

Construx b.v., 8531 Hulste, Belgium

Nuclear waste box moulds, coping with the extremely high standards of the European nuclear industry

Construx is one of Europe's leading mould manufacturers, they developed over time a vast portfolio of moulds that suit precast manufacturers' needs. In close collaboration with the customer, Construx tries to find the most appropriate mould which is in accordance with all technical specifications, which fits the customers' budget and which copes with the dimensions and numbers of precast elements the customer wants to cast.

For several European manufacturers of standard and high density concrete nuclear waste containers, Construx conceived a series of moulds to cast precast concrete boxes with a precast or a wet poured lid. These concrete box waste containers are to be used for the packaging of a wide range of wastes, arising from the decommissioning of nuclear facilities. The precast concrete boxes are fit for interim storage, transport to and final disposal in a geological disposal facility.

State-of-the-art moulds for all types of nuclear waste boxes

All boxes are poured upside-down with their base up. Their top lid is either precast or cast in-situ, at the end customers' facility, after the precast concrete box is filled with solid or

wet waste. Construx supplies moulds for the precast lids, but also came up with a solution to facilitate the in-situ casting of the lids. The base of the main box mould can be equipped with very precisely machined jigs; laser cut slotted holes with removable rubber sealants allow for preparation and positioning of rebar, which will connect with the rebar of the cast in-situ lid.

The tolerances of the nuclear waste boxes are very strict, regarding overall box length, width and height, but also for length and width between the corner fittings and regarding the position of the twist-lock pocket inserts and the swivel lifting points. These are important features allowing for lifting, handling and restraint of the waste package during transport.

All Construx nuclear waste box moulds are semi or fully automated, with hydraulically retractable outside panels and hydraulically shrinkable inner cores. In case of a triangular chamfer between walls and base, the top part of the inner core can be made as a fixed top plate underneath which the other parts of the core can retract during the shrinking operation. When a triangular chamfer between walls and base is not permitted, the top part of the inner core also needs to be made shrinkable.



Fully automated nuclear waste box mould with shrinkable core and base with jigs for rebar



Base with jigs for rebar

PRECAST CONCRETE ELEMENTS



Hydraulically operated box mould with shrinkable top part



Detail of shrinkable top part

Ensuring quality by keeping all activities in-house and providing all-inclusive solutions

In order to meet the extremely high standards, Construx carries out all activities in-house: design, engineering, production, and even test pours. The in-house testing at one of the Construx manufacturing facilities is the best way to avoid problems and misunderstandings when the mould is commissioned in the customers' production facility. Nothing is left to chance to deliver a perfectly functioning installation.

Construx operates as a partner, providing complete, all-inclusive, solutions for the manufacturing of precast boxes for nuclear waste. When needed, Construx moulds come with concrete pump inlets, insulation, heating, demoulding devices, full steel working platforms with handrails and access ladders. Taking care of all aspects of the precast production process, by not only installing moulds, but also by supplying appropriate handling equipment, lifting gear, support frames and tilting stations, makes Construx a one-stop-shop for nuclear waste box manufacturers.



Precast Moulds & On-Site Formwork



Shaping the Future of Concrete

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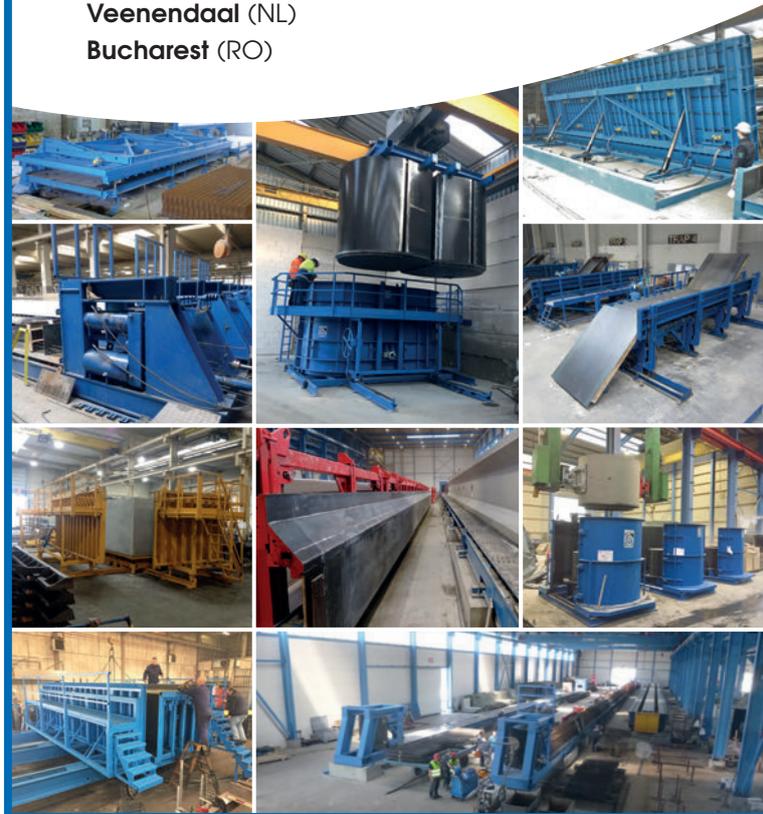
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In house testing at Construx of a tapered 8-box container mould



Fully hydraulically operated box moulds in production facility

Multiple solutions for turning precast nuclear waste boxes

Because the boxes are poured upside-down, they have to be turned 180° after demoulding. In order to carry out the tilting operation in a safe manner, Construx supplies single or double tilting stations. A double tilting station has 2 separate 90° tilting stations operating in line, with a lateral transport system in between, allowing for a single sequence operation. When using a single 90° tilting station, the tilting process takes more time, but the investment is much cheaper. The securing is done by means of hydraulic clamps and the tilting is carried out with 2 sets of 2 simultaneously operating hydraulic rams, all of which with state-of-the-art electrical controls.

Another way to carry out a 180° turn, is by means of a combined multifunctional lifting and turning device. The concrete box can be turned with or without its top lid, and a well-conceived adjustability allows to clamp and secure the precast box always in its centre of gravity, whatever position this might be.

Shaping the Future of Concrete

Construx meets the requirements of every customer, in order to obtain the most appropriate solution to manufacture their precast electrical substations. The outcome of achieving such an objective is always a very satisfied customer. Construx is an engineering-driven manufacturing company relying on the commitment, creativity and experience of its employees. Their aim is to establish a partnership, rather than to be a supplier, in providing turnkey solutions for precast and on-site formwork issues. ■

FURTHER INFORMATION



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Turning station for precast concrete nuclear waste boxes, 22T capacity



Lifting and turning device for precast 8-box containers