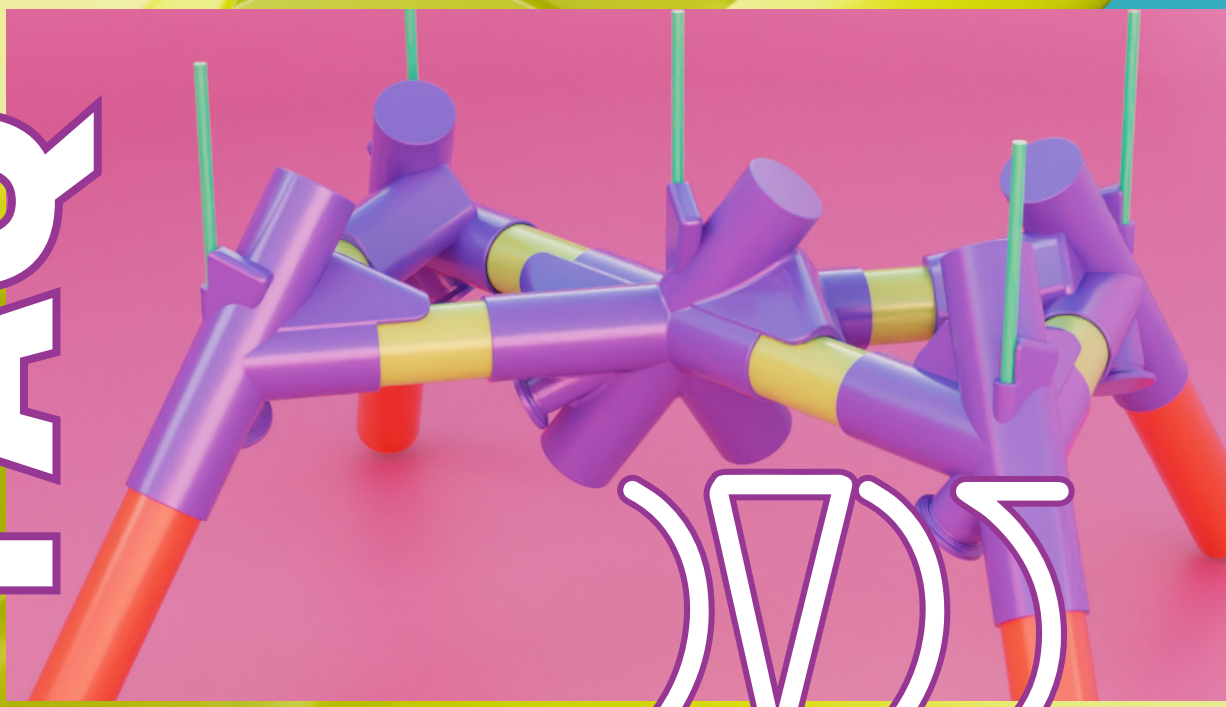
HYDRANTULA

FAQ 2025



Hydrantula is the only low-cost 3D marine concrete frame technology. Unlike piles, up to 35% of all work can be done inside workshop. And about 90% of the total work is dry. And are carried out on shore without involving heavy machinery or barges. Hydrantula installation is virtually silent and less susceptible to the vagaries of the weather. Hydrantula is almost insensitive to the type of bottom soil.

