

PMP Ball Mill 2

MULTIPLE COMPARTMENT TUMBLING MILLS



GRINDING DIAGRAM WITH PMP

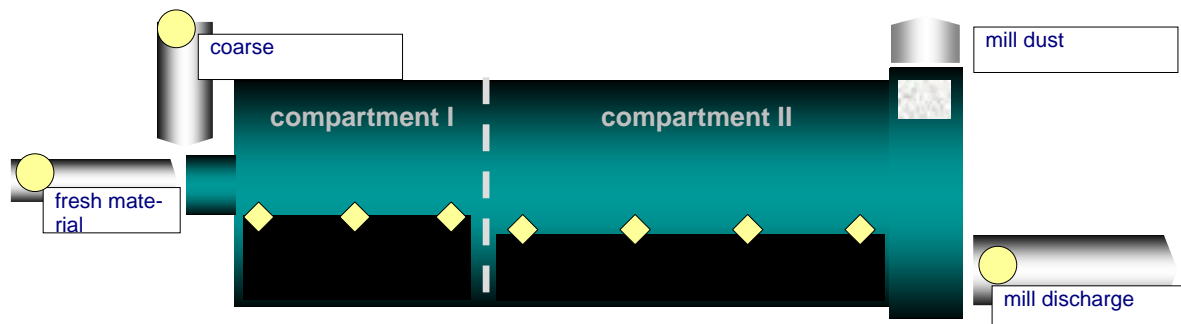
INVESTIGATING MILLS

Mill investigations are always connected with considerable efforts, particularly when multiple compartment tumbling mills need to be examined.

Expectations on results of mill audits are accordingly high.

The representation over the particle size is not very vivid for clarifying the grinding progress. This is why the display via the length of the grinding track is preferred.

This requires different conversions of the fineness information among the allocation of L. Therefore, the PMP-Software offers indispensable tools.



The mill audit should give detailed information about

- ◆ the machine-technical condition of the mill
- ◆ the operating behaviour
- ◆ the grinding progress
- ◆ the energy consumption
- ◆ the usable room for improvements

Immediately after sampling the running plant „from outside“ (circulation sampling ●) a mill stop occurs, the mill will be opened and – after a corresponding cooling period – a longitudinal sampling in the compartments will be effected ◆ .

Depending on the problem,

- ◆ the residue values for fixed particle sizes, e.g. R90, R200, ...
- ◆ the particle sizes for fixed passage values, e.g. d80, d50, ... (Fig. 2)
- ◆ calculated and measured surfaces
- ◆ the parameter d' and n of the RRSB-function
- ◆ the strengthening fractions of 3 µm 30 µm

can be represented via the length of the grinding track L. Additionally, the connexion values outwards (mill input, mill output) and the transfer from coarse- to fine compartment are indicated.

DATA PREPARATION

The grinding samples are prepared in such a way that reliable complete information of the local grinding fineness can be reached. Therefore, the values from the particle analysis need to be combined, e.g. screening > 1 mm, laser diffraction < 90 µm and analysis sieving in the intermediate range. PMP organises the combination of available information. First of all, the particle size distributions Q(x,1) can be represented as array of curves with L (length of the grinding track) as parameter (see Fig. 1).

APPLICATION BENEFITS

- ◆ The grinding diagram and the appropriate value table are generated problem-suitable and represented in the according form.
- ◆ The grinding effect is represented compartment- and mill-related by common characteristic values (grinding proportion, surface increase, specific energy, energy efficiency) and with significant characteristic curves.
- ◆ The information from the mill investigation delivers concrete advice for improvements and is available for the PC-supported optimisation of the whole grinding plant.

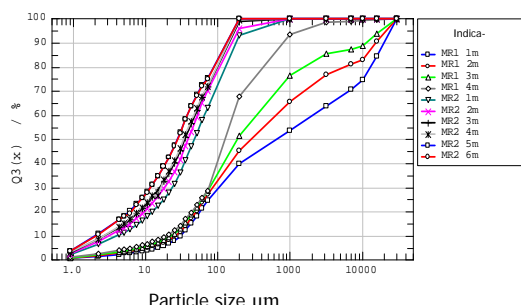


Fig.1: Investigation of Mill – Particle size distributions for longitudinal sampling

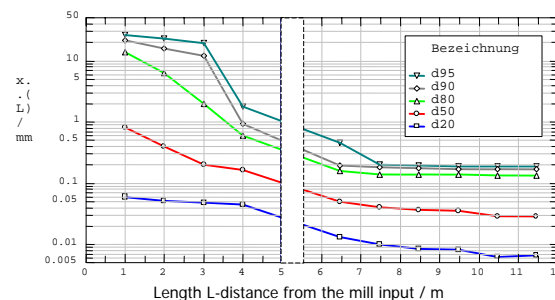


Fig.2: Grinding diagram - Course of quantile particle sizes