FLUIDRA

COMMERCIAL POOLS:

A complete guide to decision-making

COMMERCIAL POOLS:

A complete guide to decision-making

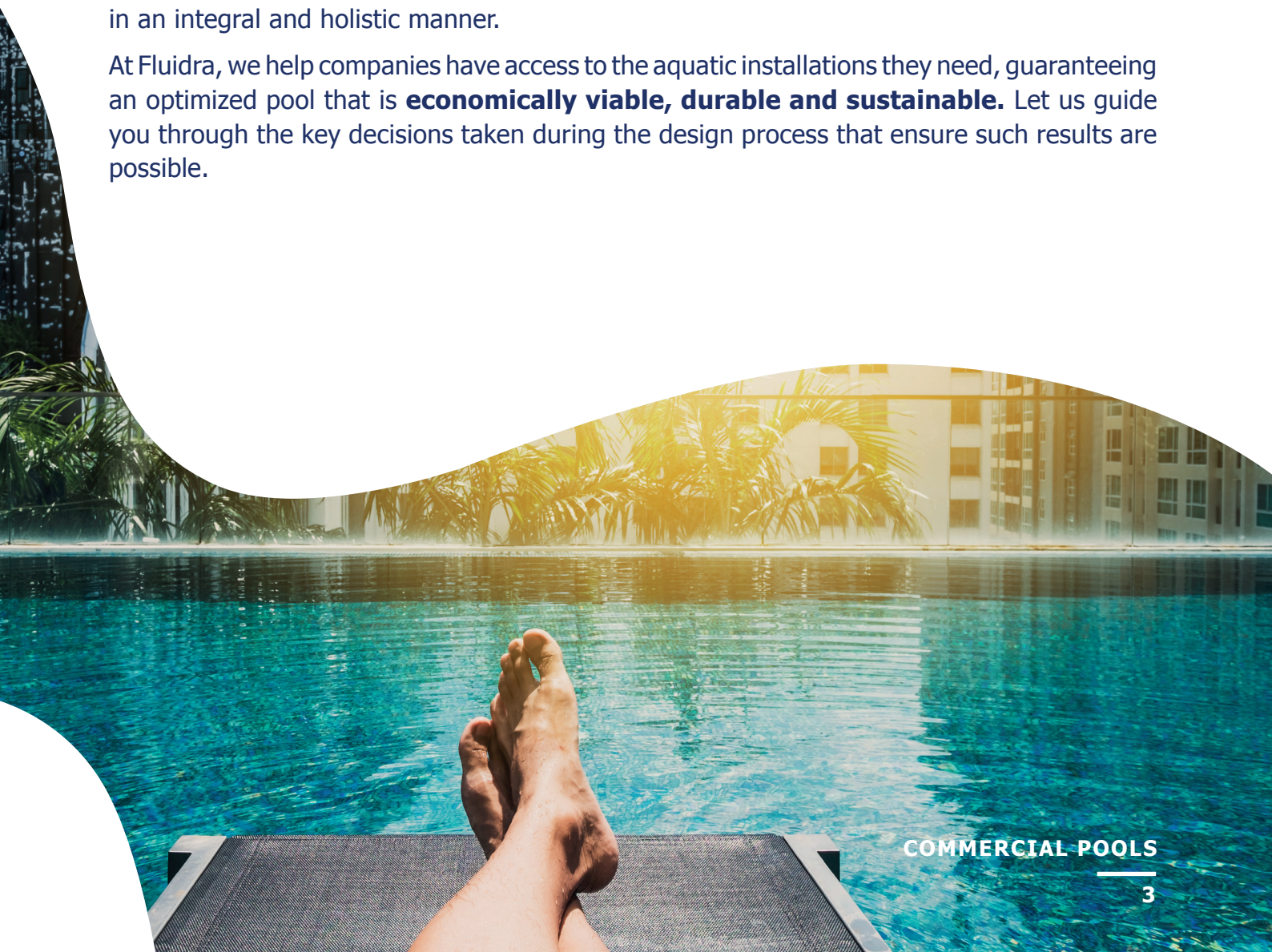
01 INTRODUCTION

The process of designing and implementing commercial pools involves a series of key decisions that have a significant impact on the installations' **economic performance, operational efficiency, maintenance and durability**. This is true for all sorts of pool projects, including small leisure pools or big scale, complex aquatic projects.

