FLUIDRA

BUILDING COMPETITION AND SPORTS CLUBS POOLS:

Best Systems and Advice



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01 INTRODUCTION

Building competition swimming pools requires an understanding of regulations, specifically around what the **World Aquatics federation (formerly known as FINA)** sets as worldwide standards for this type of swimming pools.

Whether you plan swimming pools that will host international or national-level competitions, or are putting in place pools for sports clubs, designed more for practice and routine workouts, there are construction considerations to be aware of. From the most precise and efficient panel building systems to pool accessories, the choice of materials and devices can make all the difference.

In this book, we will cover:

- **What are the essential aspects of competition pools and sports clubs pools;**
- **The associated regulations for each type of pool;**
- **The best construction systems for both competition pools and sports clubs pools;**
- **Accessories that will ensure the smooth running of each.**



02 INTRODUCTION TO THE COMPETITION AND SPORTS CLUBS POOL SECTOR

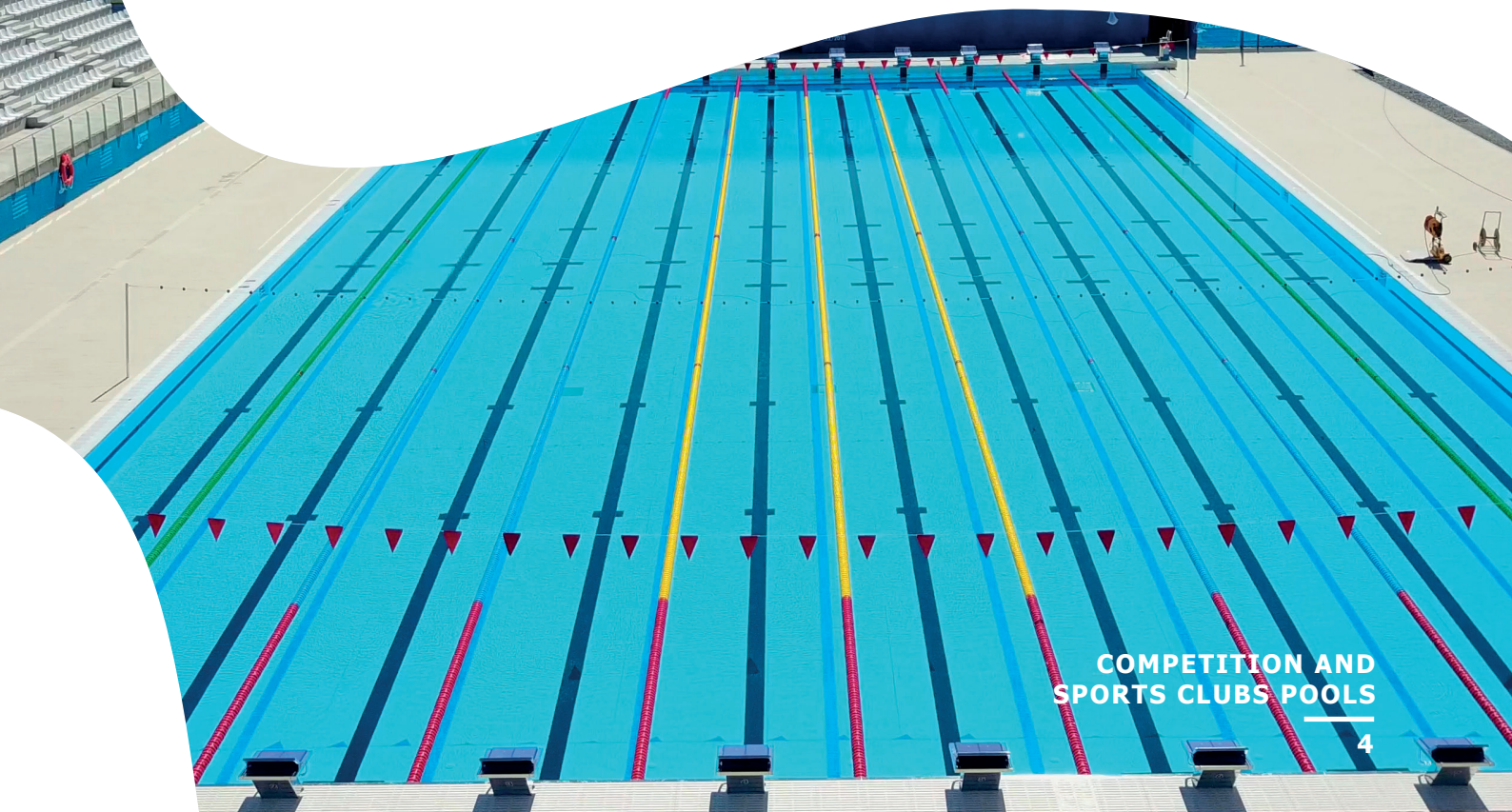
Building competition and sports clubs pools requires an in-depth knowledge of the relevant regulations, as well as an understanding of how the end users will interact with the pool. Beyond simply the installation of the pools, we should also consider their long-term maintenance, cleaning and servicing. Here is an overview of the two sectors at high level.

Competition pools

We refer to **competition pools as those used to host official swimming, artistic swimming, waterpolo, diving and high-diving events** (at various levels). They must comply with World Aquatics regulations in order to be accepted in the competition circuit, as well as with each relevant national set of rules and regulations.

1 dictate that competition pools are built within specific dimensions and minimum tolerances, temperature parameters, lighting, and that they feature particular accessories and competition equipment that comply with rules and regulations.

In addition to one-off competitions that these pools cater to, competition pools can also be used by high-level professional athletes for their training (e.g. **Club Natació Sabadell** in Spain).



Sports club pools

While these pools are not intended for official competitions, they are no less important. They do not need to obtain a World Aquatics certification.

More often, however, especially in the case of lap pools, these are used predominantly by gym members to **train or swim recreationally.**



Construction considerations

For both types of pools, a precise and reliable design must be the first step of construction. In terms of construction, **panel building systems** are ideal for this, thanks to how efficient and easy to install they can be. Additionally to the pool vessel, competition and/or athletic pools need to consider various other aspects when designing and installing:

- Lighting systems;
- Filtration, recirculation and disinfection systems;
- Heating, cooling and dehumidification systems;
- Competition pool accessories;
- Lining.
- Accesses, changing rooms, sanitary services and user flow, etc

As we will cover further, an additional challenge specifically for some competition event pools is that they are not built to be used for the long term. Sometimes, official competitions or events are hosted in a venue for a few days or a week, requiring the pool to be set up and dismantled in a short period of time, too. In this situation, **modular panels such as Skypool** become an ideal solution.

They can be installed quickly, they are extremely precise, lightweight, efficient and can be assembled and disassembled without major works, too. Thanks to their floating system, these panels allow the prefabricated concrete slabs to move easily to a new location (as opposed to long-term pools that are anchored to a fixed concrete slab and remain in the ground after the event).



03 REGULATIONS GOVERNING THE INSTALLATION OF COMPETITION AND SPORTS CLUBS POOLS

As we've mentioned, competition pools must meet World Aquatics regulations, while sports clubs pools are not subjected to these rules. Below, we are going to analyse the restrictions and/or parameters that each type of pool needs to conform to.

Competition pools regulations

Depending on the size of the pool and the sport it is intended for, there are various parameters that pool designers and constructors need to be aware of.

Olympic pool

The largest type of competition pool, an Olympic pool is most often used for international and official swimming competitions and events. At the same time, some sports clubs also host Olympic swimming pools for training.



Olympic swimming pools for competition need to adhere to World Aquatics standards, as follows:

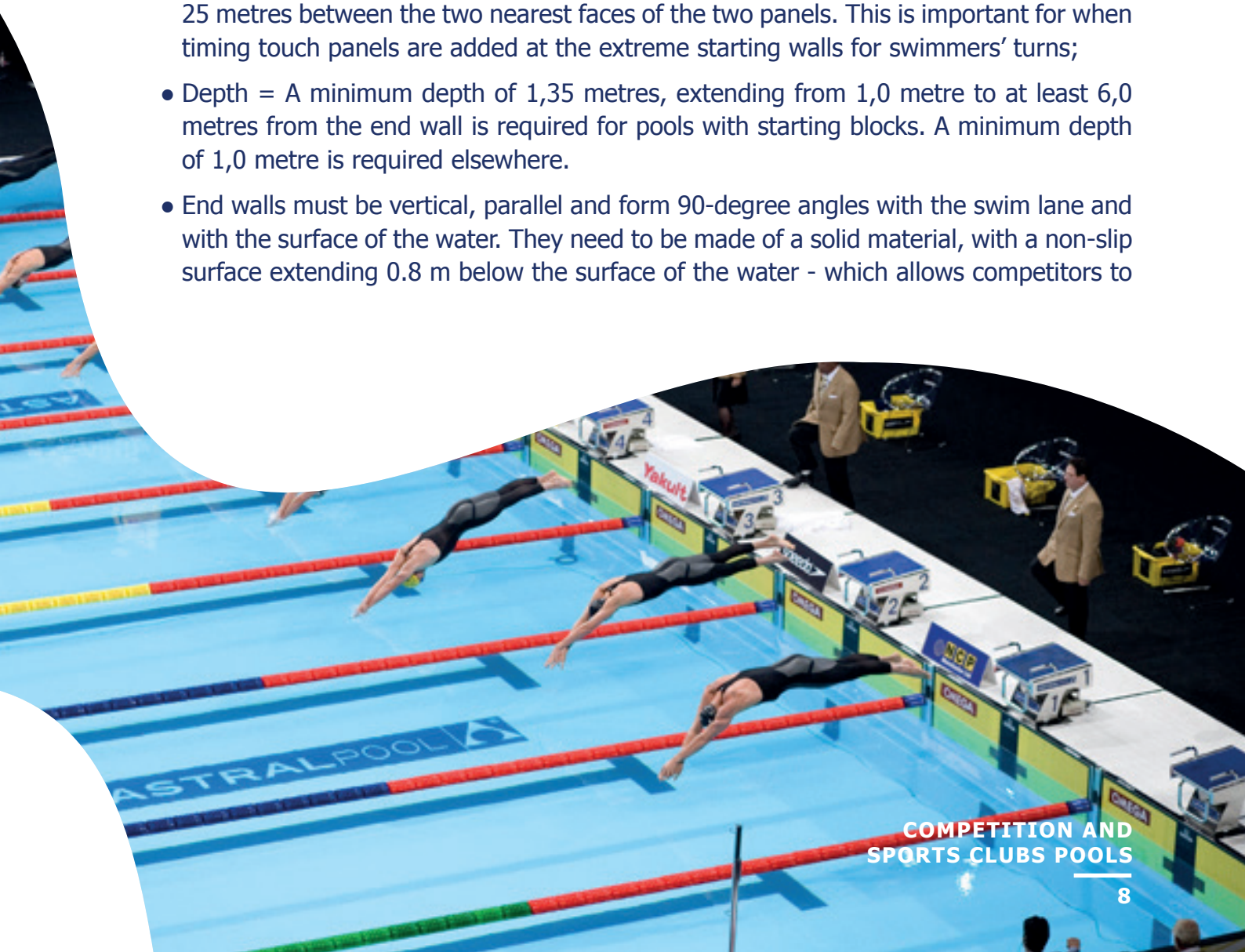
- Length = 50 m / Width = 25 m;
- Depth = a **minimum** of 2 metres. Currently, the recommended depth is actually 3 metres, as more depth prevents a rebound during the swim and keeps the top surface of the water calmer;
- Lane width = 2.5 metres;
- Water temperature = 25-28 degrees Celsius.

