CONTROL OF GRINDING CIRCUIT IN CEMENT INDUSTRIES USING FUZZY EXPERT SYSTEMS

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An appropriate method of operating a separator in grinding circuit is very important one to control the finished product in cement industries. The desired set point of separator in grinding circuit is used to ensure the expected fineness of cement. Since change in separator speed relative to fresh feed rate and finished product will result in change in both finished product with expected fineness and reject flows. Usually the set point of separator speed is changed manually according to the fresh feed rates and finished product. But the manual changes do not give a constant finished product with expected fineness. So, Vincent Van Breusegem et. al., 1996 and Bernard de Hass et. al., 1999 introduced mathematical methods to control the separator of grinding performance. But results of their method are not up to the satisfaction level as a lot of
uncertainty is involved in the problem. Since control of the separator of grinding is very essential to ensure expected fineness and minimize the reject flow, this paper introduces fuzzy expert system (FES) to control the separator speed in grinding circuit to ensure both the finished product with expected fineness and minimize the reject flows in cement industries. Using FES the following benefits are obtained: Production increase, reduction in power consumption and consistent quality in the finished product. Here the appropriate set point of fresh feed rate, quality of finished product considered as parameters of the fuzzy expert system and we define the membership functions for the input and output parameters to ensure the expected fineness. Fuzzy rules are obtained using logic rules and the desired set points of separator speed are obtained.