

Application and Development of GGBS production line in China

1. Ground granulated blast-furnace slag introduction:

Ground-granulated blast-furnace slag (GGBS or GGBFS) is obtained by quenching molten iron slag (a by-product of iron and steel-making) from a blast furnace in water or steam, to produce a glassy, granular product that is then dried and ground into a fine powder.

Abstract in China, quality Ground Granulated Blast furnace Slag (S95, baline 4200-4500cm² /g) produced with vertical roller mills are being used to substitute clinker in conventional cement manufacturing as well as to partially replace OPC for ready-mixed concrete production, for which the percentage of GGBS usage is typically at 10%-15% and 20%-25% respectively. Such low percentage of GGBS in the mixing ratio, however, whilst achieving the purpose of saving some costs, is insufficient in enhancing concrete structural durability. A long journey remains ahead for the newly established slag grinding industry to reach the day when all the inherent qualities of GGBS and its superior characteristics over fly ash or other pozzolanic materials are fully appreciated.

2. Ground granulated blast-furnace slag applications:

Ground-granulated blast-furnace slag (GGBS or GGBFS) is obtained by quenching molten iron slag (a by-product of iron and steel-making) from a blast furnace in water or steam, to produce a glassy, granular product that is then dried and ground into a fine ggbs powder.

Ground granulated slag is often used in concrete in combination with Portland cement as part of a blended cement. GGBS as an additive for cement making. Ground granulated slag reacts with water to produce cementitious properties. Concrete containing ground granulated slag develops strength over a longer period, leading to reduced permeability and better durability. Since the unit volume of Portland cement is reduced, this concrete is less vulnerable to alkali-silica and sulfate attack.

This previously unwanted recycled product is used in the manufacture of high performance concretes, especially those used in the construction of bridges and coastal features, where its low permeability and greater resistance to chlorides and sulfates can help to reduce corrosive action and deterioration of the structure. The slag can also be used to create fibers used as an insulation material called slag wool.

3. Development of GGBS Production line in China

China has witnessed a rapid growing rate in slag grinding and production of quality GGBS has been seen literally across the country since the mid-1990s, credit being given to the eco-friendly economic development policy adopted by the central government for the steel industry and the increased awareness and recognition of the benefits on the use of quality GGBS not only by

cement manufacturers and ready-mixed concrete players, but also by real estate developers, architects and designers and the public. With the establishment of the national standard GB/T 18046 announced in year 2000, market demand for quality GGBS has been given a big boost.

1. The 1st VRM Was In Operation In Shanghai in 1997

1997 marked the first milestone in the rather short history of quality GGBS production in China when commercial operations of its 1st modern slag grinding plant (with design capacity 500,000tpa) began in Baosteel of Shanghai. Since the birth of this 1st VRM for slag grinding in China, quality GGBS has been commercialized successfully and most rapidly in China.

2. Slag Grinding Becomes an Industrial Sector Independent From Cement Industry in recent years

Compared with other countries, a unique phenomenon has emerged in that slag grinding industry has become a sector to be reckoned with, independent from the cement industry. Misconception of GGBS being a low grade replacement material used for cost-saving by cement or concrete suppliers is a major barrier in GGBS being acknowledged and used for durability purpose in China. It slows down the change in perception of its key value from cost-saving to durability in China.