PC TANK EGG-SHAPED DIGESTERS

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Egg-Shaped Digesters

The Egg-Shaped Digesters (ESDs) are often used as sludge digester because they have effective shape as a mole efficient digestion process. The use of ESDs has proven to be advantageous about the sludge digestion process and is gradually becoming more common. The sediments flow to the bottom of the cone by the curved surface shape, and can be easily and continuously removed.

Conversely, a crust of light particles forms on the surface of the sludge. Because their surface area is smaller than that of circular tanks, crust removal becomes easier and more efficient.

Post-tensioning tendons are used vertically and horizontally in this type of tank. Vertical tendons are typically looped, anchored in lower lifts and foundations, and extend through subsequent lifts. Horizontal tendons are often stressed at blockouts, hence buttresses are not needed.

Construction of digester tanks (ESDs) usually progresses in horizontal rings, where post-tensioning is applied in the circumferential and vertical directions.



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Characteristics

I. COMPLETE WATER TIGHTNESS (leak-free structure)

The PC tank is reinforced by high-strength steel wires and bars (PC tendons) placed in the vertical direction, and in the horizontal direction.

That is, a compression stress is introduced beforehand to prevent the induction of tensil stress (arise with water pressure)which is a weak point of concrete. Therefore, the pre-stressed concrete is free from crack and water leakage.

II. LOW CONSTRUCTION COST

Since the cylindrical tank which is rational form can reduce the material to be used, it is economical. Because the cylindrical PC tank can make a water level more high, it can store mass water in narrow land.

It is effective in the expensive urban areas of land.

III. RUST-FREE AND CORROSION-FREE

Because the concrete has water resistance in itself, the steel materials which are Reinforcing bars and PC tendons, etc. are completely protected from corrosion caused by the infiltration or leakage of water. In addition, the PC tank is protected from corrosion caused by the chlorine used for sterilization or by sulfides to be generated in sewage.

IV. EXCELLENT COLD-RESISTANCE AND HEAT-RESISTANCE

Generally, the heat permeability of rich-mix concrete is lower compared with steel. On the other hand, cold- resistance and heat- resistance is higher.

Furthermore, it is adaptable to local changes in temperature by the excellent elasticity.

V. HIGH EARTHQUAKE RESISTANCE

As mentioned above, pre-stressed concrete is excellent in elasticity.

VI. HIGH RESISTANCE AGAINST GROUND SUBSIDENCE

The above-mentioned means that P.C tanks are highly resistant to the subsidence of ground.

