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IMPROVEMENTS TO BARTON-POT EQUIPMENT FOR MANUFACTURING LEADY OXIDE

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In order to improve the overall performance of the Barton-pot process for manufacturing leady oxide for lead/acid battery plates, the Linklater Corporation, together with the help of its customers, has initiated the following changes to the system:

- automatic airflow controller
- automatic pulse, clean dust collectors
- self-classifying outlet pipe
- automatic up-pipe temperature control
- automatic lead level control

These changes have helped both the operation and the performance of the equipment by:

(i) increasing the stability of both the equipment and the composition and apparent density of the lead oxide;

(ii) increasing production;

(iii) making the equipment easier to modify in order to regulate the oxide specification;

(iv) decreasing particle size while increasing production;

(v) decreasing maintenance and clean out.

Before these advances, Linklater was running the process to give PbO with an apparent density between 72 and 75 g in^3 with a fluctuation of $\pm 5\%$. A production rate of between 800 and 900 kg h^{-1} was achieved, but only for a few hours because of the following problems:

- decrease in airflow owing to a build up on the filters
- decrease in molten-lead temperature because operators neglected to keep the melting pot at a constant level
- plugging of the oversize particle return pipe because of the amount of oxide being returned

It is now possible to achieve oxide production at between 850 and 950 kg h^{-1} and maintain a continuous operation with the oxide quality being controlled to maintain $\pm 3\%$ of the specified level.

Figure 1 shows the particle-size distribution of leady oxide produced both (a) before, and (b) after, making the above mentioned changes to the Barton pot. It can be seen that there is a marked decrease in the particle size

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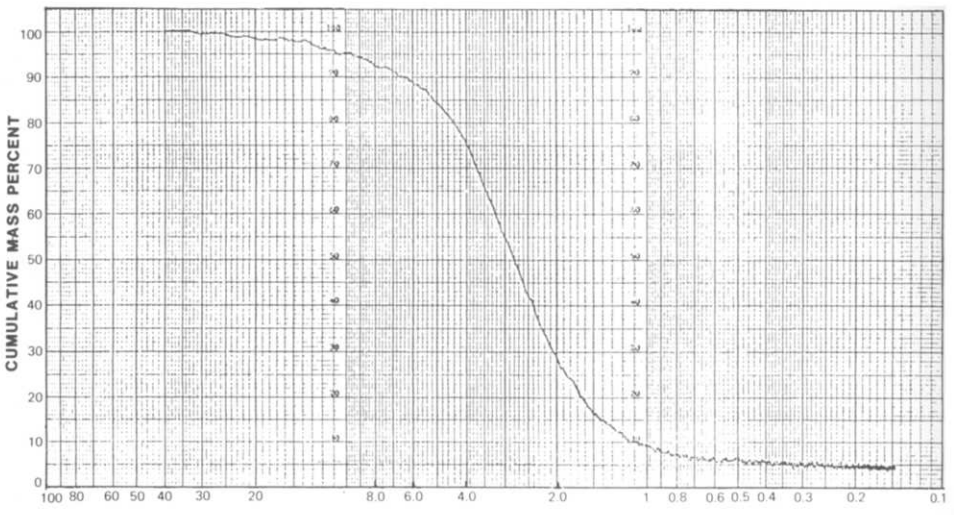
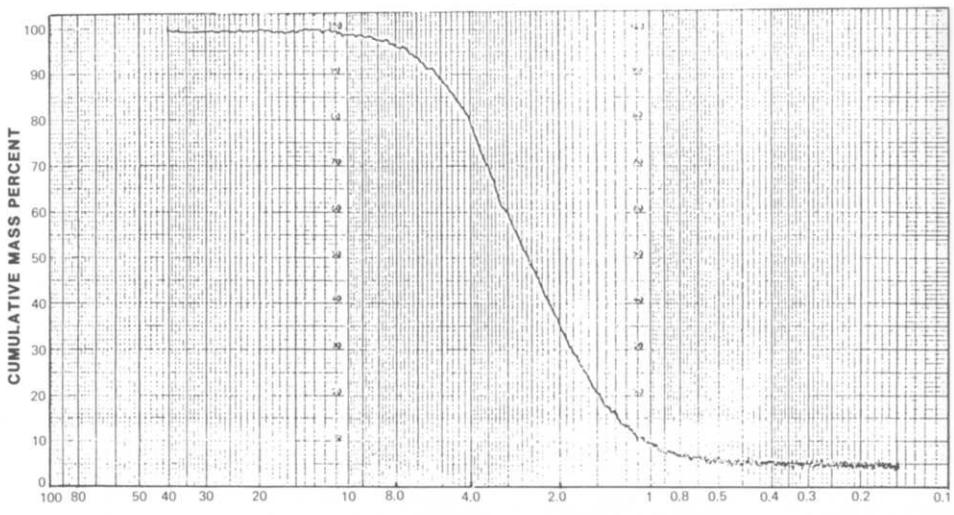


(a)



(b)

Fig. 1. Particle-size distribution of leady oxide produced by Barton-pot method: (a) old system; (b) new, improved system.

of the oxide manufactured in the new equipment. It should also be noted that production has increased by 7 - 10% and that a decrease in the maintenance and clean-out of the equipment has been realized.

Tests conducted on Linklater equipment installed in Bulgaria also show a finer product following modification of the process. In particular, a particle size of up to 97.75% through a 53 μm sieve has been achieved, while a laser

test reports 96.75%+ below 40 μm. These systems have been running at between 850 and 900 kg h^{-1} with metals running at between $72 \pm 3\%$.

Following the above improvements to the equipment, it is now possible to achieve higher production and lower particle size with reduced maintenance and clean-out. Furthermore, these changes can be made on existing equipment.