Semi-Olympic pool

This length of pool is very widely encountered at swimming competitions (short course) and in gyms and fitness clubs. Sports clubs offering state-of-the-art training facilities will also use a 25-metre swimming pool, also known as a short pool, as it is more convenient to locate, while still offering a good length for swimming training.

In order to host an official World Aquatics regulated competition, the semi-Olympic pools needs to have the following:

- Length = 25 metres. This pool length, measured as the minimum distance between the inner front sides of the pool, must be big enough to ensure that there is a distance of 25 metres between the two nearest faces of the two panels. This is important for when timing touch panels are added at the extreme starting walls for swimmers' turns;
- Depth = A minimum depth of 1,35 metres, extending from 1,0 metre to at least 6,0 metres from the end wall is required for pools with starting blocks. A minimum depth of 1,0 metre is required elsewhere.
- End walls must be vertical, parallel and form 90-degree angles with the swim lane and with the surface of the water. They need to be made of a solid material, with a non-slip surface extending 0.8 m below the surface of the water - which allows competitors to



touch and push off when turning. There is a permissible tolerance in wall verticality, at +/- 0.3 degrees

- A "swimmer's step" or rest ledge can be placed along the pool walls, as long as it's not less than 1.2 metres below the surface of the water;
- The rest ledge can be between 0.1 and 0.15 metres wide;

- Lane width = 2.5 metres;
  - Semi-Olympic pools normally have 8 or 10 lanes;
  - For permanent swimming pools, lanes from 1 to 8 shall be 2,5 metres wide and lanes 0 and 9 shall be 2,4 metres wide with 2 spaces 0,1 metres wide outside of lanes 0 and 9. There must be a lane rope separating these spaces from lanes 0 and 9 for World Championships. These distances reduces or mitigates the ripple effect of the swimmer's movement;
- Water temperature = 25-28 degrees Celsius.

Diving pool

Diving pools are designed for training and competition in jumping, springboarding and platform dives. They are normally housed in large sports complexes due to the sheer size and height required for the diving platforms. Sports clubs may also have them if aiming to offer training for professional athletes. Multiple requirements aiming to ensure the safety of divers need to be observed.

- Size = at least 25 m x 20 m;
- Depth = 5 metres at the shallow end;
- Diving platform = must form a single enclosure with the swimming pool and has to be isolated from the elements (e.g. the risk of prevailing wind which can disturb the divers' trajectory);
  - Platforms must present the following dimensions:

PLATFORM	WIDTH	LENGTH
0.6m to 1.0m	1.00m (2.90m preferred)	5.00m
2.6m to 3.0m	1.00m (2.00m preferred)	5.00m
5.0m	2.90m	6.00m
7.5m	2.00m	6.00m
10.0m	3.00m	6.00m

  - The front part (where competitors stand before jumping) must project at least 1.5 metres from the edge of the pool;
- Springboards = at least 4.8 metres long and 0.5 metres wide;
  - They must also have a non-slip surface;
- Temperature = 25-28 degrees Celsius (26 degrees is the optimal temperature).



High-diving pool

The fundamentals of high diving are closely related to the discipline of platform diving. However, there are two basic differences between diving and high diving: the fact that high-diving athletes land feet first and an additional height (World Aquatics has established heights of 20 metres for women and 27 metres for men in high diving competitions)

High diving can be performed from a cliff or artificial platform into the sea, a lake, a river or an artificial pool. In the case of pools, it is preferably performed in controlled environments with custom fabricated diving towers in conjunction with fabricated pools that comply with the following standard pool sizes:

- Shape: while rectangular dimensions are the preferred option for permanent artificial pools, temporary round pools can also be used.
- Size: non-circular pools must have a size of 17 x 17 meters. Round pools must present a minimum diameter of 17 meters.
- Depth: the minimum is 5.80 meters, although legacy pools built prior to December 2017 are allowed to be 5 meters deep.
- High diving platform: this pool accessory must be rigid, horizontal, 2 meters wide and 5 metres long. Additionally, it must be covered with an anti-slip material.



Water polo pool

Designed for the particular sport of water polo, these pools must ensure that swimmers aren't in contact with the bottom of the pool - floating at all times. It is, however, common to have water polo competitions in Olympic swimming pools where ropes are used to create the standard dimensions for a playing field and the required competition accessories are added.

- Size varies depending on whether it is a men's or women's competition. Men's water polo field of play is 33 metres long (from one goal line to another) and 20 metres wide. Women's water polo field of play is 25 metres long and 17 metres wide;
- Depth = depth of the water shall be consistently not less than 1.80 metres, guaranteeing that players cannot touch the bottom;
- Temperature = 26 degrees Celsius (with an accepted variation of 1 degree up or down - for competition and for training sessions alike)
    - This is a good temperature for cardio-pulmonary endurance, stimulating blood circulation, and maintaining stable blood pressure.

"... Men's water polo field of play is 33 metres long and 20 metres wide. For women's competitions is 25 metres long and 17 metres wide."

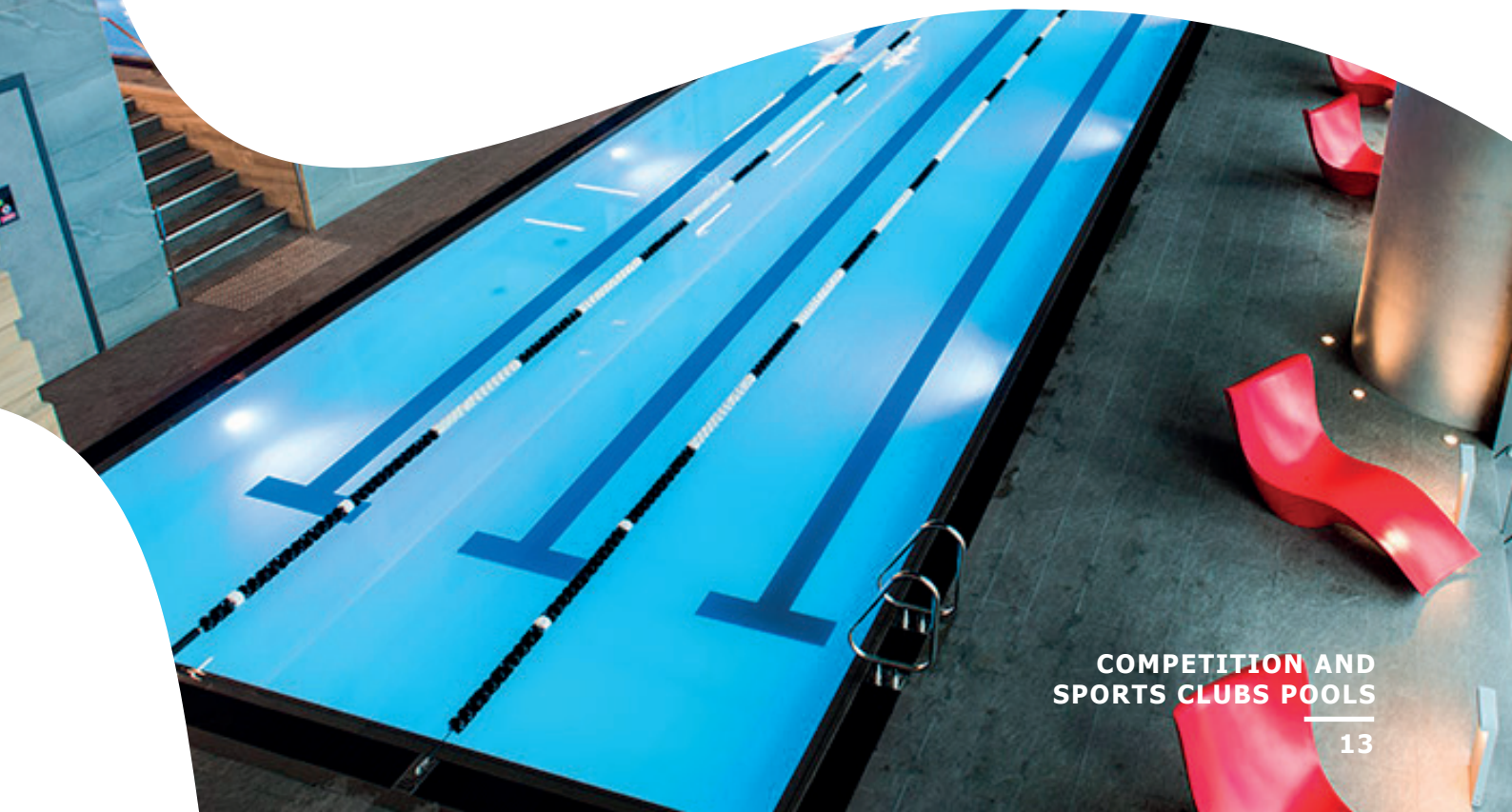
Sports clubs pool regulations

In the case of sports clubs, swimming pools are also referred to as lap pools and are designed to allow recreational swimming as well as training, swimming lessons and general physical activity in the water (this can include aqua gym classes etc.).

They are not subjected to World Aquatics rules, and each lap pool found in gyms, leisure centres, municipal buildings or other locations can have its own specifications, as they have to comply with oficial standards according to the regional regulations in terms of public and commercial pools use.

Here are some common features and recommendations for building a lap pool:

- Size = most commonly 25 metres long / 12.5 metres wide with a rectangular shape;
- Depth = 1.4 metres is the recommended depth for casual or amateur swimmers, while 1.8 metres is recommended for professional athletic use;
- Temperature = 25 to 28 degrees Celsius, to facilitate blood circulation, help swimmers perform their training in comfort and prevent heart disease;
- Surface finishes are most commonly from PVC - especially in the case of panel systems;
- Water recirculation is usually ensured by an overflow system all around the edge of the pool;
- Pool accessories: lane lines are advised for lap pools; some may also have podiums to dive off of or backstroke signs.



03

THE BEST CONSTRUCTION SYSTEMS FOR COMPETITION POOLS

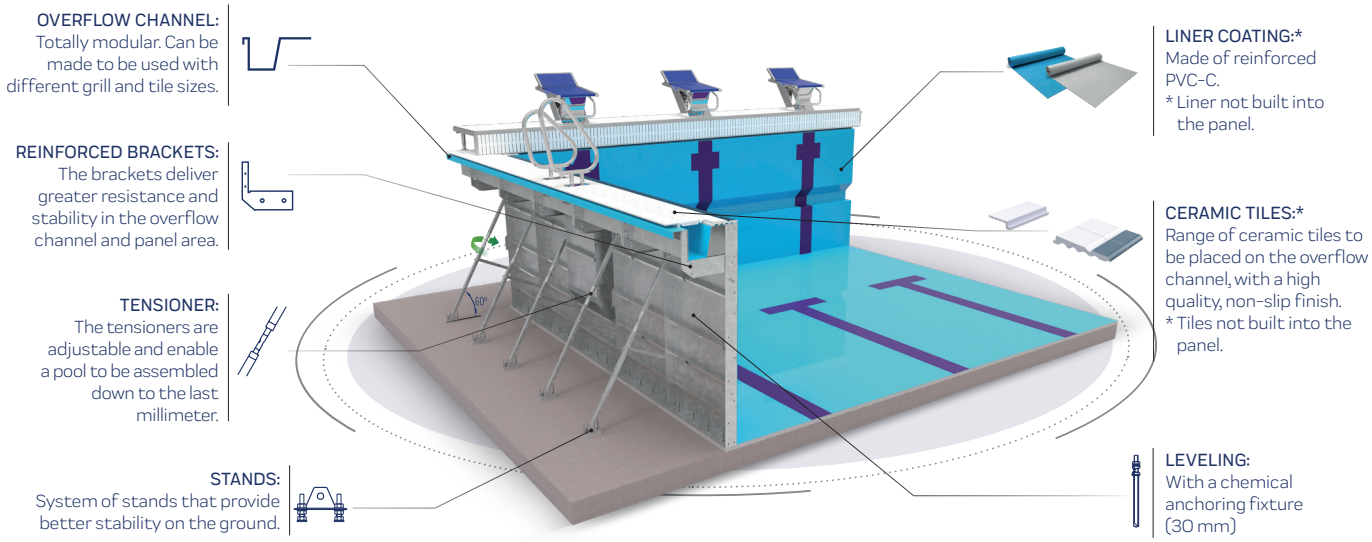
For both competition pools and sports club pools, the **modular panel system** is the best approach for building high-performance pools. Here we will look at the **Skypool** **panel system** specifically for competition venues.

