Q. A European company currently operates two open circuit ball mills each of which are 4.0 m x 14.0 m rated at 1800 kW each. It is looking to convert them to a closed circuit system as part of an energy efficiency program. The company's problem is that space is limited, so it wants to know if it is possible to install a single common separator rather than two individual ones?

Answer by Potito D'Arcangelo, Technical Assistance Group/Cement Additives Division, Mapei SpA

Yes, it is possible to run two ball mills in closed circuit with a single common separator (3rd generation would be better), that must be able to threat the sum of the two circulating loads coming from the two mills simultaneously.

The process run conditions of the separator have to respect the feed maximum material to process air ratio (A/Q) of 2,2 – 2,5 kg/m^3. This possibility is feasible only through the installation of two centrifugal fans and two bag filters (one couple per each grinding line) of adequate project design.

Running with only one mill is not a problem once the A/Q ratio and the separator speed is adjusted according to the range value above described.

By the way, in order to optimize the overall grinding operations and maximize the mill hourly production, the ball charge must be reviewed increasing the filling degree of the two chambers from 15% (the highest possible with the actual power installed) to around 30%; at this point the main drive and the gear box have to be changed increasing the power installed up to 3.000 – 3.200 kW for each mill.

The two bucket elevators (conveying the mill outlet material to the common separator) shall also be re - designed to lift the larger amount of material, up to 6 – 7 times higher than in the open circuit working conditions.