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Production System for Precast concrete: L-Crane Pouring System

For over 30 years, Toyotaforms provided many different types of the production line system for precast concrete manufacturers in Japan including design and construction. One of them is called “L-Crane Pouring System” and it will be introduced in this issue.

Usually there are 2 types of the manufacturing systems for wet-cast concrete industries. One is Continuous Moving Production Line System that the moulds and concrete products are conveyed around. Another one is called “Pouring in Place” System that the moulds are set in the floor and the pouring machine can be moved onto every mould to be poured.

“Pouring in Place” System is mainly used for producing large products because they are heavy and cost a lot to move the moulds together with the concrete products by using the Continuous Moving Pouring Line System. The productivity of “Pouring in Place” System is determined not only by the moulds, but also greatly by the layout of the moulds and the performance of the equipment. Also it is important to keep the enough working space for turning over, setting/removing attachment parts and repair-

ing the concrete elements after de-moulding. It is necessary to consider the factors above when design a new factory.

The L-Crane Pouring System shown in fig. 1-3 is a typical “Pouring in Place” System with the high productivity and efficiency. There is one rail fixed on the column of the building and another rail on the floor. The pouring machine can run across on the girder that is with only one leg. That is why it is called “L-Crane Pouring System”.

The biggest advantage of this pouring system is that the L-Crane for pouring machine and the overhead crane for de-moulding and turning over won't interfere with each other. The elements lifted by overhead crane can be passed the L-Crane in the area shown in fig. 3. If use two overhead cranes, one cannot go to the place over another that is working somewhere until it is

escaped after finishing. However, by using overhead crane and L-Crane system, they can do different operation such as pouring, de-moulding, and turnover simultaneously without any interference.

The concrete can be poured by using agitator truck or turning forklift but big space will be needed because of the necessary passageway for the vehicles. However, by using L-Crane Pouring System, the moulds can be put close to each other allowing only minimum clearance for the opened out forms. Instead of using that place for passageway, the place can be effectively used for de-moulding, turnover the products, repair and other operation.

The L-Crane Pouring System can save the limited space inside of the factory and use them more effectively.

The pouring machine itself is also designed with many technical efforts. Fig. 4 shows

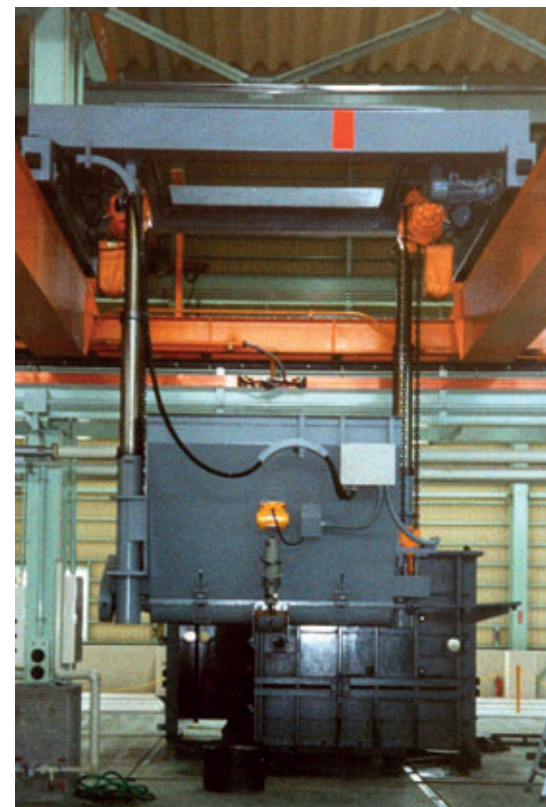
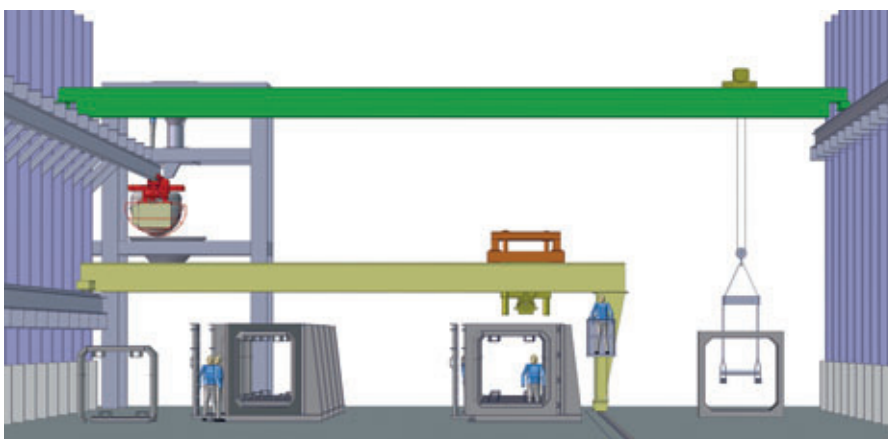