Design considerations should in fact take into account multiple aspects that range from the actual **tangible conditions** of a swimming pool (what materials are used, what type of water is chosen…) to the choice of **systems** to ensure efficient operations regarding water treatment, hygiene, etc.

The choices should result in a balanced ecosystem where every system and material works in an integral and holistic manner.

At Fluidra, we help companies have access to the aquatic installations they need, guaranteeing an optimized pool that is **economically viable, durable and sustainable.** Let us guide you through the key decisions taken during the design process that ensure such results are possible.



02 CHOICES REGARDING MATERIALS

Pool lining

The pool lining is basically responsible for providing a **coating layer** for swimming pools.

On the one hand, pool lining on inground pools is usually shaped to fit the pool and attached to the pool walls. On the other hand, pool lining in some above-ground pools usually takes the form of a hanging bag.

It's defined as a vinyl surface that is attached to the walls and floor of a pool, and its roles include:

- Acting as a **barrier** between the pool's wall and the water inside.
- Improving the pool's **look**. The pool liner is the most visible element of the pool, since it's responsible for the water's tonality and color. Many parameters can be changed to achieve customization, such as material quality, color or finish.

As such, choosing the right pool liner is a key decision because these elements are subjected to a significant amount of wear and tear.

Changing the pool lining is, in fact, one of the crucial operations in many pool rehabilitation projects, helping **restyle old-fashioned pools** while also boosting their durability. At the same time, it's a key decision in new pool projects that will greatly determine the system's looks and maintenance needs.

There are many options when it comes to pool lining materials and types.

Today, **reinforced PVC membrane liners** stand out as the best option for cost-effective, practical and versatile, especially for large commercial facilities.

This system is made of an extremely resistant polyester net which is covered by two PVC sheets that have been fused together, so that the polyester net stays right in the middle of them. In this case, they also include a foam layer that acts as a cushion and a buffer between the liner and the pool wall. This high-quality structure provides **total watertightness and great durability.**

Furthermore, it acts like an armor for the pool basin structure, guaranteeing that the liner will never lose water. As every raw material is recyclable, responding to **growing sustainability concerns** among pool users, operators and governmental organizations.

The **easy and fast installation of a PVC pool lining** is another key advantage for this system. As an **extremely versatile** option, it can be installed in a newly built pool.

A PVC pool lining system is based on a reinforced, **totally-sealed membrane.**

This system can be easily placed, repaired or removed at any time without emptying the pool or picking and lifting the coping stone. Besides, **pool cleaning operations** can be carried out easily (using a specific damp cloth) and there's no possibility for falling tiles (compared to issues emerging after choosing gresite materials).

A PVC pool lining provides endless customization opportunities and attractive designs and finishings, including many mosaic patterns and color possibilities.