Competition pools need to conform to very specific standards in all aspects, starting with the pool basin. Its dimensions must adhere exactly to the World Aquatics specifications discussed above for Olympic pools etc. Additionally, competition pool basins must be capable of handling large volumes of water.

Moreover, basins need to guarantee user safety, perfect waterproofing, and geometric precision.

Skypool panel overview

AstralPool's line of prefabricated pools comes in panels called SkyPool and can be customised to fit into either permanent or temporary infrastructures. This is Fluidra's patented pool basin solution.



These panels have an **easy anchoring and assembly system** that provides **complete watertightness** when installed. They are also extremely quick to install in-ground or for an elevated pool.

Skypool panels are made from stainless steel or hot dipped galvanised steel which gives them **antioxidant protection** and renders them more durable and safer.

Thanks to the **light weight, quick installation, excellent durability and millimetre precision** of Skypool panels, they also contribute to **saving on costs**, while also providing pools that can be transported for subsequent use after official events.

Some additional features of Skypool include:

- Levelling and dimensional tolerance adjustment systems;
- Materials resistant to subsidence and expansion;
- Easy to install but also to check on from a technical gallery that gives access to the back of the panels - can be used for inspection, maintenance and repairs, eliminating the need to empty the pool of this sort of intervention;
- Structures are compliant with European and local standards, including seismic calculations that comply with the most rigorous standards.

Benefits of Skypool panels

In a nutshell, pools built with Skypool panels benefit from:

Watertightness guaranteed by the perfect fit between panels which also enhances pool safety;

Durability thanks to maximum resistance to corrosion and the lack of need for much maintenance thanks to the stainless steel and galvanised steel panels;

Low maintenance costs: pool components are readily accessible, making it easy to pinpoint and work on problems faster, without having to empty the pool either;

Precision: this technology gives acute tolerance attainment, unlike traditional building methods. Our pools are recognised for use in World Aquatics standard competitions;

Sustainable: all parts of Skypool panels can be recycled, are non-contaminating and are made through processes with low environmental impact;

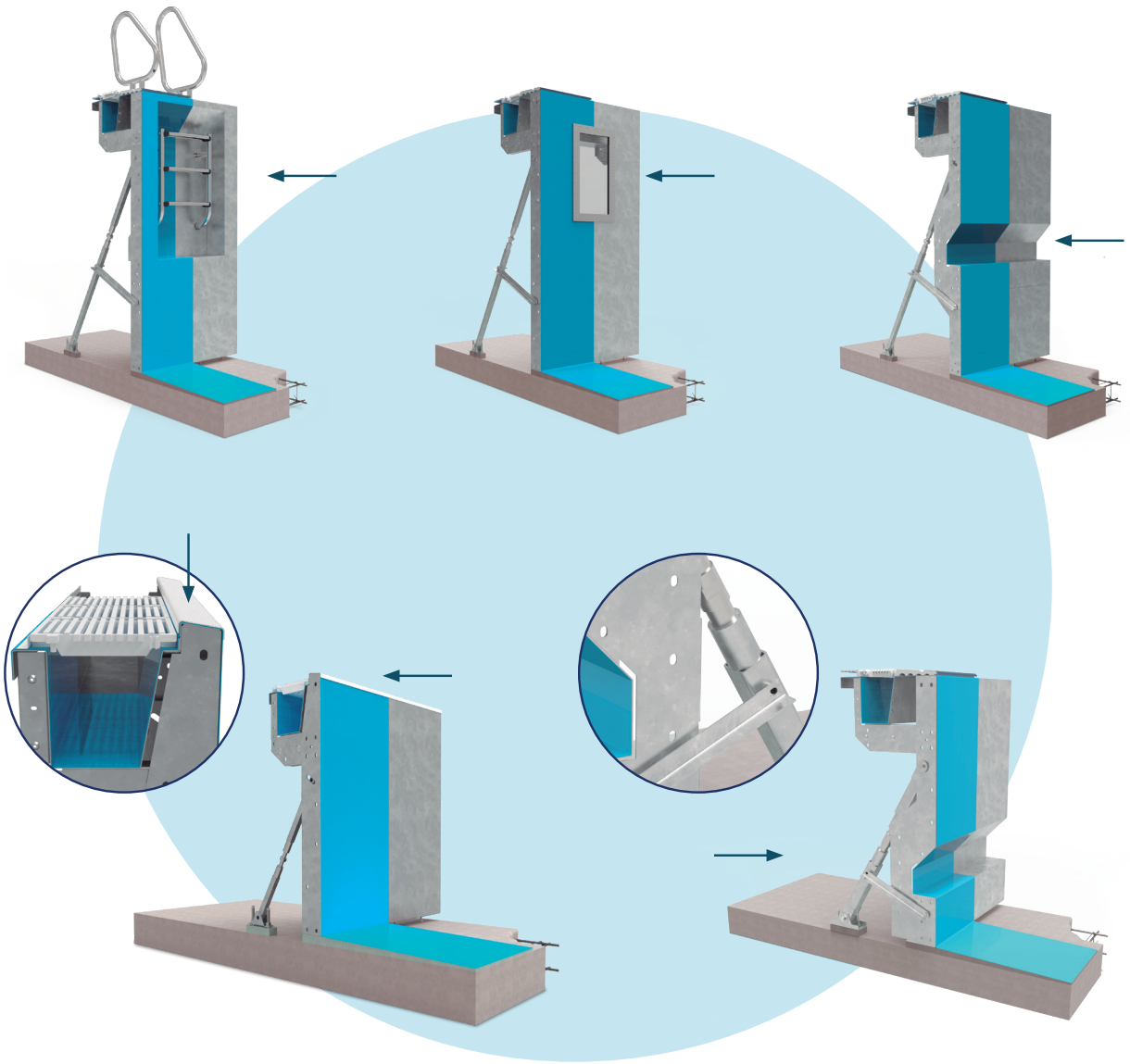
Low installation costs: there is no need for a complex infrastructure to be put in place, so a high-performance pool can be set up at lower costs.

World Aquatics Compliant: this panel system creates pools homologated for official competitions in line with World Aquatics standards, thanks to its extreme accuracy and tolerances.

Type of panels

The choice of an unwelded panel framework and chemical anchor fastenings makes Skypool panels compliant with all seismic building codes. Here are all the types of panels that can be used to put together a competition pool:

- **Step panels** - with built-in ladders compliant with World Aquatics standards; they are supplied with a split ladder, fastenings and asymmetric handrails to make it easy for swimmers to get in and out of the pool;
- **Glass sighting panels** - these are glass windows allowing coaches, physiotherapists and spectators to see the swimmers underwater;
- **Swimmer foothold panels** - a built-in foothold is added at 1.2 m for swimmers to rest;
- **Ceramic free panels** - specially designed not to need the front edge ceramic tile;
- **Seismic panels** - Skypool pools can withstand earthquakes of the highest magnitude thanks to the unwelded panels and chemical anchors attached to a pre-built concrete



slab. These panels are adapted to the seismic regulations of each country.

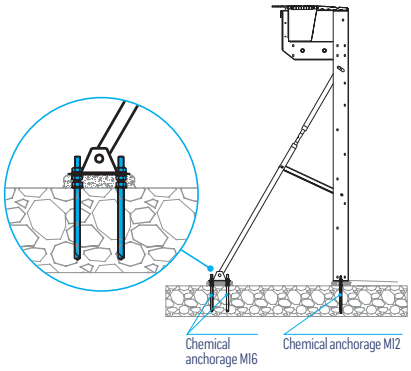
Skypool panel models

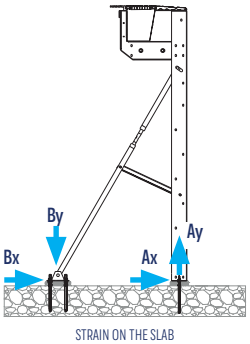
BARCELONA PANEL (SELF - SUPPORTING STRUCTURE)

The Barcelona panel was designed for the first time for the 2003 World Swimming Championships in Barcelona. The pool was installed inside the Sant Jordi palace, on the basketball court without damaging the ground.

Its self-supporting system allows it to be anchored to a concrete slab without the need to fasten a pool's outer decking to the slab. The panels can be supplied in hot-dip galvanised







BARCELONA PANEL MODEL

SkyPool galvanized steel self-supporting panels suitable for pools of up to 2.2 m.

GENERAL SPECIFICATIONS

Panel	Height (m)	**0,8**	**1,0**	**1,2**	**1,4**	**1,5**	**1,6**	**1,8**	**2,0**	**2,2**
	Width (m)	1.0 m standard size (special sizes available on request)								
Panel weight	(kg)	56	62	70	76	80	87	96	104	113
Tensioner		M16				M20			M24	
Panel anchors	Chemical type	M12								
Reinforcement anchors	Chemical type	M12							M16	
Panel fastening screws	(8.8)	M10								

***LOADS**

On panel	A	Ax (kN)	-1,79	-2,56	-3,01	-4,59	-5,52	-6,44	-8,47	-10,73	-12,99
		Ay (kN)	-4,54	-5,72	-8,58	-10,18	-11,14	-12,1	-14,23	-16,6	-18,97
On tensioner	B	Bx (kN)	-3,54	-4,67	-5,02	-5,98	-6,55	-7,11	-8,42	-9,88	-11,34
		By (kN)	4,07	5,25	8,7	10,34	11,32	12,29	14,46	16,86	19,26

FINISHES AND MATERIALS

Panel materials	S235JR steel according to standard UNE EN 10025
Panel finish	Hot-dip galvanized steel according to standard UNE-EN-ISO 1461: 2009
Waterproofing	Reinforced ALKORPLAN-2000 liner
Ceramic finish	ERGO 216 non-slip + 035 non-slip Rosa Gres

* Considered water level hydrostatic load and variable loads according to standard UNE-EN-ISO 13451-1 on pool equipment

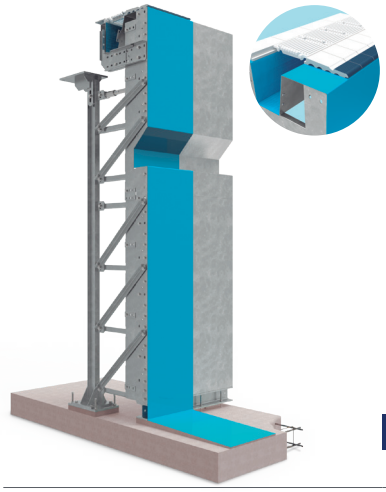


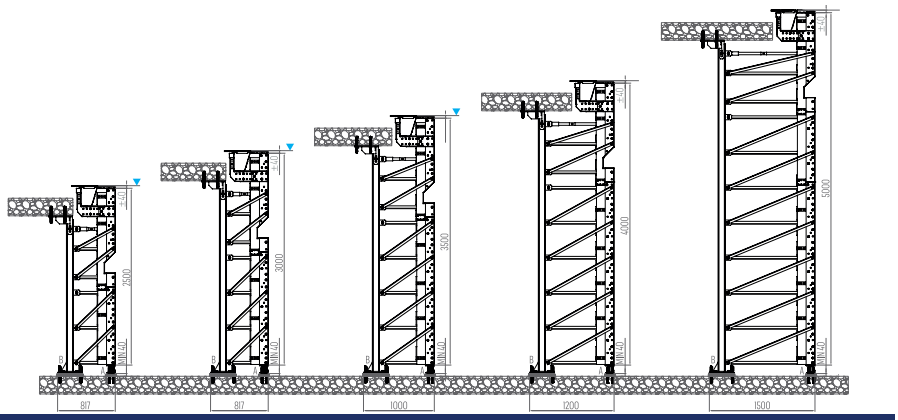
steel and stainless steel.

