Regulations continually reduce the allowable NOx emissions produced by these burners. This presentation will give a brief history of the development of low NOx process burners since the passage of the Clean Air Act in 1970. It will discuss the techniques commonly used to reduce NOx in these burners including some more advanced techniques such as ultra-lean premix, extreme staging, and flameless combustion.



**Biography** Dr. Chuck Baukal is the Director of the John Zink Institute which is part of John Zink Hamworthy Combustion in Tulsa, Oklahoma where he has been since 1998. He has over 35 years of industrial experience with specific emphases on combustion, heat transfer, and pollution reduction. He has a Ph.D. in mechanical engineering from the University of Pennsylvania, an Ed.D. in Applied Educational Studies from Oklahoma State University, and is a registered Professional Engineer. He has been an adjunct instructor for over 30 years, has authored/edited 15 books on industrial combustion and engineering education and over 200 other publications/presentations, is an inventor on 11 U.S. patents, and serves on several advisory boards.

**When: Tuesday, January 16, 2018 at 4 pm**

**Where: EP#252**