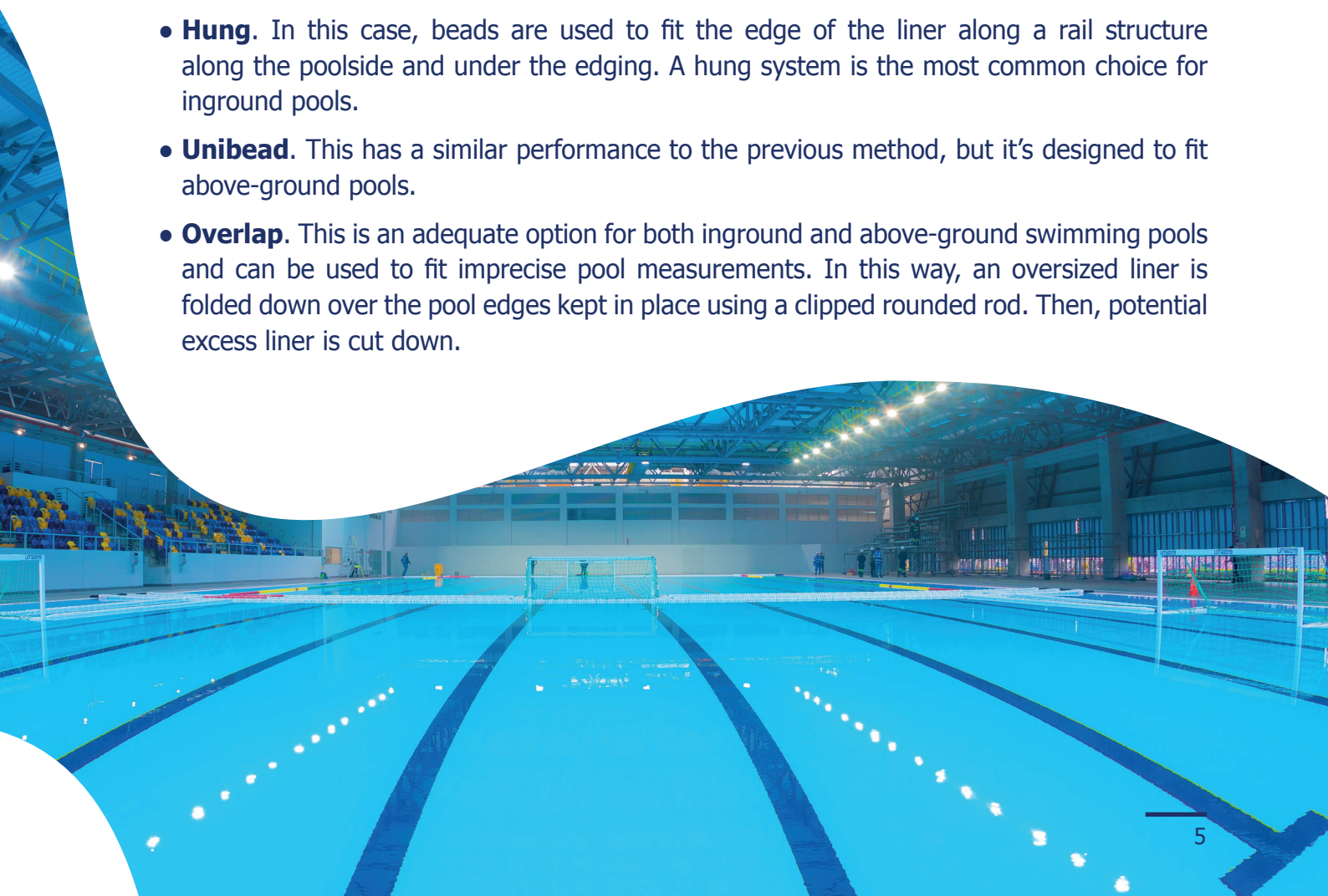
Reinforced PVC liners present a varnish on both sides of their sheets, **protecting it from external elements and stains.** The system is also exceptionally resistant to chemicals that are potentially used by pool operators and **water treatment systems**, while also providing an effective barrier against the proliferation of bacteria.

Additionally, this reinforced liner can be made with **recycled and recyclable materials** without compromising its high quality and durability, thus representing an ideal solution with a low environmental impact.

Besides making the right choice of materials and structures, it is important to keep an eye out for potential issues and signs that might indicate the pool liner needs a replacement, such as **color fading, water losses and wrinkles.**

When undertaking pool rehabilitation operations, the method of attachment for the pool lining will already be decided depending on the previous system. But, **if the project starts from scratch**, pool owners might choose among the following three methods:

- **Hung**. In this case, beads are used to fit the edge of the liner along a rail structure along the poolside and under the edging. A hung system is the most common choice for inground pools.
- **Unibead**. This has a similar performance to the previous method, but it's designed to fit above-ground pools.
- **Overlap**. This is an adequate option for both inground and above-ground swimming pools and can be used to fit imprecise pool measurements. In this way, an oversized liner is folded down over the pool edges kept in place using a clipped rounded rod. Then, potential excess liner is cut down.



The PVC pool liner provides total watertightness and great durability

Pool deck

The **swimming pool deck** is the area that surrounds a swimming pool basin. It's the nearest surface to the water surface and a place where bathers often rest on loungers, walk around or prepare to dive into the pool.