CAR PANEL (SELF - SUPPORTING STRUCTURE)

The range of prefabricated panels CAR (High Performance Center) is designed for elite athlete training. Made for large pool heights, they aim to meet all standards for Olympic, semi-Olympic, Paralympic, world swimming championships and water sports, such as water polo, jumping and synchronised swimming.

CAR panels are designed with a strong metal lattice framework anchored both to the concrete slab and to the formwork of a pool's decking.





CAR PANEL MODEL

Self-supporting galvanized **SkyPool** steel panel suitable for pools of up to 5 m. Fastenings are required at the top and on the bottom.

GENERAL SPECIFICATIONS

Panel	Height (m)	**2,5**	**3,0**	**3,5**	**4,0**	**5,0**
	Width (m)	1.0 m standard size (special sizes available on request)				
Peso panel	(kg)	245	290	340	395	500
Anclaje panel	Chemical type	M12		M16		
Anclaje refuerzos	Chemical type	M16		M20		
Tornillos unión panel	(8.8)	M12				

***LOADS**

On panel	A	Ax (kN)	Ask for details
		Ay (kN)	
On tensioner	B	Bx (kN)	
		By (kN)	

FINISHES AND MATERIALS

Panel materials	S235JR steel according to standard UNE EN 10025
Panel finish	Hot-dip galvanized steel according to standard UNE-EN-ISO 1461: 2009
Waterproofing	Reinforced ALKORPLAN-2000 liner
Ceramic finish	ERGO 216 non-slip + 035 non-slip Rosa Gres

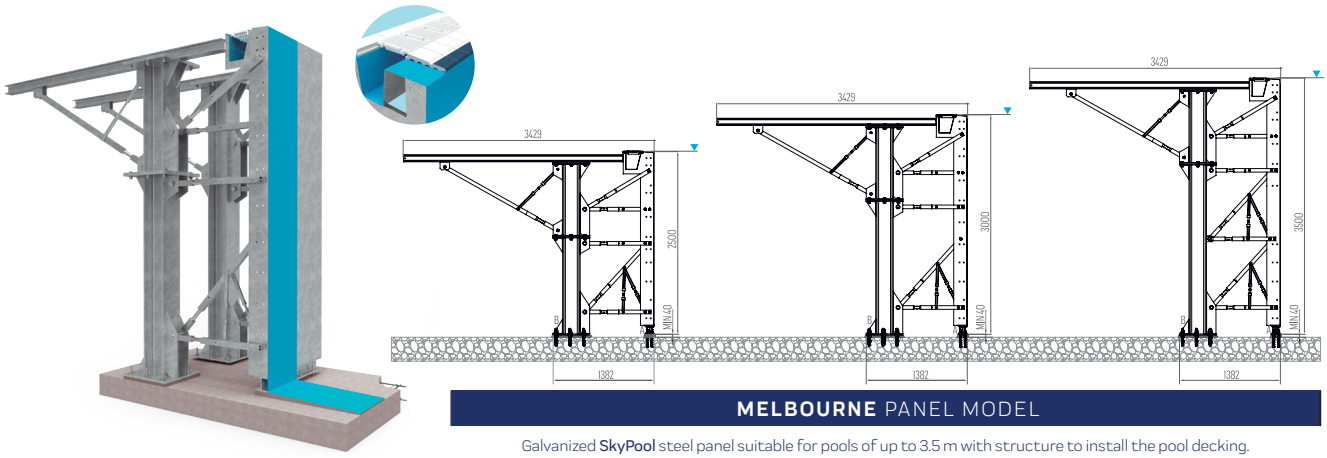
* Considered water level hydrostatic load and variable loads according to standard UNE-EN-ISO 13451-1 on pool equipment



MELBOURNE PANEL (SELF - SUPPORTING EVENT POOLS)

The prefabricated Melbourne panels were designed for the 2007 Swimming World Championship in Melbourne. Their main feature is that heights can vary between 2.5 and 3.5 metres. The self-supporting framework is anchored to the base slab and has a structure for building the outer decking. They are Ideal for building Olympic and synchronised swimming pools.

This type of panel is suitable for use in temporary events. The design of these pools makes it



MELBOURNE PANEL MODEL

Galvanized **SkyPool** steel panel suitable for pools of up to 3.5 m with structure to install the pool decking.

GENERAL SPECIFICATIONS

Panel		Height (m)	**2,5**	**3,0**	**3,5**
		Width (m)	1.0 m standard size (special sizes available on request)		
Panel weight		(kg)	1255	1370	1545
Panel anchors		Chemical type	M12		M16
Reinforcement anchors		Chemical type	M16		M20
Panel fastening screws		(8.8)	M12		

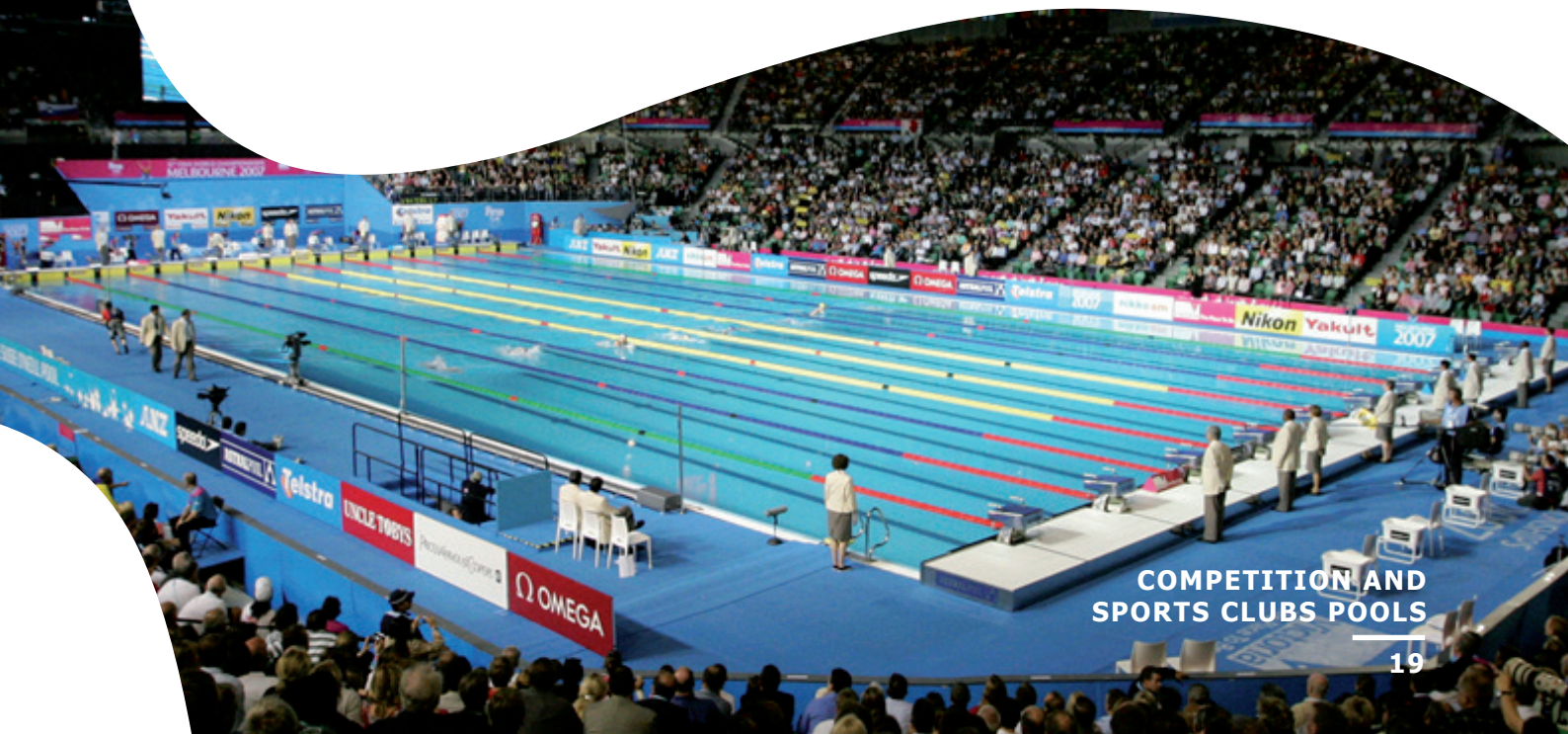
***LOADS**

On panel	A	Ax (kN)	Ask for details
		Ay (kN)	
On tensioner	B	Bx (kN)	
		By (kN)	

FINISHES AND MATERIALS

Panel materials	S235JR steel according to standard UNE EN 10025
Panel finish	Hot-dip galvanized steel according to standard UNE-EN-ISO 1461:2009
Waterproofing	Reinforced ALKORPLAN-2000 liner
Ceramic finish	ERGO 216 non-slip + 035 non-slip Rosa Gres

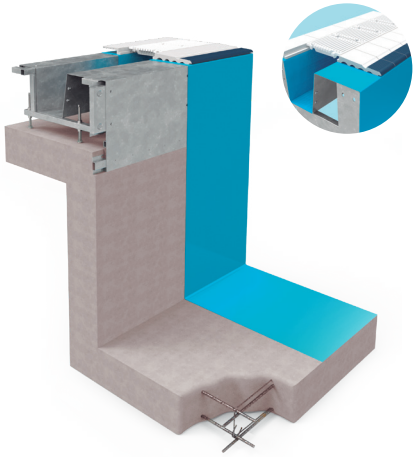
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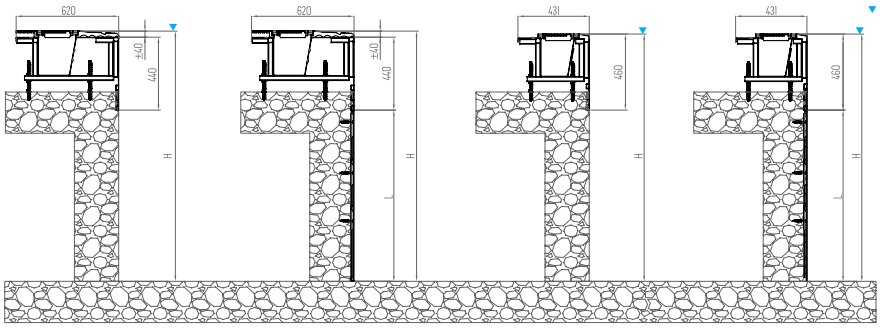


perfectly feasible to add bleachers in a stadium and they have an outer decking.