1. What are we selling?

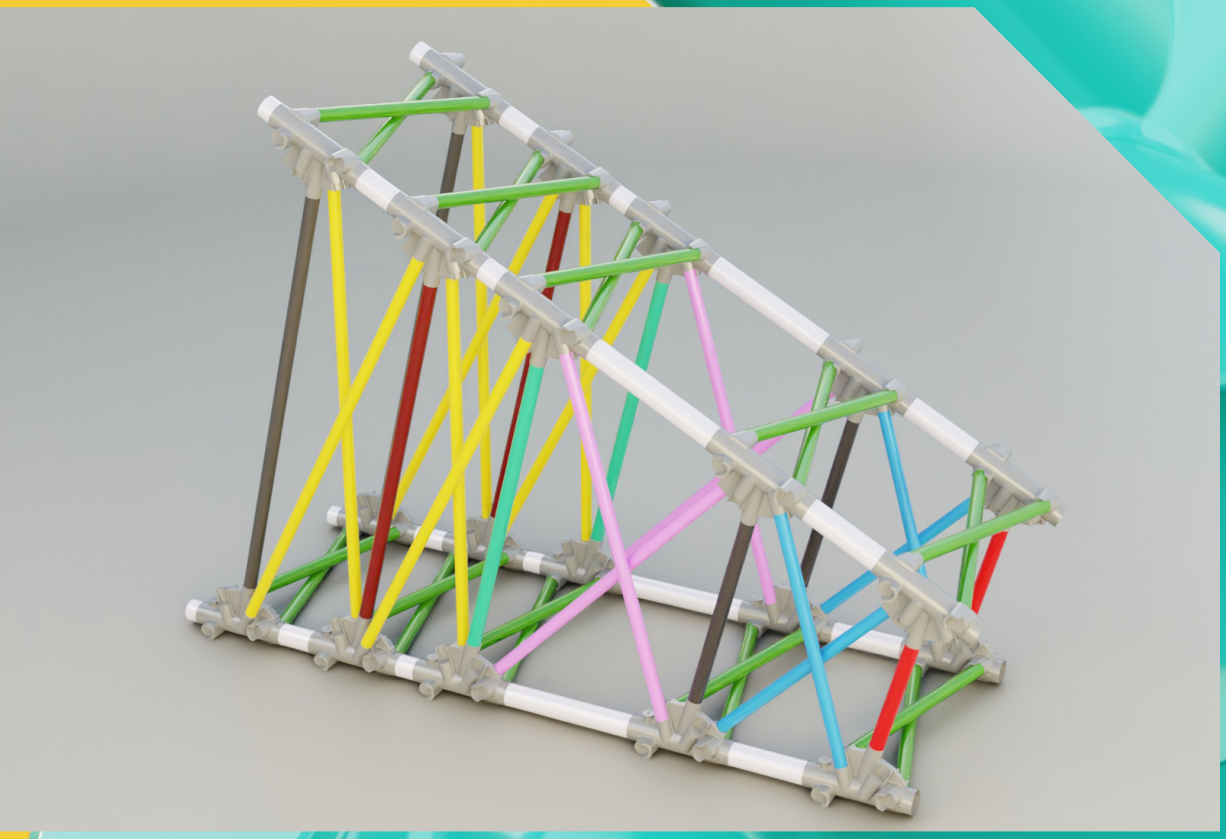
HYDRANTULA develops, manufactures and sells permanent [non-removable] formwork for casting concrete underwater or in the tide zone. The ready-to-cast concrete formwork consists of original connecting elements [fittings or nodes] and beams made of regular HDPE plumbing pipes.

2. What exactly are you selling and what will need to buy separately?

*We sell technology. In a narrow sense, we only sell fittings = connecting nodes of the 3D frame. Beams are made from standard plumbing pipes; sea concrete, rebar and microfiber are also widely available mass products and purchased locally

3. Do we need to concrete on the shore or in the water? How is concrete placed inside?

* An empty formwork is fully assembled on the shore, and later is moved as ONE PIECE to site [aquatoria] by a crane or barge. A concrete pipe must be connected to one of the port [5½» groovelock] before drowing of frame.
Concreting is carried out under water.
* Hydrantula formwork is usually not watertight and sinks slowly. If desired, water in cavity can be later replaced by freshwater or immediately forcibly flooded using fresh water. However, the formwork «holds» the concrete well enough, this approach reduces the risk of air traps and non-spills of concrete. The formwork is filled by displacing water with heavier concrete.



4. What is the size of the structure?

* All HYDRANTULA designs are scalable. They don't have a fixed 3D cell size, is there only a constant aspect ratios. The final dimensions are chosen by the customer, according to their needs and the characteristics of the site.
The size of our formwork structure is continuously adjustable over a wide range due to the length of the beams. The lengths of all beams vary proportionally.

5. How does the concrete get inside the formwork?

Each Hydrantula fitting has a 5½» or 4½» Groovelock connection port. Some fittings additionally have a Camlock 3» (75mm) connector. The concrete pipe [cast iron or hose] DIN125/100 is connected using a standard clamp to connector on fitting. Concrete is then pumped under pressure into the formwork cavity.
* Concrete has a density of about 1900 kg/m^3 and can displace water from the formwork if concreting is carried out «from bottom to top» and with some overflow. Accordingly, the concrete pipeline must be connected to the bottom point of the structure.

6. How are the beams [pipes] connected to the fittings?

With Butt/socket welding, by manual extruder, rivets, fixtures, fasteners.