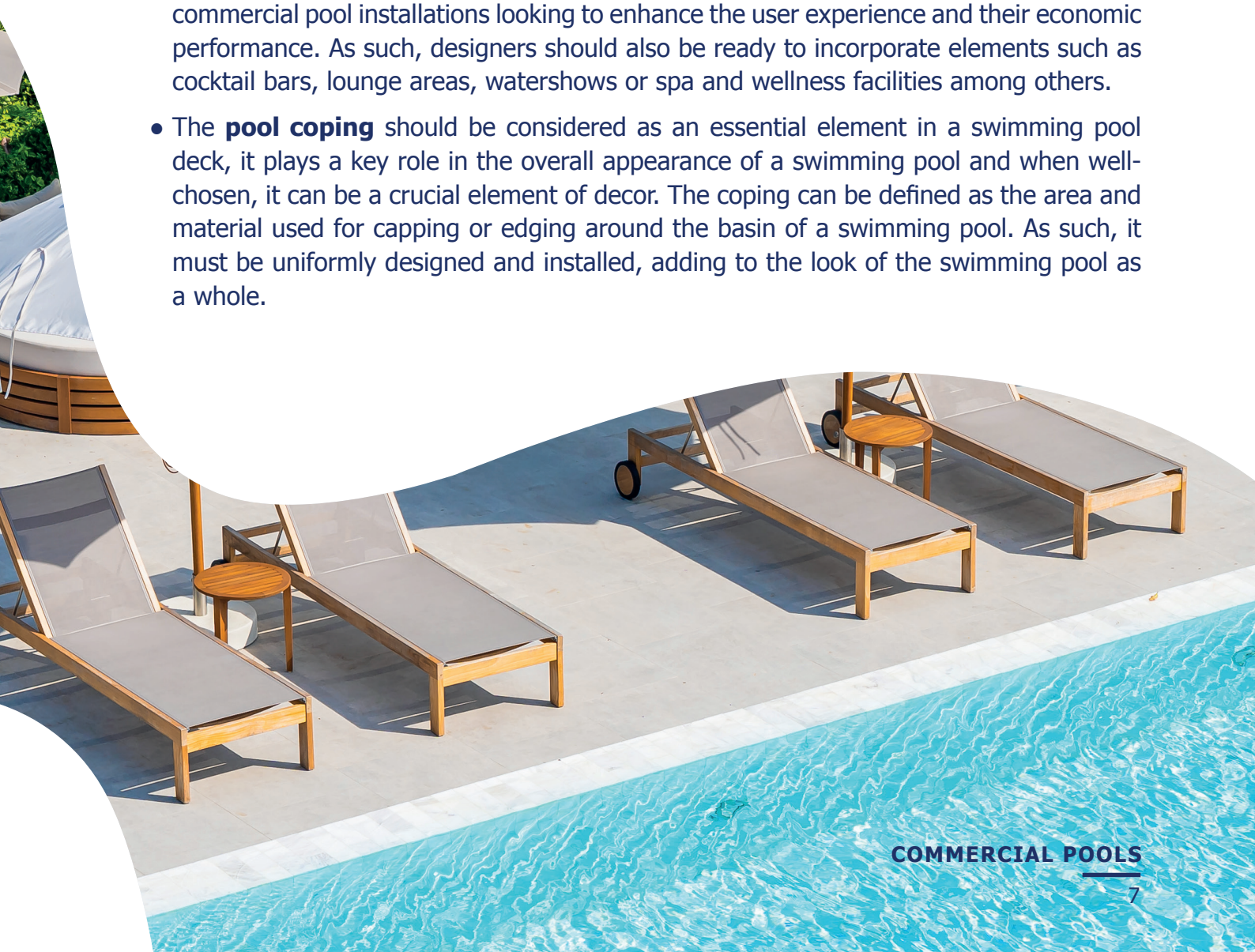
However, the significance of a swimming pool deck goes beyond these obvious activities: it's a key element that defines the pool's area **aesthetics, safety and comfort.**

The choice of **swimming pool deck** makes a crucial impression on bathers and their overall swimming experience and safety.

Current swimming pool deck alternatives can be built using a variety of materials and installation mechanisms. Making the right choice will ensure efficient results, as picking a **low-maintenance, durable option** will ensure operators' investments remain efficient in the mid and long term.

There are a few factors to take into consideration when choosing the right swimming pool deck for your installations:

- The **surface** of a swimming pool deck should look good, be easy to navigate barefoot, be non-slippery, even-surfaced, red-heat reflective and resistant to chemicals, mold and mildew.
- The swimming pool deck is often home to extra **leisure areas** and **services** in commercial pool installations looking to enhance the user experience and their economic performance. As such, designers should also be ready to incorporate elements such as cocktail bars, lounge areas, watershows or spa and wellness facilities among others.
- The **pool coping** should be considered as an essential element in a swimming pool deck, it plays a key role in the overall appearance of a swimming pool and when well-chosen, it can be a crucial element of decor. The coping can be defined as the area and material used for capping or edging around the basin of a swimming pool. As such, it must be uniformly designed and installed, adding to the look of the swimming pool as a whole.



- **Accessories** such as **movable floors** and certain **pool covers** are typically installed as part of the swimming pool deck and act as an extension of this area by completely covering the pool surface when needed. Apart from protecting the pool water, they add versatility to pool installations by allowing this space to be used for additional purposes.