RENOVATION PANELS

Renovation panels are the ideal solution for any old pools that have to be renovated to adapt to current standards and to give them a new lease of life. Quick and easy to fit without the need to demolish a pool, all that's required is for the pool's coping to be demolished and a new overflow channel to be installed. Ceramic and non-ceramic finishes are available, and they have built-in drainage outlets. This is the most inexpensive solution to give your pool a new lease of life.





Ceramic overflow channel | Ceramic overflow channel & wall | Non-ceramic overflow channel | Non-ceramic overflow channel & wall

RENOVATION PANELS

Galvanized steel **SkyPool** panel suitable for renovating any existing pool.

GENERAL SPECIFICATIONS

		CERAMIC		NON-CERAMIC	
Panel	Type	Overflow channel	Overflow channel & wall	Overflow channel	Overflow channel & wall
	Depth H (m)	**0,44**	**1,2**	**0,44**	**1,2**
	Depth L (m)	-		-	
	Width (m)	1.0 m standard size (special sizes available on request)			
Panel weight	(kg)	36	55	32	51
Panel anchors	Chemical type	M12			
Panel fastening screws	(8.8)	M6			

FINISHES AND MATERIALS

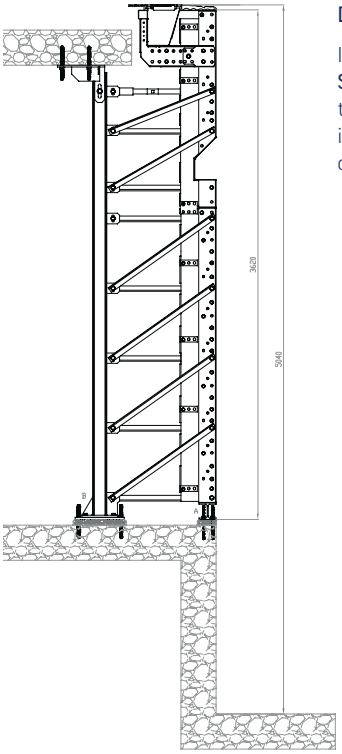
Panel materials	S235JR steel according to standard UNE EN 10025	
Panel finish	Hot-dip galvanized steel according to standard UNE-EN-ISO 1461: 2009	
Waterproofing	Reinforced ALKORPLAN-2000 liner	
Ceramic finish	ERGO 216 non-slip + 035 non-slip Rosa Gres	Does not apply

BUILDING PROCESS FOR SKYPOOL PANELS

Here is a step-by-step process overview for Skypool panel installation:

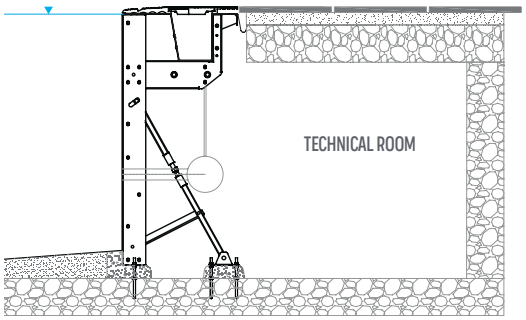
- We unload the prefabricated panels and concrete slabs;
- We mark out the corners of the pool and fasten the chemical anchors;
- We put the panels in place and screw them in;
- We join the panels to the chemical anchors;
- We assemble the panels and lay out the levelling stands;
- Fitting of filtration ducts;

- Waterproofing of the pool using a reinforced PVC liner;
- Coping finishes in porcelain tiling;
- The pool is filled to check for possible leaks and levelling errors;
- Ready for the perfect pool experience.



DIVING POOLS

It is possible to combine the use of **SkyPool panels** and **concrete walls** to attain the great heights required in **diving pools**, whilst making savings on the cost of building work.

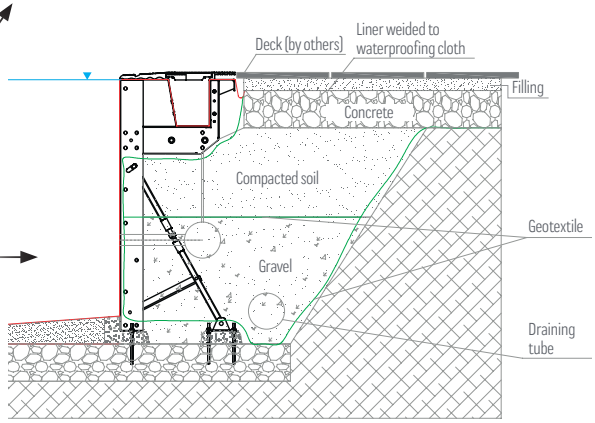


PANEL IN TECHNICAL ROOM

The panel can be accessed from the back. **Easy maintenance and inspection**

IN-GROUND POOLS

SkyPool panels can be used for in-ground pools as long as allowances are made for land drainage.





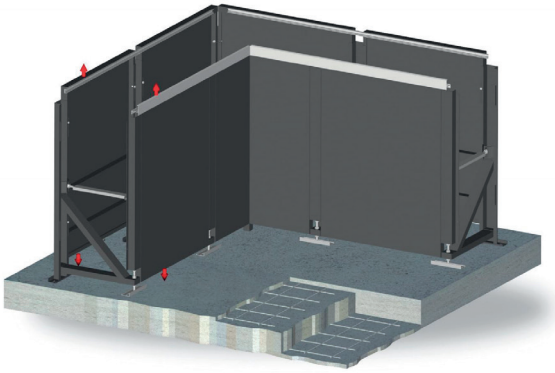
03

THE BEST CONSTRUCTION SYSTEMS FOR SPORTS CLUB POOLS

In the case of sports club pools, there is no need to adhere to World Aquatics regulations and there is more flexibility in the requirements for building a pool.

Apart from Skypool, we also recommend using **Bluespring panels**, whose **modular structure** uses prefabricated panels. They provide exceptional **quality and durability**, with a **stylish** look and a **lightweight structure** that can be easily **adapted** to the pools required. This also makes them easy to fit in limited spaces, for example rooftops.

The Bluespring system has a double-walled perimetral self-supporting structure (external panel and internal panel), with an overflow channel and a built-in compensation tank. This means it doesn't need a retaining wall or soil filled with inert materials like sand or gravel, thereby limiting masonry work to the absolute minimum. The metal structure has a 25-year warranty.



Since pool components are readily accessible, any problems can be pinpointed faster, so repair and maintenance work is easier and costs less. Also, all components are recyclable and manufactured with low environmental impact.

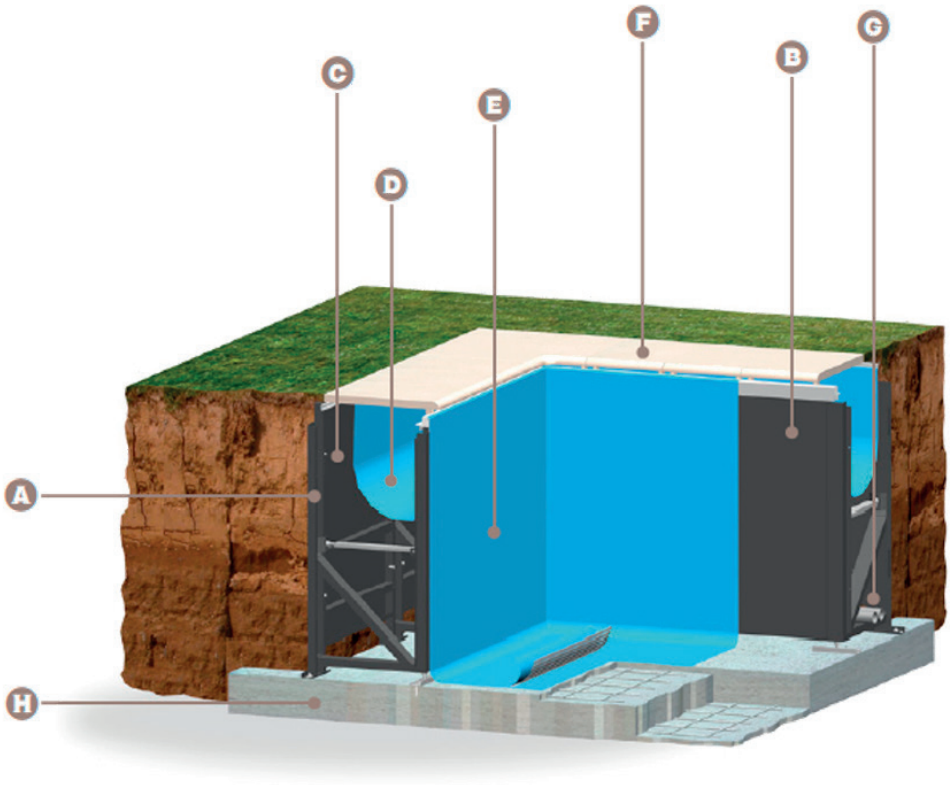


Bluespring panel versions

Bluespring features three versions according to its installation: in-ground, partially in-ground and above-ground.

In-ground

This is a self-standing, double-wall perimeter pool, with overflowing channel and built-in compensation tank. It's been designed for the construction of public pools for recreational use and sports. Internal staircases, beaches and whirlpool areas can be added using cement. The backfilling is used only at the landfill, without the need to carry out expensive consolidation works in masonry.



A. SELF-STANDING STRUCTURE. EXTERNAL PANNEL.

B. INSIDE WALL WITH OVERFLOW PERIMETER ADJUSTABLE IN HEIGHT AND ALIGMENT.

C. OUTSIDE WALL ADJUSTABLE IN HEIGHT AND ALIGMENT.

D. OVERFLOWING CHANNEL AND BUILT-IN COMPENSATION TANK.

E. REINFORCED VINYL COATING.

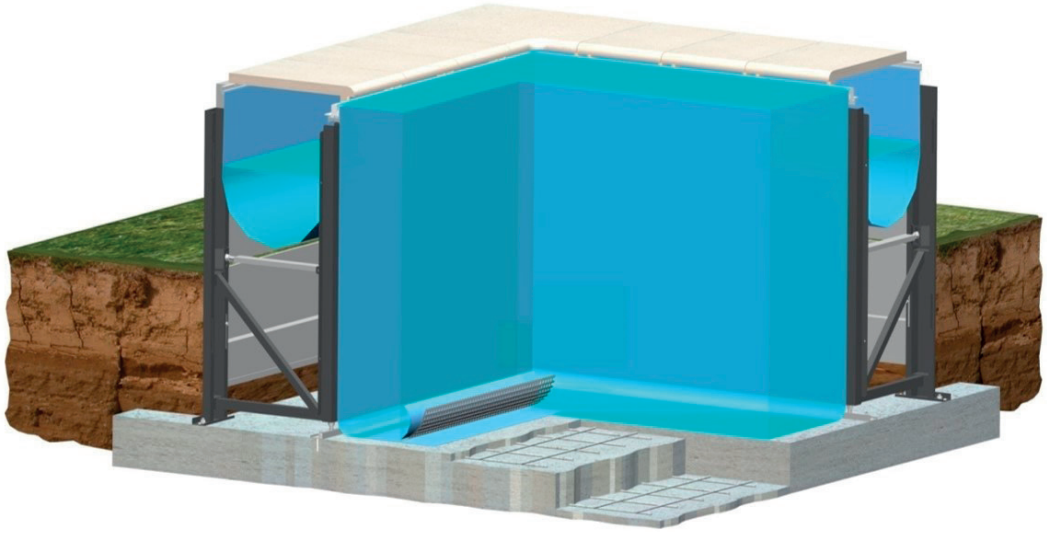
F. EDGES OPTIONS: STONE, WOOD, GRID FOR SPORTS PURPOSES, INFINITY EFFECT.

