

THEME № 3

BLENDING EQUIPMENT

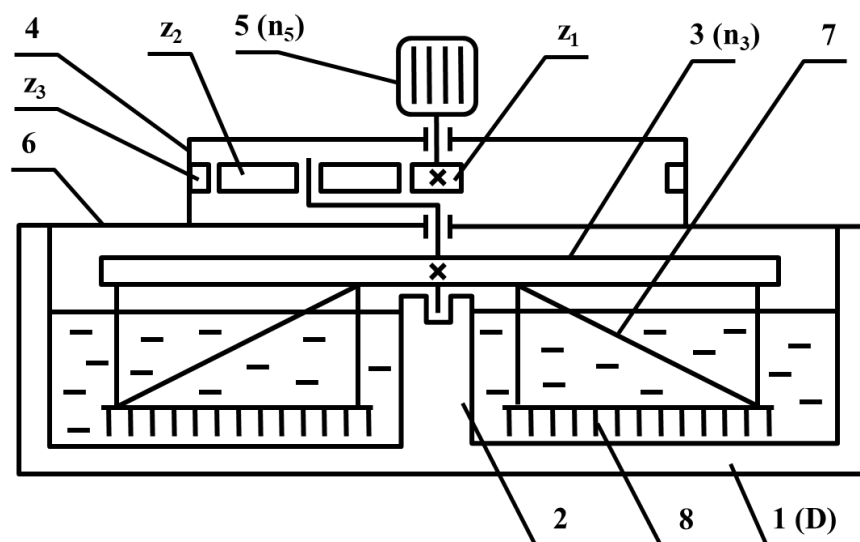
Summary

The purpose of blending equipment. Construction of blending tanks for clay and slime. Basic parameters of blending tanks.

Theory

Next type of equipment for cement production is blending tank (pool). They have several functions: 1) stock holding for slime; 2) maintenance of uniformity of solution; 3) addition grinding.

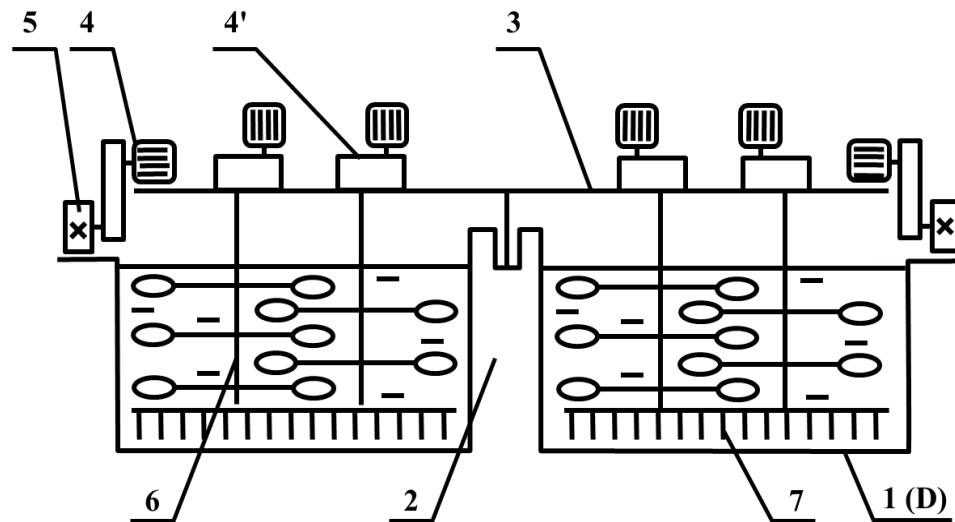
First we need to talk about blending tank for clay.