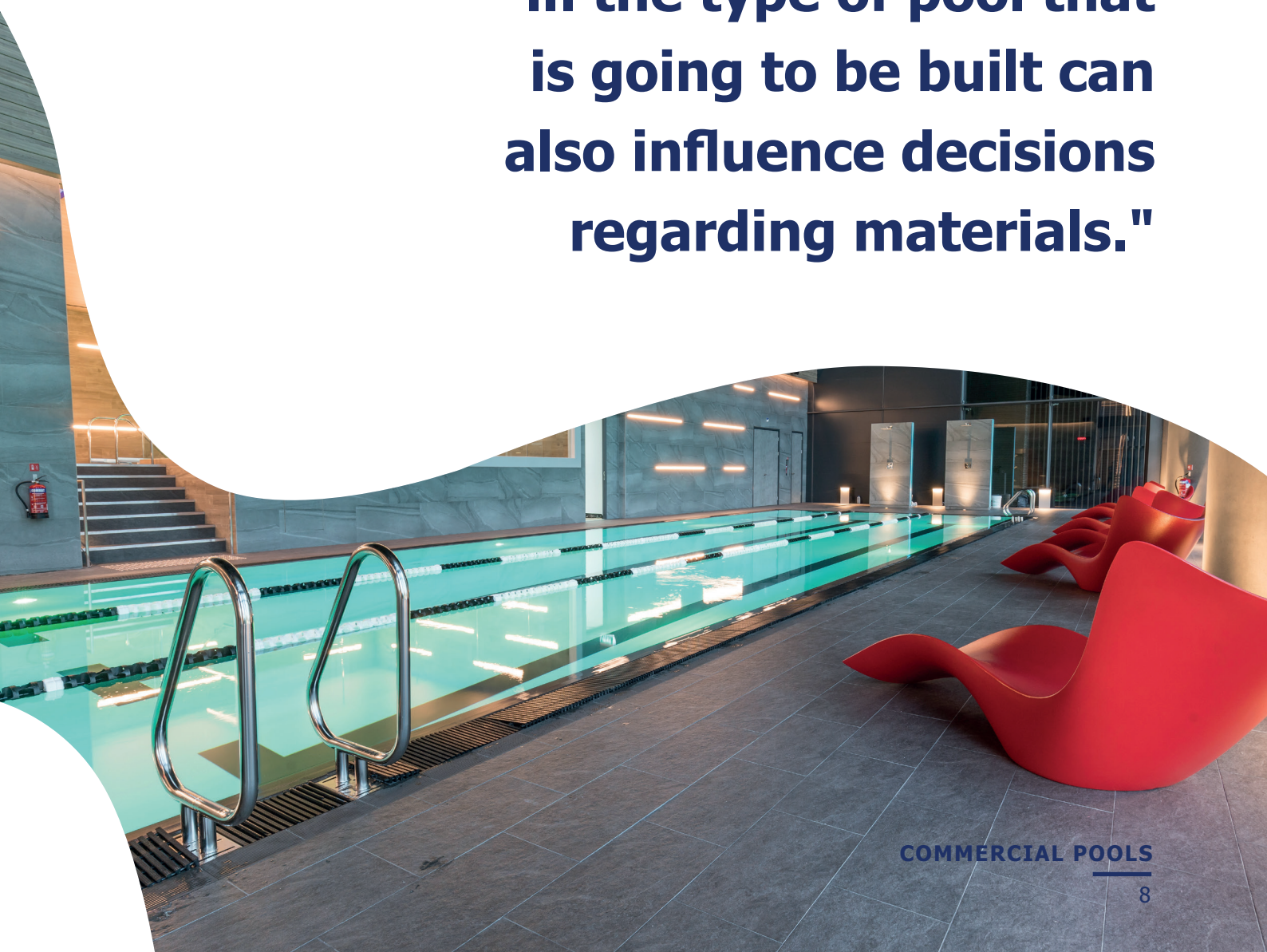
The choice of materials for swimming pool decks should balance **cost, durability and low-maintenance needs.**

But the type of pool that is going to be built can also influence decisions regarding materials. For instance, in-ground pools could be accompanied by a pool deck made from concrete, as that is a durable, easy-to-customize material. Another good option are ceramic pool decks. On the other hand, wood and composite swimming pool decks are a go-to option for above-ground pools.

