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Toyota Kohki Co., Ltd., Tokio, 183-0035 Japan

Manufacturing precast septic tanks with special mould technology

Septic tanks form a sewage treatment system that is used around the world. Normally, since the shape of the septic tank very much resembles that of a large-sized, deep drain inlet, the inner core of the mould for manufacturing such tanks needs to feature some form of tapering for de-moulding purposes. This is the commonly employed method of manufacturing such kinds of moulds to date. In this article, some technological advantages of an alternative mould system for septic tank manufacture will be introduced.

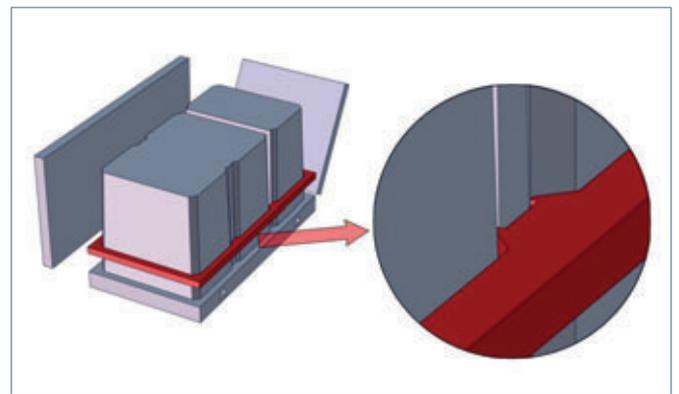
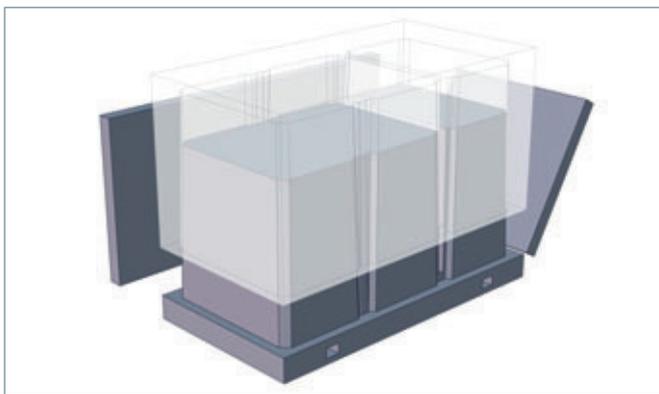


Fig. 1 and 2: The inner core of the mould for septic tank manufacture needs to feature some form of tapering for de-moulding purposes. Heights are adjusted by means of different base pallets.

Since the inner wall of the tank needs to be as vertical as possible, the inner taper is kept at a minimum to cut down on the level of resistance when de-moulding the product (Fig. 1). Furthermore, products featuring baffles will display higher de-moulding resistances than those without such obstacles. In such cases, compressed air, hydraulic jacks or some other form of assistance may be required for the de-moulding process. In addition, it is not possible to arrive at different heights by using the same type of base pallet in cases when the inner core is tapered.

Fig. 2 shows base pallets for producing tanks with different heights. In such cases, it will be necessary to provide numerous different base pallets because the wall thicknesses of such tanks are bound to change.

Owing to frequent requests by U. S. customers, Toyotaforms have developed and provided moulds without tapered inner cores that allow for one-touch open/close operations.

As shown in Figs. 6 and 7, inner cores can be manually opened/closed in seconds from outside the mould. Products can be de-

moulded without resistance and without the need of removing any parts from the inner core. The required crane capacity must only conform to the load force exerted by the concrete product itself as it is not necessary to dismantle the mould for de-moulding.

The one-touch collapsible inner core is designed and manufactured in such a fashion that maintenance can be carried out by customers themselves.

When maintenance is needed, the core can be dismantled by disengaging just a few bolts. Moulds can be used over long periods of time and kept at constantly high levels of operation provided that proper maintenance is ensured at all times. Moulds featuring such inner cores were shipped to customers in the U.S.A. 10 years ago and have since been continuously working well.

Moulds without inner core tapering provide for constant tank wall thicknesses. Also, the same adjustable base pallet can be used for producing tanks with any desired height. Tanks can be separated into top, bottom and riser sections and all of these can be produced using the same mould. Of course it is also possible to provide different volume capacities by adjusting the heights of top, bottom or riser sections.