7. Which pipes should be connected?

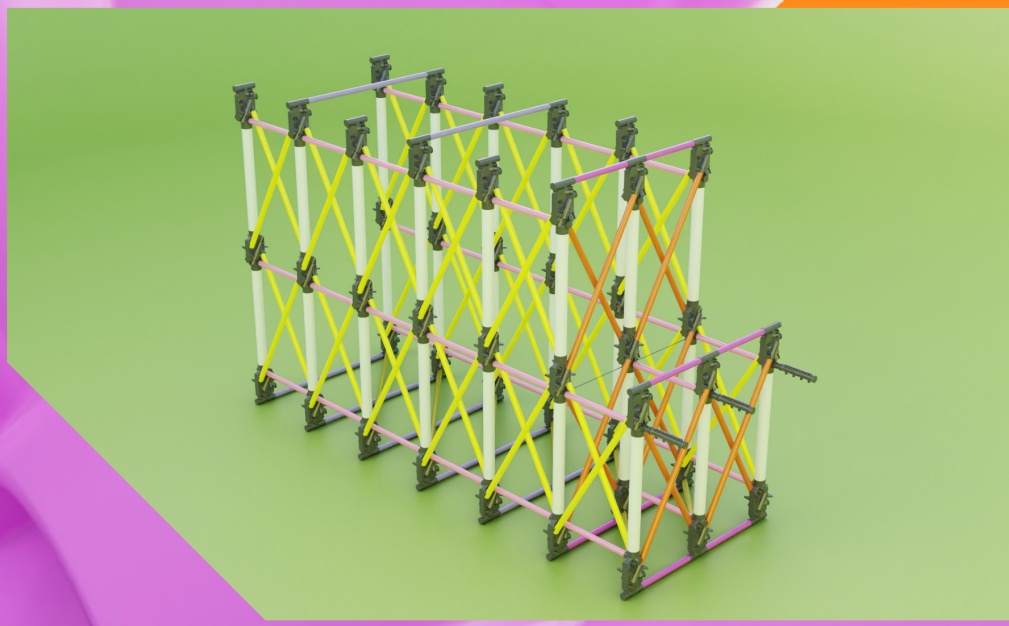
By default [from the factory], all sockets and sleeves are disconnected. Installers drill with crowns only at the sleeves and sleeves that will be involved in this very node of the structure (in place). Thus, the same fitting may have a different set of pipes to be connected.

8. How many fittings required to complete construction?

** Mono-fitting is a universal fitting, when only one fitting model is enough to assemble the entire structure (Y4, S3, S5, X31)

** Bi-fitting - a set of 2 fittings sufficient to assemble the entire structure (B61+B62; L2+L1; R3+R1; U45+M11). Often boundary between bi-fitting and mono-fitting is not sharp and clear. For example, the entire structure can be assembled not only from a mixture of L2 +L1, but also from L2 alone (without L1) or from L1 (without L2). The same situation applies to R3 (without R1) and vice versa. Or B61 (without B62) or B62 (without B61).

** Service fittings are fittings that provide convenient connection of structures with concrete pumps - D2 and D3. As a rule, the fitting can be connected to the concrete pump by a regular concrete pipeline (cast-iron or hose). However, when concreting structures at a great distance from the shore, flushing and evacuation of the concrete pipeline become difficult. And using one-time (sacrificial) HDPE pipe concrete pipeline is an inexpensive and uncomplicated alternative. Fittings D2 and D3 allow you to quickly and inexpensively produce a concrete pipeline from a typical HDPE pipe



9. Does the formwork float?

* Floats for a while if composite reinforcement is used. Sinks immediately if steel reinforcement is used. Steel rebar has better load performance, but greatly reduce lifespan of 3D frame in salt water.

10. How is the reinforcement carried out?

* Beams reinforced by rebar assemblies in advance. Rebar placed inside pipes during formwork assembly. An empty formwork with rebar inside the pipes is concreted on site.

11. Is the HYDRANTULA structure mounted on piles?

* It is possible to use the vertical [load-bearing] columns as conductors for screw piles. However, a proprietary feature of HYDRANTULA structures is the possibility of their installation on the bottom soil in the FreeStand mode - on own sleds, without a firm connection with the seabed.

12. What if the bottom has a slope?

* The H1 series design includes «height-adjustable» lower columns. The designs of the H2 series also adapted to the slope. For rest series, it is possible to recoup the slopes with the upper deck adaptation.