The main component of blending tank is POOL (pos. 1) made of concrete. The pool is COVERED by special ELEMENT (pos. 6). There is a COLUMN (pos. 2) in the center of the pool. On the top of the column there is a TRAVERSE (pos. 1) which is mounted on the main shaft. Several HARROWS (pos. 8) are connected to traverse by the CHAIN SYSTEM (pos. 7). These harrows blend the material in the pool. The travers is rotated by the ELECTROMOTOR (pos. 5) with help of special reducer (pos. 4). It is a PLANETARY REDUCER. This name is given because of moving of one of gear axes. This reducer has a gear ratio calculated by the equation: $w = (z_3/z_2) \times (z_2/z_1) = z_3/z_1$.

The diameter (D) of clay blending tank is about 10 or 15 m.

Tanks of large size is needed for preparation of slime (clay and chalk solution). In this case it uses a slightly different design.



This type of equipment also has a large POOL (pos. 1) with COLUMN (pos. 2) and TRAVERSE (pos. 3). This slime tank has a diameter up to 40 m. The traverse is rotated with help of the other driving system. It consists of ELECTROMOTORS AND REDUCERS (pos. 4) connected to a WHEELS (pos. 5). These wheels are moving across the perimeter on the top of the wall of the tank. The next feature is that the solution is blended by several SHAFTS with BLADES (pos. 6). All these shafts mounted on the traverse and have separate MOTORS and REDUCERS (pos. 4'). A slime pool makes uniformity solution by the system of HARROWS (pos. 7) as a tank for clay.

Practice

1. Select a variant of equipment from the list:

- gate;
- the feeder (for bulk materials);
- bunker;
- dispenser (for liquid materials);
- mixer (periodic action);

- concrete mixer (continuous action);
 - concrete pump;
 - truck mixer;
 - paver.
2. Give characteristic of selected equipment:
 - make constructive scheme;
 - describe the principle of action;
 - specify base technical parameters;
 - highlight the advantages and disadvantages.
 3. Make report according to previous actions.

Control questions

1. Specify the functions of such type equipment as blending tank.
2. Describe the principle of action of blending tank.
3. Try to draw the construction scheme of blending tank.
4. Type the expression for calculating of gear ration for planetary reducer.
5. Define the list of basic parameters of blending tank.
6. Try to define the difference between clay blending tank and slime pool.
7. Describe the principle of action of slime pool.
8. Try to draw the construction scheme of slime pool.
9. Define the list of basic parameters of slime pool.

USEFUL LINKS

Blending equipment

1. <http://ctgrainhn.ecol.xyz/products/flour-mill/p735424/mfb-series-professional-high-quality-motorized-flap-box-for-flour-mill.html>
2. http://en.muyang.com/content/details187_2380.html
3. <http://fdsp-cn.com/info/wide-storing-capacity-low-cost-material-storag-1664454.html>

4. <http://www.sbmchina.com/topic/aerated-brick/index.html>
5. http://zzxfjxwm.com/products/150T-Cement-Silo.html?from=sns_my
6. <http://www.verdes.com/en/docs/Verdes-box-feeders.pdf>
7. <https://www.kennards.com.au/lifting-and-materials-handling/concrete-kibble-0-75-cu-m-grout.html>
8. <http://www.tkequip.com/index.php/our-products/concrete-mixers-line>
9. <http://www.verdes.com/en/docs/Verdes-double-shaft-mixers.pdf>
10. <http://www.verdes.com/en/docs/Verdes-extruder-mixers.pdf>
11. <http://www.concordpumps.ca/placing-booms/>
12. http://www.allianceconcretepumps.com/_docs/JB-NM33H.pdf
13. http://www.allianceconcretepumps.com/_docs/63-meter.pdf
14. https://www.volvoce.com/-/media/volvoce/global/products/asphalt-pavers/abg-tracked-pavers/brochures/brochure_p7820c_p8820c_t4i_en_22_20029046_h.pdf?v=4l83Pw
15. https://www.volvoce.com/-/media/volvoce/global/products/asphalt-pavers/blaw-knox-wheeled-pavers/brochures/brochure_p7110b_p7170b_t4f_en_22_20051888_a.pdf?v=V6kzPw