Fig. 1-3: “L-Crane Pouring System”

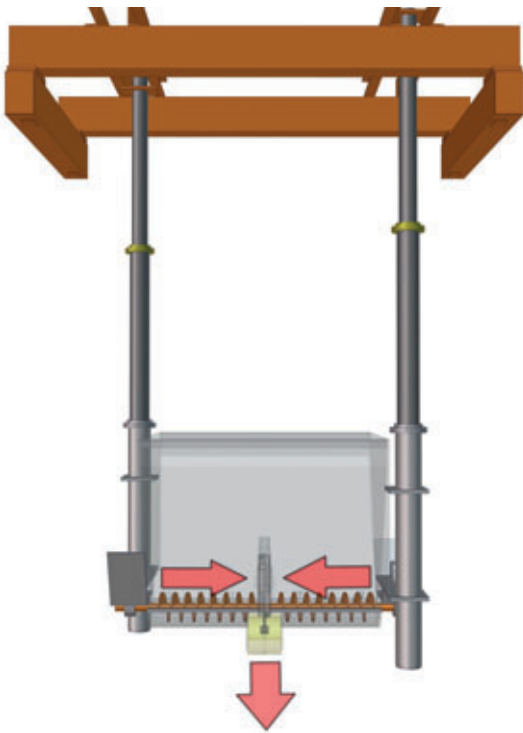


Fig. 4: Pouring gate in the center of pouring machine

the pouring gate that is located in the center of the machine. The spiral screw is made in opposite direction from left and right side and gathering the concrete to the center for pouring. Comparing with

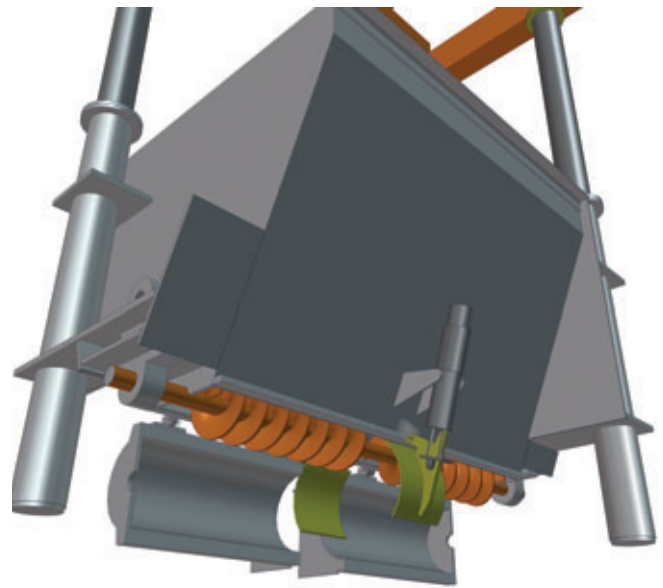


Fig. 5: Screw case can be opened for washing

the normal single way screw, it is more durable because of the less abrasion. In addition, double amount of the concrete can be poured during the same pouring time. That's why it is suitable for the large products that pouring speed is required. Of course, it can also be used for pouring the small product by adjusting the opening of the pouring gate and the speed of the screw. The concrete can be poured little by little.



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Fig. 6: TMD is feeding concrete to L-Crane Pouring Machine



Fig. 7: It is possible to set a switch to change the directions (2 ways or 3ways) for TMD.

Pouring gate is opened / closed by power cylinder and is designed with the mechanism of leaking protection.

The pouring machine can be moved up and down stable with the help of the guide cylinders. It makes easy to focus the pouring point and is especially effective for the products with narrow pouring entrance.

Fig. 5 shows that the screw case can be opened for washing and the screw can be washed directly by water easily because it is full opened.

Normally, operator of pouring machine stays in the control cage hanged on the girder and operates by the control panel. It can also be controlled by using the wireless remote controller when operator is beside the mould when pouring.

By Installing the monorail concrete distributor (Technology from Dudik®-Germany; it is called TMD-Toyota Monorail Distributor), L-Crane System will become more efficiency. Once the operator requires the fresh concrete, TMD will automatically move to the provided place and stay until the pouring machine comes. Then they get synchronized and the feed operation is done automatically.

Fig. 7 shows the possibility of setting a switch to change the directions (2 ways or 3 ways) for TMD. Concrete can be automatically distributed to the multiple production lines by using more than one TMD. And also they can travel in flexible route with small curve, up and down slopes. Toyotaforms provide not only moulds but also total solution services for manufacturers

of wet cast concrete products by designing and constructing precast plant.

Toyotaforms offers moulds and equipment from productive way based on their know-how and rich experiences. The important thing is to consider about balanced productivity of mould and equipment. ■

FURTHER INFORMATION



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