13. What if the sea depth is large?

* Designs of the H3 [15 meters], H4 [6m], H5 Series [8...12m], as well as H2 [5 m] can be made in 2 or three storeys. This allows them to be used at the maximum depths indicated above. H1 is only single storey series of Hydrantula.

14. How much does an empty formwork weigh?

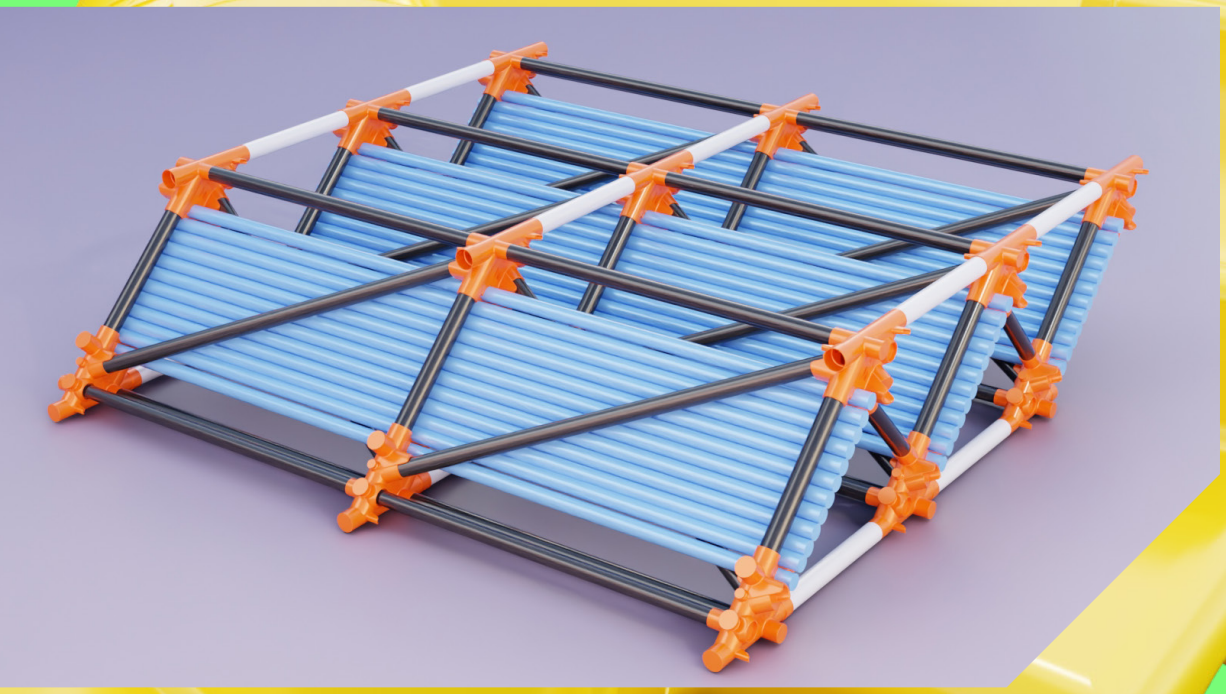
* No more than 20% of the total (final) weight. With composite rebar used its often keep afloat.

15. At what maximum distance from the shore can HYDRANTULA structure be built?

* It depends on the availability of barges suitable for transporting and launching empty formwork, as well as for placing a concrete pump and cuvet with fresh concrete.
Limiting factor is that the depth at the installation site should be less than the maximum permissible. When casting from the shore, the length of the concrete pipeline is usually limited to 70 meters.

16. Will the structure be pushed away or crushed by moving ice? Is it prone to ice damage?

* The structures are NOT designed for the ice flow of Arctic rivers. Freezing in sea bay or lake waters usually does not harm them.



17. Who can assemble such a structure?

* Butt/socket welding of PE pipes can be performed by plumbers engaged in work on outdoor PE pipelines. The rest of the work can be easily handled by any skilled construction workers.

18. What kind of tool is required?

* Drills, screwdrivers, cutters [crowns], optical levels, hand extruders, end welders, circular saws.

19. What kind of construction equipment is required?

* Cranes, concrete pump, long-haul trucks, concrete delivery trucks.

20. Is it possible to build structures in the high tide zone or on the shore?

* The Archimedes force acting in water reduces the weight of fresh concrete by more than half [up to 800 kg/m^3]. When using HYDRANTULA formwork on land, enhanced reinforcement and some external support of inclined and horizontal beams (tubes) will be required.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