G. INSPECTED TUNNEL FOR POSITIONING HYDRAULIC AND ELECTRICAL CONNECTIONS.

H. REINFORCED CONCRETE BASE.

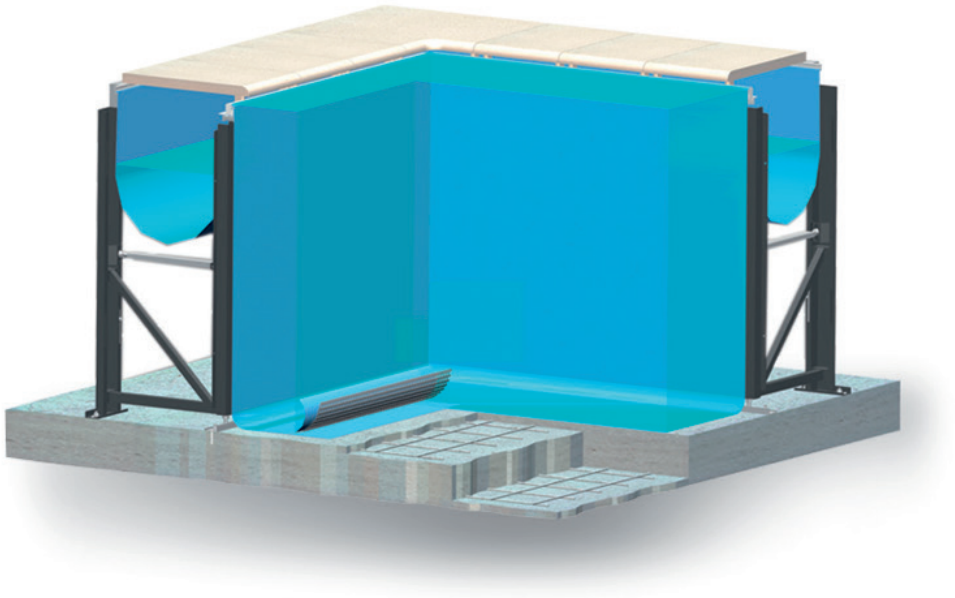
Partially in-ground

As with the in-ground version, the masonry works are reduced to the realisation of the concrete basement (slab). In this version both the water and ground retaining walls reach the bottom of the pool foundation in order to create two different walls. Between the two walls a 60 cm wide channel allows the pool to be inspected and maintained throughout its lifetime.



Above ground

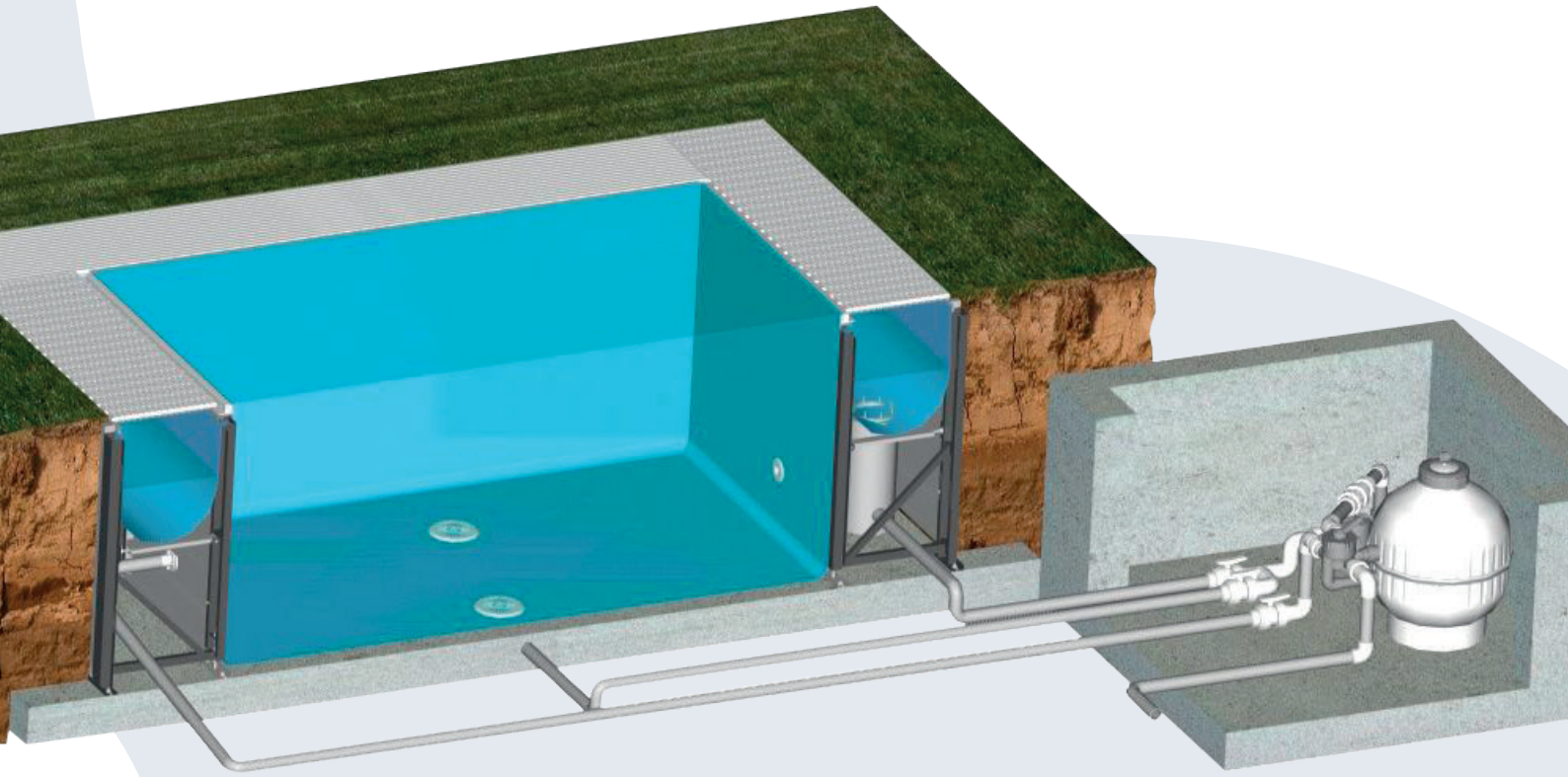
In this version the external wall is only 30 cm high, in order to leave all the internal parts completely accessible from the outside. The above-ground structure makes maintenance even easier if you choose to build a terrace around the pool or to install removable panels. The structure consists of two completely independent walls which over the years can be adjusted in height and alignment. Between them there is the overflow channel, which also functions as a compensation tank.



Main features of Bluespring structures

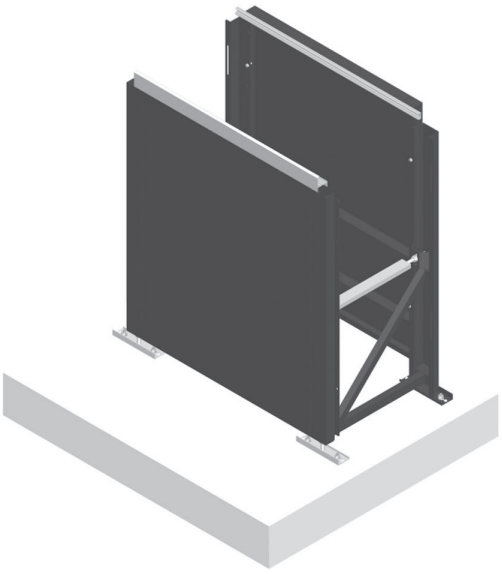
These Bluespring different structures lead to remarkable aesthetic results for sports centers and leisure pools. Additionally, they present a number of advantages thanks to the following features.

- **Overflow level regulation:** a unique and exceptional feature of the Bluespring structure is the possibility of adjusting the correct overflow level both during construction, in order to solve problems related to works, and over the years, to keep the pool efficient.
- **Thermal insulation:** the distance between the internal and external walls creates a 60 cm wide space, which ensures the perfect heat exchange between the mass of water and the surrounding ground. This air chamber not only reduces the heat loss of the water, but also eliminates the formation of condensation between the steel panel and the liner. This considerably increases the lifetime of the pool panel. The gap is wide enough to allow technicians to inspect and intervene, without causing any issue to the structure and considerably limiting the maintenance costs over time. With Bluespring you can also add accessories such as a whirlpool area, without incurring further work costs.
- **Compensation tank:** in the Bluespring structure the construction of the compensation tank is no longer necessary. This is instead inside the channel located below the perimeter edge, making it easy to access and service.

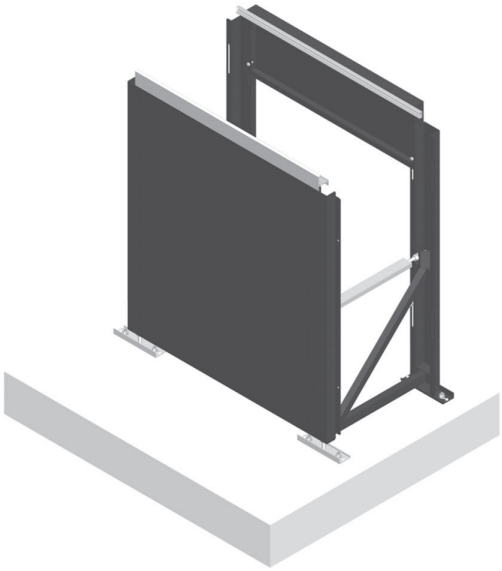


Bluespring technology

All Bluespring components are made of galvanised steel sheet, with a low level of carbon (according to standard UNI EN 10327). After processing, including drilling, trellis are finished with an epoxy powder coating, while support feet, threaded rods and anchor bolts are made of stainless steel.