The choice of materials includes concrete, wood, wood composite, synthetic materials (such as recycled plastic and PVC), pavers, stone, tiles or bricks, all with their own advantages and disadvantages.

Also, in competition pools, the pool deck installation differs between those pools intended for temporary events and those that will be fixed for long-lasting use.

"... the type of pool that is going to be built can also influence decisions regarding materials."



Pool coping

The term "**pool coping**" applies to the area and material used for the capping or edging around the basin of a swimming pool. It is an essential component of the aesthetics of a pool facility and can rightfully be thought of as an essential ornamental part of it, too.

Whether for a single small leisure pool or a big scale complex project, multiple aspects must be taken into account when choosing the right pool coping, such as the type of pool water, its fencing, heating systems, water treatment installations, hydraulic circuits, lighting elements and ornamental finishes. This is because the pool coping integrates into the project and interacts with each of these elements.

During construction, the coping material is laid on the swimming pool beam (the width of concrete around the pool). During renovation, only specific products can work with the existing shape of the pool, such as **modular panels**. In both cases, available space around the pool should be considered.

Additionally, pool coping is available in several finishes or profiles: square-edged; bull-nose; and rebated. Choosing the pool coping style depends entirely on the facility or business brand image and the desired appearance.

Apart from the looks for the swimming pool, there are other things to consider when picking a pool coping:

- Whether it can withstand the salt or chemicals (for example, in saltwater pools treated with **salt chlorinator**)
- Whether it provides a **non-slip surface**. Anti-slip surface is actually a key element of choosing a pool coping material, as it will avoid falls and potential injuries.
- **Resistance to heat** from the sun during the summer peak season. Some pool coping materials don't absorb too much heat, allowing users to walk barefoot around the pool without the risk of getting burned.
- How the **overflow system** of the pool will be integrated. This can be a downward-sloping pre-deck system consisting of a single piece, in which blocks provide the slope and support the overflow grate. Alternatively, a hidden longitudinal overflow system makes it possible to keep the water below the deck level. This stops the water from spilling out of the pool and swimmers can also grip onto it.
- The color and material of the **joints** between tiles (mostly Epoxy materials) should also be taken into account. In pools constructed with panels, there are fewer joints and the existing ones are covered with a PVC liner, which makes them more watertight. These are quick to install and very reliable, which makes them an excellent choice for competition events where pools need to meet stringent timing schedules when getting built.
- One final decision is the choice of different **grids** for the edge of the pool, which cover the overflow channel to recapture water. They can be visible or hidden.

Pool coping comes in a large variety of **materials**, including poured concrete, brick, natural stone like limestone, sandstone, slate, flagstone, travertine, granite, precast concrete, tile, pavers, wood, liner, ceramic etc.

Each of these has different colors, patterns and visual appeal. Whatever the material, it is essential that it's sealed so that water does not damage the coping or leave unsightly marks. It is best if you choose a non-slip coating to increase the safety of users.

