

COMPARISON BETWEEN THE MECHANICAL MODELS APPROACH FOR THE MOVEMENT OF BALL MILLS AND THE MEASUREMENT

PRICHICI Mariana Adriana, INDRIE Liliana, GHERGHEL Sabina
University of Oradea
mprichici@uoradea.ro

Key words: ball mills, mechanic model approach, vibration amplitude

ABSTRACT

This paper wants to demonstrate how is possible , by simple mechanic approach for the movement of grinding elements in vibrating tube mills to determine the operation range in which the **maximum transfer of energy** and thus the optimum combination effect exists in relation to vibration. The value obtains for the vibration amplitude is different from reality from the measurement .I imagine tow mechanic model approach for the movement and we can establish the value of vibration amplitude. The values are:

- **Mechanic Model nr.1 , of “ dividing mass in tow cylinder “**

$$A = \frac{1}{p_g} \left[\frac{D}{2\pi} (1 - \sqrt{2\eta}) + \frac{\pi \cdot g}{2\omega^2} \right] \quad (1)$$

- **Mechanic Model nr.2 , of “ dividing mass in tow half cylinder “:**

$$A = \frac{1}{p_g} \left[\frac{D}{2\pi} (1 - \sqrt{\eta}) + \frac{\pi \cdot g}{2\omega^2} \right] \quad (2)$$

To determine the very well approach, it is determinate the part coefficients: $p_i = \frac{A_{c,i}}{A_{m,i}}$ (3)

and global coefficients:
$$p_g = \frac{\sum_{i=1}^n p_i}{n} \quad (4)$$

With $A_{c, necorec}$ value of calculated vibration amplitude and A_m value of measured vibration amplitude:

$$A_{c,corectat} = \frac{A_{c,necorectat}}{p_g} \cong A_m \quad (5)$$

BIBLIOGRAPHY

- 1.Prichici, Mariana. (2005), *The calculus of optimum filling ratio of grinding elements in vibration bolss mills with a mechanic model of dividing mass in two half cylinders*, Oradea University, ISSN 1583-0691, Oradea
- 2.Prichici, Mariana; Indrie L ; Gherghel S ; (2007) „*The dynamic study of vibrating tube mills. The calculus of operating range with the model mechanic approach of - Dividing mass in tow cylinder*” *Anal. of the University of Oradea, Fascicle of Management and Technological Engineering*, ISSN 1583 - 0691 pp.409-414,
3. Prichici M,A , Indrie L, Gherghel S (2008), *Model mechanic approach of “ divided mass in N bar” for the calculus of vibration Amplitude* *Anal. of the University of Oradea, Fascicle of M T E , Volume VI (XVI)*, ISSN 1583 - 0691 pp. 383-392, Oradea,
- 4.Prichici, M.A. (2008). *The Calculus of the Vibration Amplitude with the Mechanic Model Approach for Vibrating Tube Mills* 1143-1144, *Annals of DAAAM for 2008 & Proceedings of the 19th International DAAAM Symposium*, ISBN 978-3-901509-68-1, ISSN 1726-9679, pp 572, Editor B. Katalinic, Published by DAAAM International, Vienna, Austria 2008
- 5.Rajamani R., K., Herbst J., A., (1992)-*Optimal control of a ball mill grinding circuit I I*.Feedback and optimal control, *Journal Annoncement nr 9112 Tehniche Universitat Graz*, ISSN 0009-2509 Austria