ANALISES OF TERTIARY AIR DUCT INSTALLATION USING DIFFERENT KIND OF TURBULENCE MODELS.

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Abstract Installation for conveying tertiary air in cement industry is one of the element, which has very large influence to production processing. This paper analyses numerical simulation of installation for tertiary air in cement factory. The condition for the operation of the installation is to ensure transport of gas with a small amount number of particles. For calculation was used few turbulence models and Lagrangian discrete phase model. Results compares few types of turbulence models, the influence for particle trajectories depend of velocity field in model.

During pneumatic conveying of tertiary air there is a phenomena to transport particles with the gas. For optimization of kiln, it is necessary to understand the detailed process that it take place in the kiln [1]. The specific requirements of process in designing the burner system and provided a burner design that will deliver efficient and reliable combustion[2]. Yet, extensive use of this form of transportation may bring about some problems that need to be eliminated. During pneumatic conveying we can witness uncontrolled solid particles segregation. This results from gravity influence and centrifugal force at flow direction changing. As an effect it leads to formation of the, so called, 'rope' of particles inside the gas stream, which distorts the conveying process and conducts to premature erosion of the system's elements. There is rich literature, i.e.[3,4,5], on both theoretical and experimental research on homogenous fluid flow through a single bends, especially focusing on energy losses.
In this paper the object of analysis is a gas-solids mixture flow through a system for tertiary air in cement factory. The problem to solve is to separate particles from gas, to resist the deposition of particles in a horizontal channel.

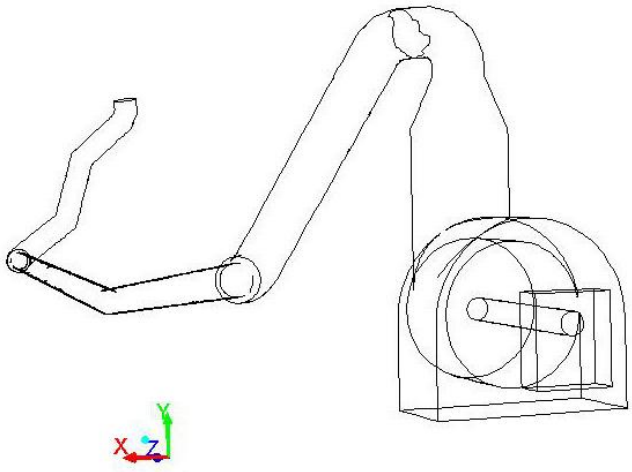

Fig. 1 Tertiary air installation with a vertical channel

Fig. 1. present one of the possible options to project an installation for tertiary air. Integral part for this installation is a connection between kiln and head. The inlet to this installation is at the outflow from clinker cooler. Because of the complexity of the conveying installation there is a need for several turbulent models. This paper presents calculations results applied to determination of construction of pneumatic installations for tertiary air.

References

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