BLUESPRING IN-GROUND AND PARTIALLY IN-GROUND STRUCTURE

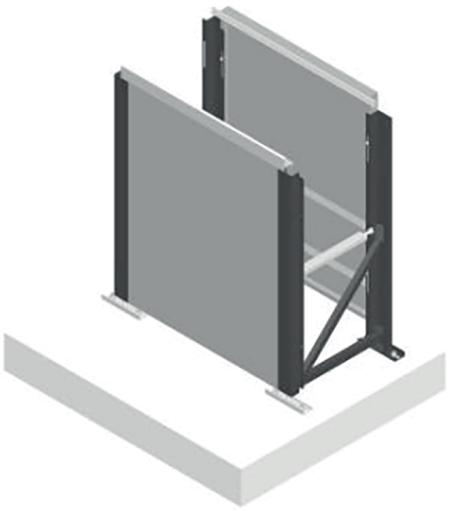


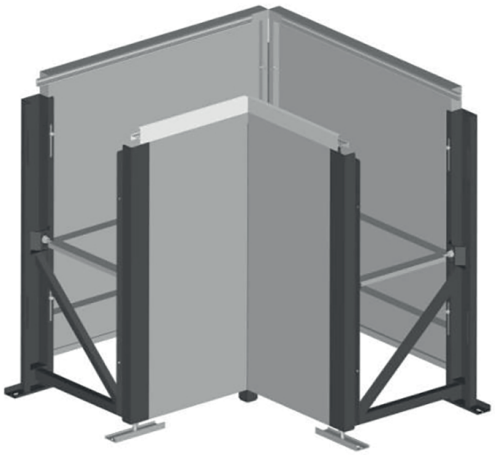
BLUESPRING ABOVE-GROUND STRUCTURE

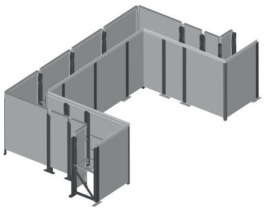
Trellis:	2 mm, galvanized steel sheet. 3 mm stainless steel (rear foot support). Epoxy powder coating finish.
Internal "omega" fixing:	2 mm, galvanized steel sheet. 3-4 mm stainless steel (front foot support). Epoxy powder coating finish.
Adjustable Foot:	3 mm stainless steel sheet. Threaded rods in stainless steel.
Horizontal Tie:	2 mm stainless steel sheet. Threaded rods in stainless steel.
Internal/External panels:	1,5 mm galvanized steel sheet. 40x40x2 mm Z275 epoxy powder coating finish.
Foot corner:	2 mm galvanized steel sheet. Epoxy powder coating finish.
Pool bottom sheet:	1,2 mm, galvanized steel sheet.

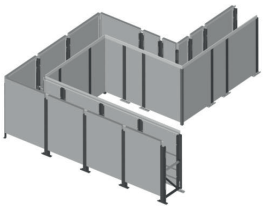
The Bluespring structure is modular since the final product takes shape by combining and assembling individual structural modules. These can be of two types: central and corner. Thanks to its modularity, Bluespring allows the design of various shapes and sizes. Also, special modules are available to create various types of pools and entrance points with curved shapes.

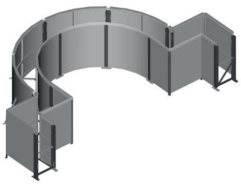
Skypool also allows the creation of curved-shaped pools that are intended for training or leisure, not for hosting official competitions through World Aquatics Regulations. These curved panels and others, such as the infinity panel, even integrated the overflow system to create stylish finishes.













Once connected, Bluespring modules accommodate the water containment membrane. Thanks to the presence of a special fixing "clamp" and the relative aluminium profile, the membrane is constrained along the entire perimeter of the pool. The water is made to overflow into the perimeter channel, which also acts as a compensation tank.

The materials used for the construction of the various details that make up the structure are:

- zinc magnesium steel S250GD ZM310 plus powder coating;
- AISI 304 stainless steel;
- anodised aluminium.

The water containment sheet is made with a polyester fibre warp and weft fabric coated with PVC on both sides. The material is suitably treated for UV resistance thanks to the use of additives that limit aging. The internal sheet of the pool and the sheet of the overflow channel are fixed to the structure with a system consisting of an aluminium profile and plastic clamps.

04 ACCESSORIES FOR COMPETITION AND SPORTS CLUB POOLS

In addition to building the pool basin, there are a number of accessories to account for with competition and sports club pools alike. Here is a quick overview.

Liners and coping finishes

Extra waterproofing of the pool using a reinforced PVC-P liner is a great idea. The liner made of 150/100 reinforced PVC-P (plasticised polyvinyl chloride) is the most commonly used system for covering liner pools as it is extremely flexible, resistant to tearing, easy to weld, resistant to bleaching from UV rays and because it comes in a wide range of colors. PVC reinforced membranes are 100% watertight and 100% recyclable.

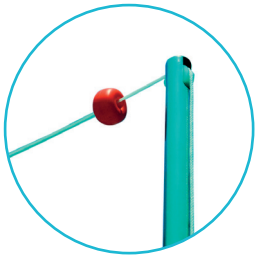
For ornamental and coping finishes, porcelain stoneware enhances a pool's design and embellishes its finishing. Tiles and porcelain stoneware is chosen for Skypool pools because of the quality of materials, the exclusive designs and their performance in pool environments.



Competition specific accessories

Competition pool accessories will depend on the actual event and the best-designed pools make it easy to anchor these accessories safely into the panel construction system.

For instance, for **swimming competitions**, you should be able to use the following on the pool:



False-start ropes



Timing systems



Podium platforms
(also works as turning panel)



Movable floors
(optional)



Lane ropes
and floats



Bulkheads
(optional)



Starting blocks or podiums
(with backstroke start)



Anchors



Indicators for
backstroke turns



Turning panel

Movable walls and movable floors stand out as an innovative pool accessory providing multiple solutions in a single sports venue.

By using a **movable wall or a movable bulkhead**, a pool can be turned into a multipurpose facility that adapts to different public uses and can be divided into independent work areas. This enables facilities to be more profitable, as they can make the most of their capacity by running various activities at the same time in a single pool.

Movable wall is a structure folded on the pool floor that rises up when activated to divide the pool, so when it's recessed into the pool floor is no longer in sight. After the vertical wall is set in the highest position, the pool consists of two or more parts.

A movable bulkhead is a vertical underwater structure able to move lengthwise across a pool floor to form a physical barrier, to make the most of the space in a pool as it divides it into areas for different uses. The framework of a movable wall is made of stainless steel and ABS slats, and it rests on rails fitted on adjacent decking. It moves by means of two mechanical flywheels that may be automated.

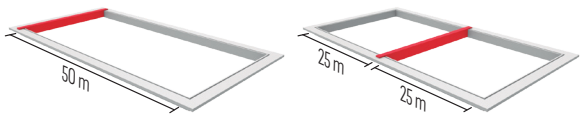
GENERAL SPECIFICATIONS

MATERIALS
Structure made of AISI-304
Surface of white ABS slats
Polished stainless steel (AISI-316) finish
Rails in stainless steel (AISI-316) finish

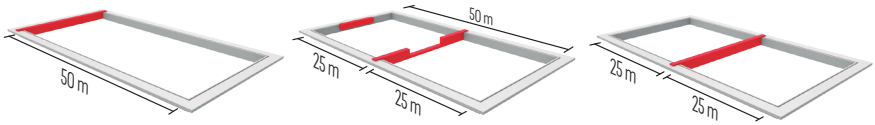
MOVEMENT OPTIONS
Manual drive
Mechanical drive with wheel
Motor drive

ACCESSORIES
Railings
Starting block anchors
Lane rope anchors
Starting blocks
Swimmer step
Tube for lane ropes / Rope anchor
Swim ladder

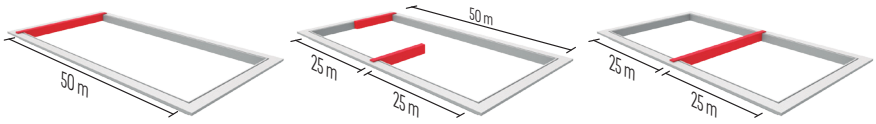
STANDARD MODEL (1 piece)



MEDITERRANEAN MODEL (Central movable segment)



SPLIT MODEL



The installation of AstralPool's **movable floor** makes it possible to use a single swimming pool to stage several activities at the same time, requiring various depths of water. This includes competitions, synchronized swimming, leisure activities, rehabilitation exercises and water aerobics.

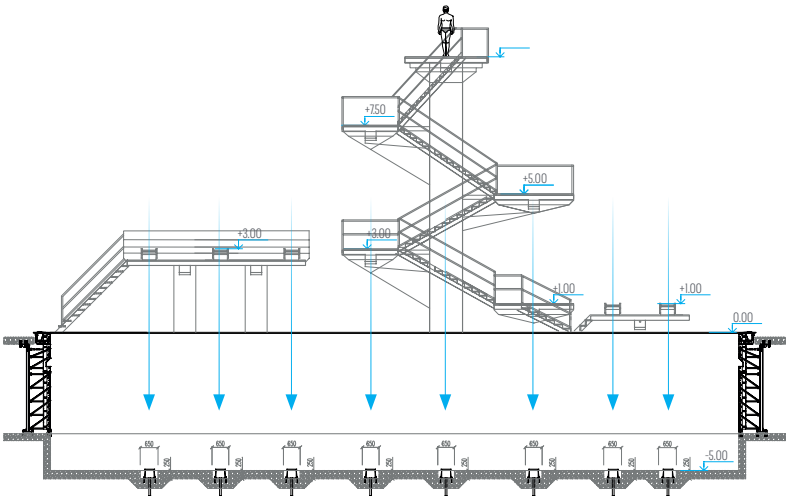
The system is based on a mobile platform submerged in the water that changes the height of the pool shell, which enables a number of areas of varying depths to be created according to needs. In addition, the movable pool floor can be used to partially or totally cover a pool, which means greater energy savings and safety.

In the case of **diving pools**, you will need spargers for training sessions. These help soften the diver's landing into the water surface by releasing air bubbles from the pool bottom (aeration system). They complement the jumping platforms, which are just above the spargers.

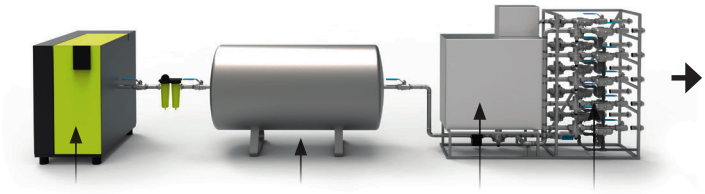
SAFETY IN DIVING SCHEME



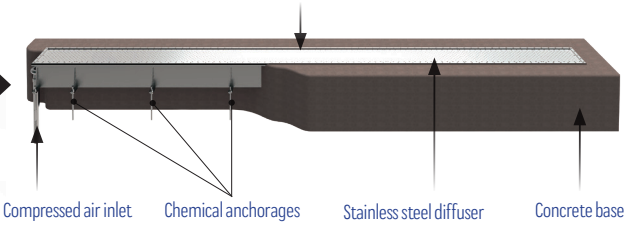
AUTOMATIC AND MANUAL USE



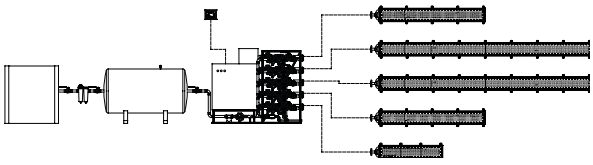
COMPRESSED AIR EQUIPMENT | CONTROL GROUP | DIFFUSER DRAWER

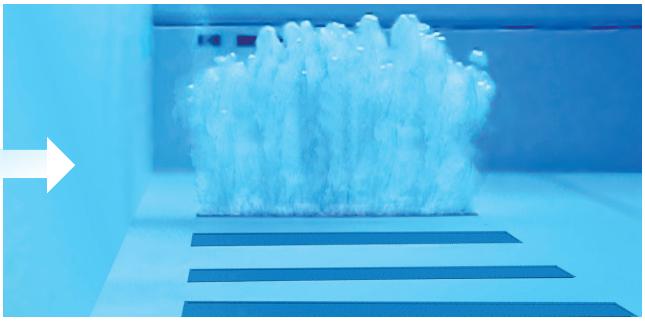


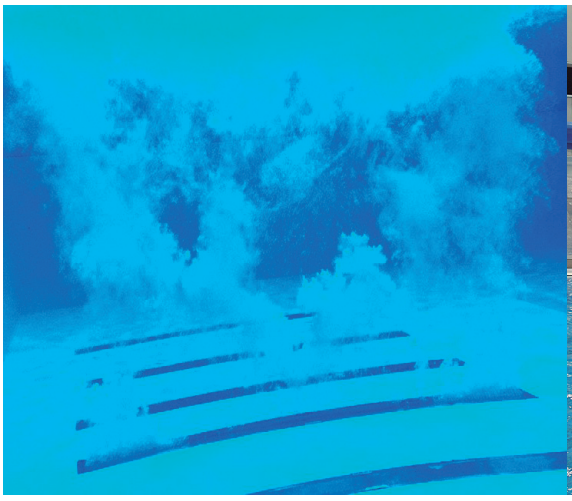
Regulation and control system



Length	5,5 m	3,0 m	1,5 m
Jump height	10 m / 7,5 m	5 m / 3 m	1 m









For **water polo games**, you may also need lane ropes to delimitate the playing field, plus water polo goals and ball holders.