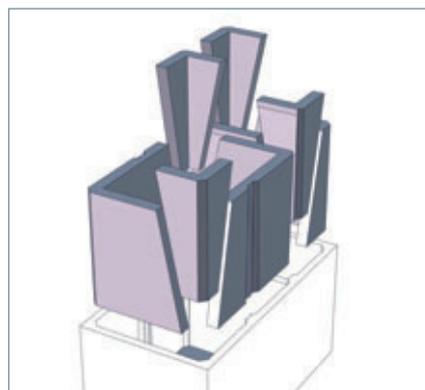
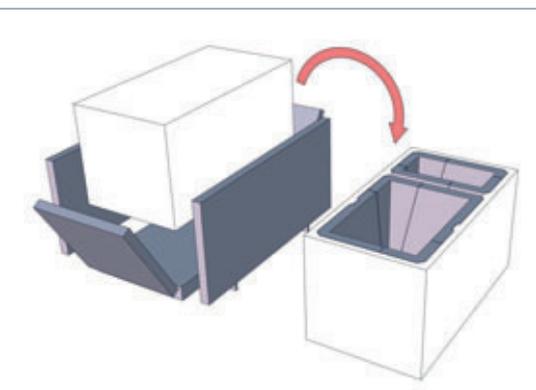
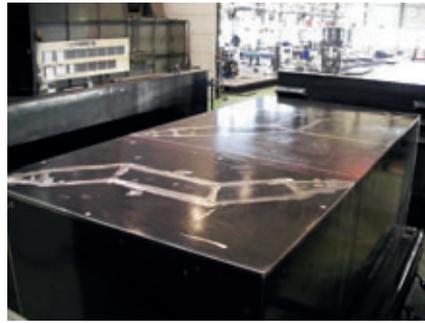


Fig. 3 and 4 illustrate a moulding system with straight walls. Normally, the inner core has to be dismantled into several pieces for de-moulding, i. e. a manpower and time consuming operation.



Figs. 5, 6 and 7: De-moulding process without need of removing parts from inner core by Toyotaforms

Most of the moulds made by Toyotaforms use man-powered mechanical systems instead of electrical or hydraulic devices. This policy eliminates the risk of damage when the mould is used under conditions of strong vibration and moisture. Another merit of a man-powered mechanical system is that it enables protecting the mould from breaking when closing and setting it. Operators can easily detect any undesired remainders such as small concrete pieces of debris remaining between the moving parts of the mould and remove these leftovers.



Fig. 8 shows some products produced by C.R. Barger & Sons Inc., in TN. U.S.A.

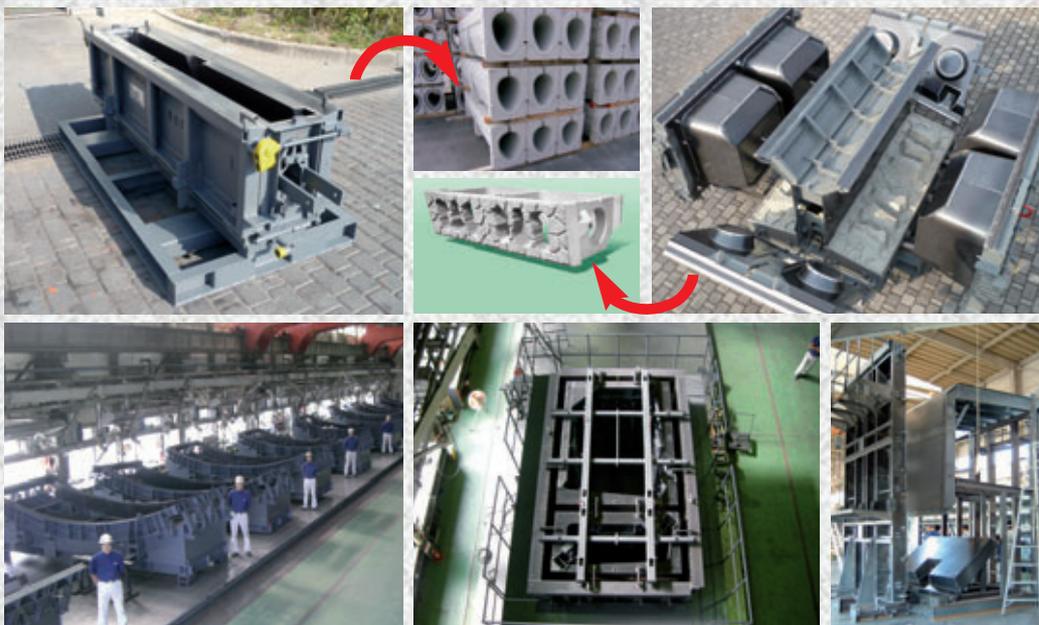
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