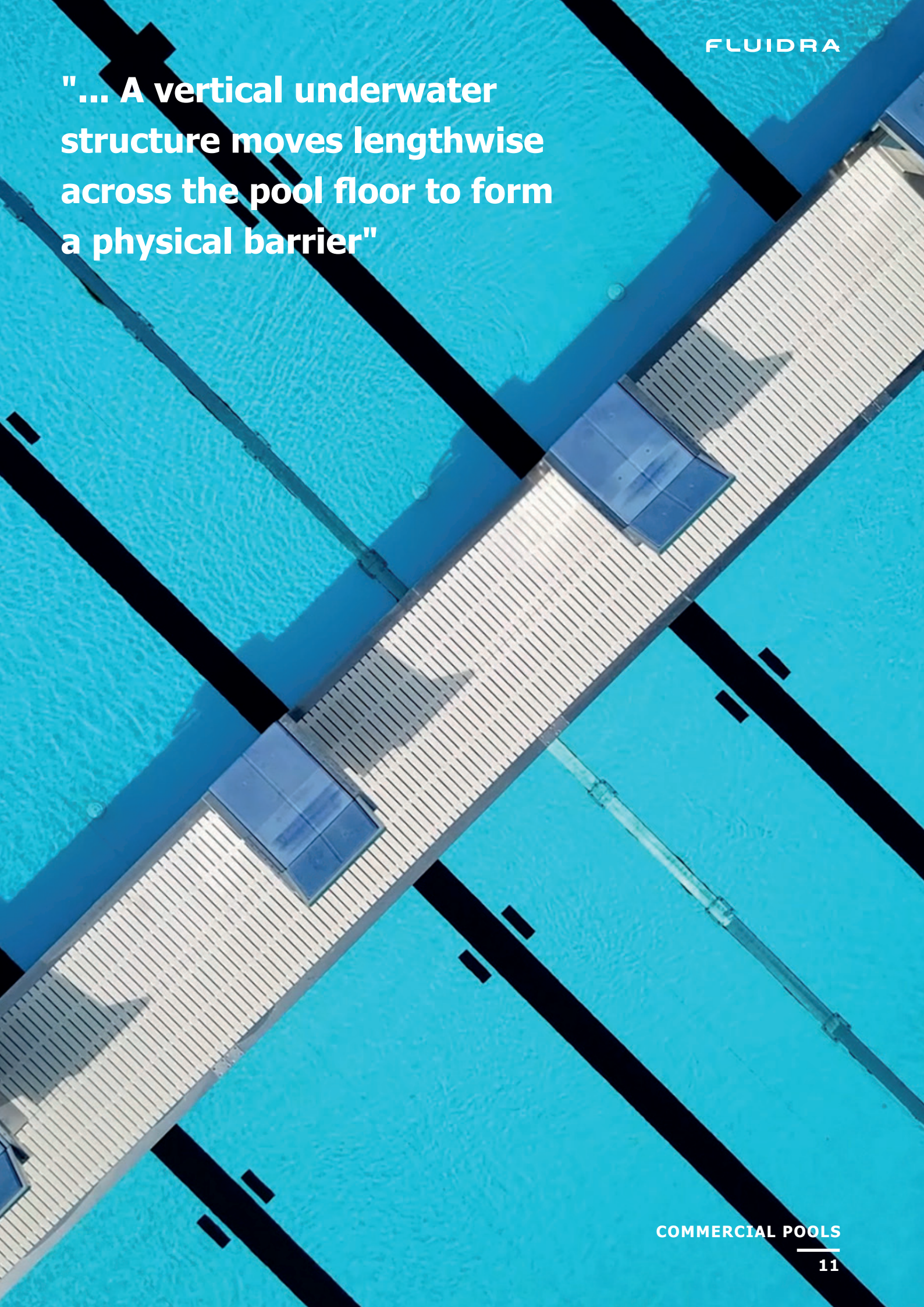
Space optimization equipment

One last side of pool equipment focuses on optimizing the available space. They can create a **more versatile environment** and ensure that facilities are used to their full potential.

Some examples are:

- **Movable bulkhead.** In charge of dividing the pool into different spaces or lengths, it creates more options for use. A vertical underwater structure moves lengthwise across the pool floor to form a physical barrier. It moves by means of two mechanical flywheels, which can be manual or automatic.
- **Movable walls.** Installed at a fixed point on the pool floor, they divide the pool into two parts. In rest position, when the wall is not in use, the wall is completely flat in a recess on the pool floor. In a newly built swimming pool, the wall is integrated in a structural recess, so it's not visible in its resting position.
- **Movable floor.** This makes it possible to use one single pool to simultaneously host several activities that require different depths of water.

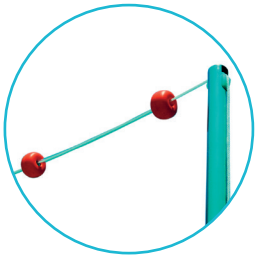
"... A vertical underwater structure moves lengthwise across the pool floor to form a physical barrier"



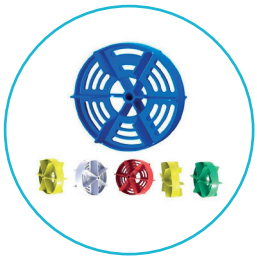
Competition accessories

Any venue that hosts competitions needs to comply with **World Aquatics** (former FINA) requirements and feature a number of specific **swimming pool accessories**. These include:

Swim lane lines



False-start ropes



Lane ropes and floats

Lane rope storage collector

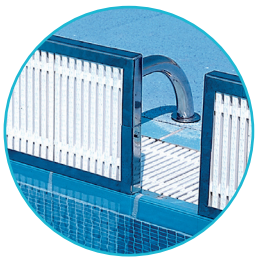
Anchors and tensioners

Podium platforms (also works as turning panel)

Backstroke start system

Starting blocks or podiums (with backstroke start)

