

Construx b.v.b.a., 8531 Hulste, Belgium

# Variable PPVC mould

**Construx b.v.b.a. is one of the leading manufacturers of moulds with shrink core technology worldwide. A technically high-quality and sophisticated mould was installed once again in 2020. The combination of dimensional flexibility, quality, user-friendliness and the necessary safety precautions posed a great challenge and was met to the satisfaction of all parties.**

The mould is used for the production of large-volume modules, which are used for technical buildings. Six different lengths up to 7.20 m can be combined with three different widths up to 4.20 m in the inner core. The specifications called for simple handling of the mould, the shortest possible setup times when converting, a solid construction and a sufficient number of steps and working platforms for safe working.

Pit access is required underneath the mould in order to be able to convert the inner core. This pit allows access to the inner core. At the same time, the pit is used to accommodate the hydraulic unit. This arrangement allows for a compact installation of the hydraulic lines, without long distances to an external unit. Terminal boxes are installed in the inner core and in the pit as well, in order to concentrate the electrical

cables as far as possible. This means that only few cables are required from the mould to the control cabinet.

The shrinking movements and the movement of the components in case of a change in geometry are done hydraulically; the outer walls are moved hydraulically or by electric motor. The movements are controlled by a Siemens PLC. The movements can be triggered via a monitor on the control cabinet or via a touch panel. This is done in automatic mode, where the individual movements are triggered in a specific sequence, or manually. The touch panel allows all movements in the inner core and around the mould to be observed and monitored.

The pit with its stairway and the different levels in the foundation were precisely installed in advance so that the erection of the base frame and the entire mould could be done smoothly. Large interlocking work platforms and stairways are arranged for all positions of the mould and all conversion work steps. In the inner core, sufficient surfaces at different levels are covered with gratings to allow for safe access to all connecting screws during conversion. A shelving area next to the mould allows for all intermediate parts and floor segments to be stored safely.



General view of the variable PPVC mould



Pit with hydraulic unit

## PRECAST CONCRETE ELEMENTS



Controller

### Large design variety of the PPVC

Shrink-cores are always used where vertical surfaces cannot be implemented with a demoulding bevel for the demoulding procedure. The classic applications are PPVC moulds for technical buildings, garage moulds, moulds for container or manhole construction and also moulds for U and L-shaped elements. PPVCs are also increasingly being used in residential construction in order to enable effective and time-saving assembly on building sites.



Module for prison cells



## Precast Moulds & On-Site Formwork



## Shaping the Future of Concrete

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Module for the German Federal Railways



Module for wind turbines

There are almost no limits to the sizes of the inner cores, the number of rooms in an element and the geometric designs within the rooms. Depending on size and geometry, there are different shrinking techniques that can be used individually or in combination.

An example of the size of the element and the number of rooms is a mould for prison cells. In this mould, up to four rooms with integrated toilet areas are concreted in one piece; this allows for an extremely efficient construction of the entire building.

Classic applications of shrink core elements are small PPVCs for all kinds of technical buildings. Whether for a wind turbine or for the German Federal Railways, shrink technology can be implemented for any required geometry. The geometry of the modules, openings in the walls or possibilities for lifting the elements determine the technical design of the shrinking technology. Especially with manhole elements, a right-angled design of the element corners is not always necessary and thus there are possibilities to carry out the shrinking technique more cost-effectively.



Mould for shafts



Shrinking over corner



Shrinking over line

### Locking of the moving components prevents damage

It is important for all designs that the moving parts of the shrink technology are as wear-resistant as possible. This is achieved by using precisely milled and laser-cut parts, which are exactly executed for the necessary movements. Shrink rubbers or spring plates that deform or bend during the shrinking process are maintenance-intensive and pose the risk of breakage. The failure of such an element during concreting is often not immediately visible and can cause major damage to the mould due to concrete penetrating it. To prevent the moving components of the metal shrink systems from lowering under load, these components are automatically locked.

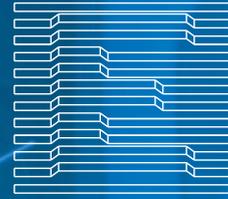
Once again Construx was able to prove its high flexibility in the current project. However, there are also reliable partners in the field of hydraulics and control who are fully committed in developing and working out effective customer solutions together with Construx. ■

#### FURTHER INFORMATION



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