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Increasing Efficiency of Natural Gas Cyclones through Addition of Tangential Chambers

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Abstract

This paper experimentally investigates the effect of adding tangential chambers on the efficiency of solid-gas separation in cyclone separators used in gas treatment. To investigate the effect of such an addition on the cyclone performance, the size distribution of the solid particles escaping with the clean gas is compared between the conventional cyclone design and that with the proposed addition. It is shown that the tangential chamber enhances the separation efficiency by 21% in the conventional cyclones, particularly for 4-μm particles.

Keywords: Solid-Gas Separation, Tangential Chamber, Conical Section, Cyclone Separators.

1. Introduction

The increasing demand for natural gas, due to its high energy efficiency and low emissions, has led to many technical innovations in natural gas processing steps (i.e., gas extraction, treatment,