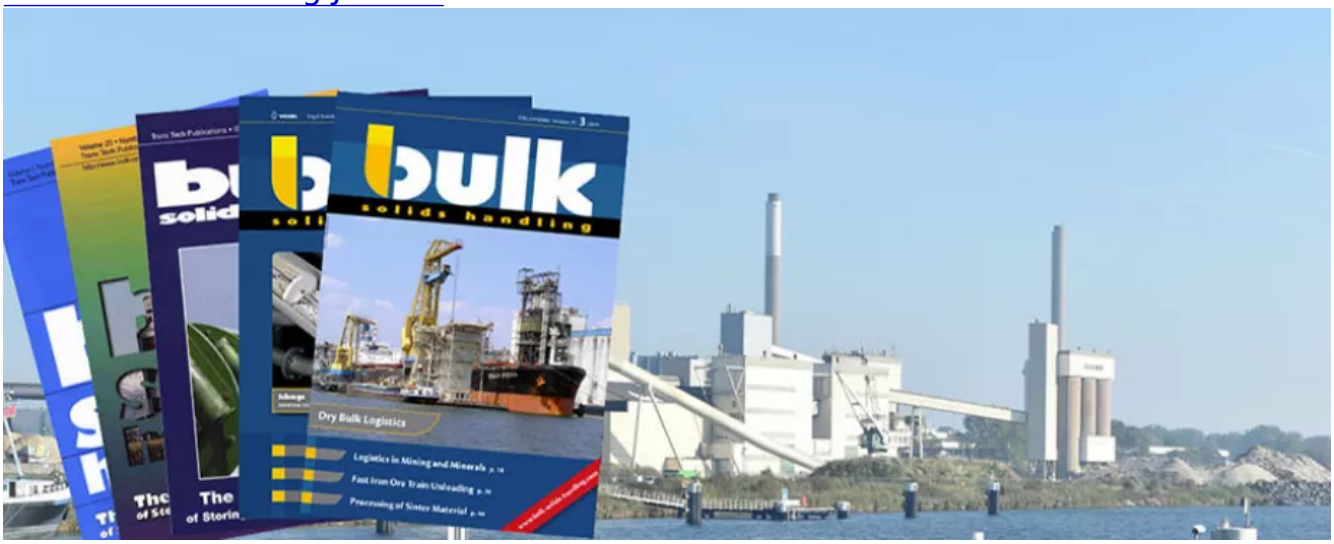
bulk solids handling Journal



Technical Article

Pneumatic Transport In Dilute and Dense Phase

Edited by on 22. Oct. 2023
Published in bulk solids handling, Vol. 2 (1982) No. 2

The hydraulic transport of solids can be divided into two broad regions, dilute phase and dense phase. The author reviews the characteristics of these two cases and the relationships which describe them. Results of recent experiments are presented which should lead to a deeper understanding of this complex topic.

Thousands of years ago when the invention of ceramics in the Middle East began, one needed to replace the unreliable wind with a continuous air stream for heating.

The ancient Egyptians, for example, used primitive air blowers in the iron ore process in order to attain high temperatures. These blowers and man-driven ventilators were in operation for a very long time. In the XVth century ventilators were used for aeration purposes in mines. Despite the technical use of a generated air flow for thousands of years, the conveying of solids by means of air flow energy was first utilized at a later date, although this possibility of conveying has been known a long time, e.g., in nature air can attain very high velocities such as cyclones, which are able to lift and transport heavy objects. With the invention of fast revolving and powerful engines the generation of similar air velocities was used for technical purposes. The first conveying line was set up In 1887 to transport agricultural products. Since that time this process has been developed and found wide application in industry. It has become indispensable for plants which handle bulk solid materials.