Water treatment

It is important to note that World Championships can only be held in water with less than 3 gr/litre of salt according to World Aquatics Competition Regulations.

Freepool & Neolysis

Fixed swimming pools in sports clubs or competition venues must provide excellent water quality in order to ensure the health and comfort of their users. For this purpose, we recommend the **Freepool2** and **Neolysis** systems.

Freepool is a revolutionary solution designed by Fluidra in collaboration with the Autonomous University of Barcelona and the Hospital Clínic de Barcelona. It provides optimal air and water quality through Neolysis, which corrects pH levels by injecting CO^2 through the same reactor, thus reducing water consumption. The Freepool2 equipment uses CO^2 to treat the water, instead of acid. This reduces the amount of harmful compounds derived from mixing with organic substances, obtaining a healthier water. The process is also beneficial to the environment by reducing gas emissions from facilities without affecting water quality. This not only avoids using chemical chlorine, it also drastically reduces the concentration of chloramines from ultraviolet radiation.



The main **characteristics and advantages of Neolysis** are:

- It is not necessary to add salt to the pool;
- High resistance dual disinfection (UV-C + chlorine in situ / anodic oxidation);
- Increased chloramine removal capacity (UV-C + cathodic reduction), providing a clean environment without strong chlorine odors;
- Increased sustainability due to saving water and energy;
- It is no longer necessary to backwash the filter for the sole purpose of reducing chloramine levels (<0.6 ppm), adding to savings in water consumption;
- Synergetic treatment of great interest due to the oxidation capacity with residual effects;
- Increased durability of components and filters in swimming pools.

Freepool benefits include:

- 75% reduction in the concentration of oxidants in the ambience, improving the quality of the environment and reducing the smell of chlorine;
- 100% reduction in the production of chlorine and dilute acid, which completely avoids the use of chlorinated products (hypochlorite, chlorine tablet, etc.) and acids;
- 66% reduction in pool refills, saving water and energy;
- Avoids skin irritations;
- Decreases the incidence of respiratory (asthma), ocular and nasal complications, and airways' inflammatory responses;
- The health problems and discomfort for users derived from the use of oxidising agents completely disappear;
- There is a reduction in water by-products, which leads to savings through not having to renew the pool water.



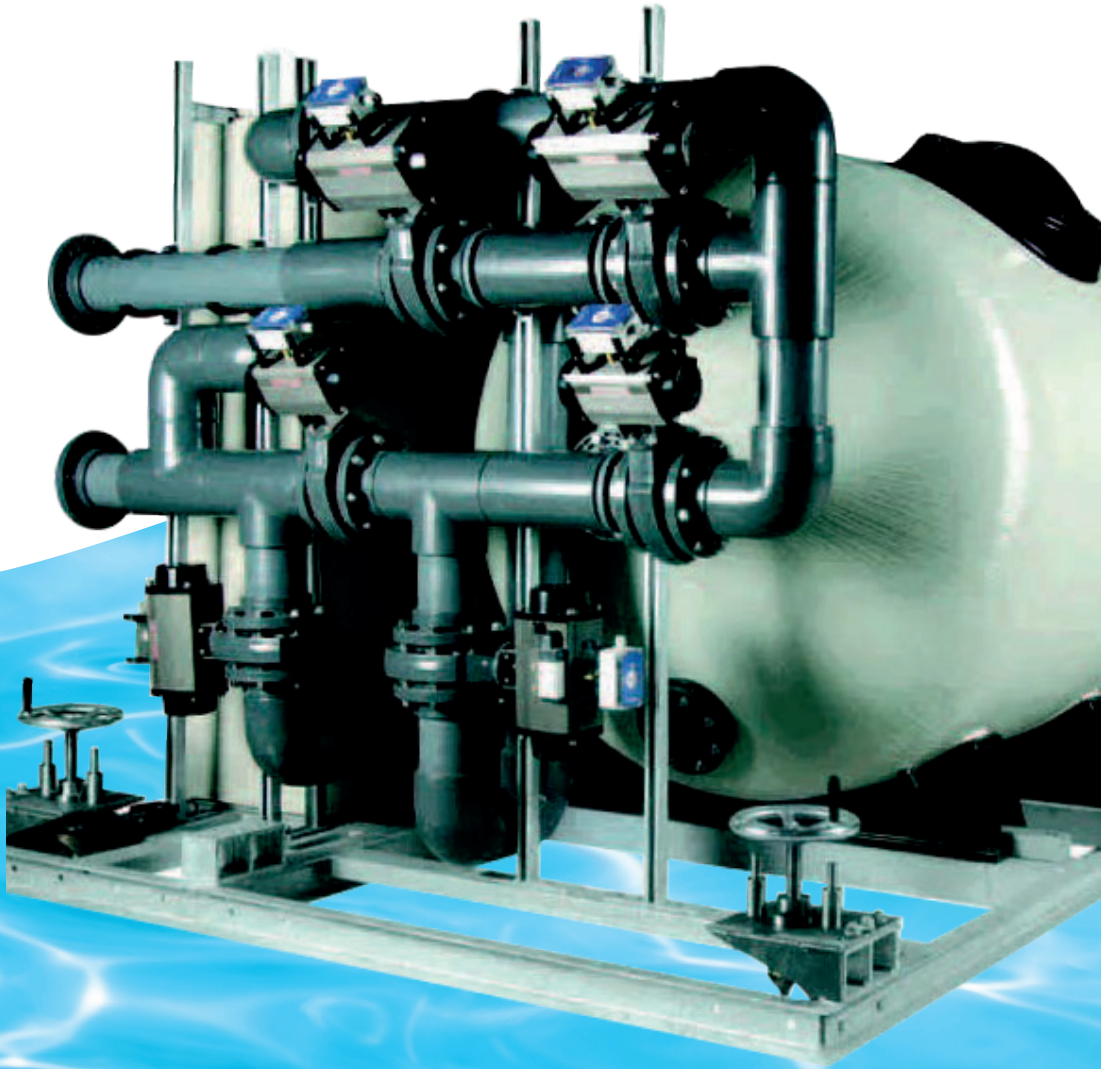
Nefrona

For temporary pools at competition events, we recommend the **Nefrona** solution.

This water treatment solution is a compact and transportable plug-and-play concept developed by AstralPool, especially designed for temporary events. Nefrona includes disinfection, filtration and pumps for the recirculation system in the same monobloc, obtaining excellent water quality. This filtering unit is mounted on a hot-dipped galvanised steel bed plate to prevent corrosion. Additionally, all models can be supplied with heating and microfiltration using diatomaceous earth.

Here are the key characteristics of the Nefrona solution:

- **Filtration rate:** all Nefrona compact units come with one of two different options, based on the filtration rate required by the pool;
- **Diatomaceous earth filtration:** Diatomaceous earth is composed of one-cell microscopic algae which have a highly porous, silica-like covering that can filter particles up to 1 micron in size. The loader-separator works automatically, is user-friendly and includes a filter gauze for easier removal of clogged diatomaceous earth. To maximise ecological operation of the system, the recirculated water generated by the process is returned to the balance tank to prevent dumping in the drain due to improper handling or accidental use;



- **Pool heating:** this option features two water-water heat exchangers, with a power rating of 20 kw. These can be used to heat the pool water, using a primary circuit;
- **Control and dosing of chemicals:** the Nefrona compact unit can be equipped with an automatic device for dosing the disinfectant in the form of bromine or chlorine tablets. This system can be further enhanced with a variable area flowmeter assembly to control the flow rate circulating through the tablet doser;
- **Compensation tanks:** all Nefrona models can be equipped with a compensation tank of 5 m^3. The tanks are constructed of polyester and fibreglass and fitted with a lid to prevent water evaporation and heat losses. A control panel and probes can also be included with the compensation tank;
- **The MCS Program:** control and administration software effectively solves all your control needs in a single installation, allowing automatic administration. The MCS system is especially designed for supervising filtering and chemical treatment equipment in one or several swimming pools and can adapt to installations of any size.

Benefits of the Nefrona solution include:

Compact size: all the elements are assembled and ready for use. You will only have to connect the water inlets and outlets and make the connection to the electrical network;

Easy to transport: Its size allows it to be easily transported using standard containers;

Adaptable: Thanks to its modular concept, it can be disassembled into different blocks. The modular construction of the Nefrona can be installed in areas with restricted access;

Easy to install: It is a pre-wired connected plug-and-play solution designed to be easy to set up and use straight away;

High water quality: The system has everything a swimming pool needs to guarantee a very high water quality.



Lighting

According to the EU eco-design regulations dating from September 2021, swimming pool halogen lights can no longer be sold in the European market, so **LED lighting** stands out as the ultimate lighting solution for swimming pools for its efficiency, adaptability and sustainability.

The benefits of LED lighting include:

- Low consumption with a high efficiency, compared to any other lighting systems;
- Long lifespan: the luminous flux stays up to a 70% of intensity during 50,000 hours.

Swimmers need adequate lighting to measure distances and locate the pool's walls and bottom in order to swim, dive or participate in other activities safely. Therefore, proper lighting is essential in competitions, but also for sports clubs installations.

Depending on the different pool construction materials and the type of aquatic installation, swimming pool lighting choices can vary. For instance, there are specific spotlights for liners and others for concrete swimming pools, as its installation, assembly and waterproofing may vary. You can read more about this in **pool lighting in our web blog**.

06 CONCLUSION

When designing a competition or sports club pool, it is always advisable to choose the most efficient solution for the construction process, but also for athletes' performance and long-term maintenance. Engineering specialists like Fluidra can cover all the intricacies of the multi-panel construction and installation of these pools, as well as 100% World Aquatics compliance for official events.

We advise using modular panels such as Skypool or Bluespring, as they are more flexible, easier to maintain, and faster to install. Finally, the Skypool adjustable panel system guarantees millimetric precision, so your pool can pass World Aquatics standards if required.





"This information contains general recommendations that must be taken into consideration on a case-by-case basis. This information is not an instruction manual and cannot be considered as such for any purpose. Any implementation or installation to be made must be made by a professional and under the appropriate guidelines. In this regard, each user is responsible for the application it makes of the information contained herein. Fluidra will not be responsible for its use. Consequently, under no circumstances will Fluidra be liable or responsible for any claim, damages or loss that may arise as a consequence of the use of this information".

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