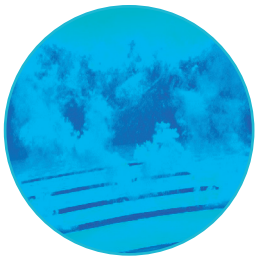
Indicators for backstroke turns



Turning panel

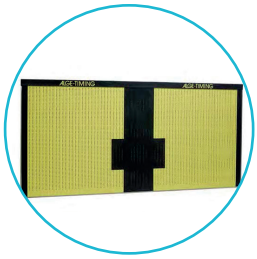
Diving platforms and springboards

Water polo goals and lane ropes



Spargers

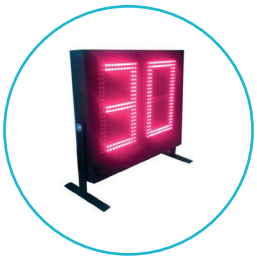
Water polo ball release holder



Timing systems

Stairs and handrails

In addition, these competition facilities shall be equipped with a high resolution camera system and entry terminals for judges in the case of diving and artistic swimming competitions.



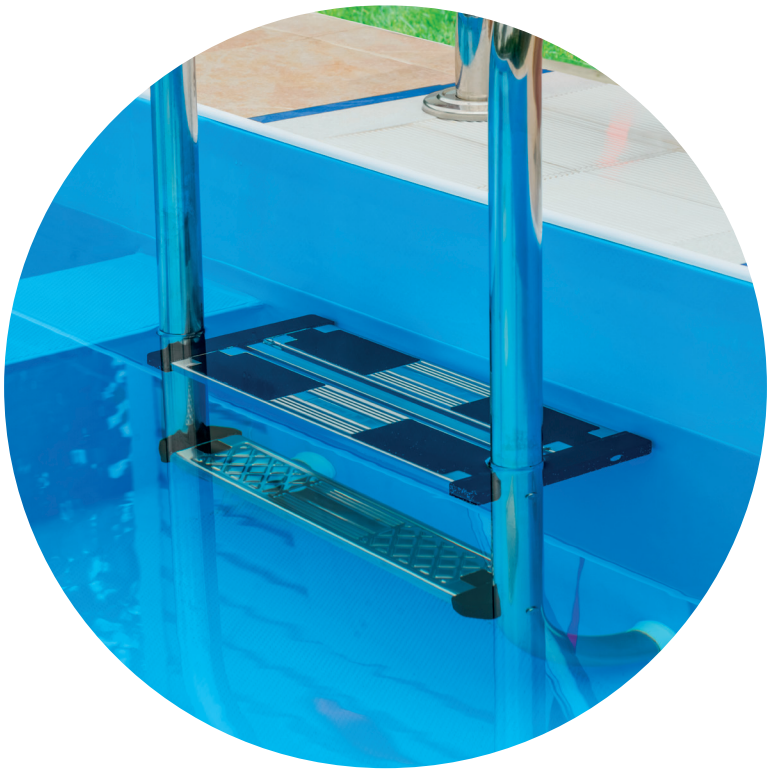
Water polo shot clock

Other swimming pool elements

Ladders, handrails, slides, themed spaces and other elements such as waterfalls and massage jets can be added to swimming pools in hotels, sport clubs or wellness facilities.

Lastly, another element present in both sport and leisure pools is a **pool cover**, in charge of keeping water temperatures constant, thus helping pool operators save energy and costs when the pool is not being used.

A **thermal pool cover** can even absorb the sun's rays during the day. All covers are also excellent safety features, since they prevent accidental falls.



03 SWIMMING POOL SYSTEMS

Cleaning systems

Beyond the obvious benefits of maintaining a clean swimming pool, cleanliness prevents cloudy water and can help **extend the life of components** and pool accessories, as well as having an impact on sustainability, energy use and economic costs.

Pool cleaning it's directly connected to water treatment systems performance, as one affects the other. When it comes to cleaning systems, the options include:

- **Pool vessel cleaning**. Automatic **robot cleaners** are an excellent solution for daily cleaning, sweeping the swimming pool basin without any additional effort.

  Panel pools with PVC liners are even easier and faster to clean, as there are no joints or small areas that can be difficult to access. They need a lot less manual cleaning and maintenance.

International, national and regional regulations require that larger swimming pools with lots of users need to be completely emptied once a year to ensure the cleanliness of the water. This also allows the basin to be cleaned carefully. Special attention should be paid to the joints between pool panels during this process, although it's easier to clean than tile pools as there are fewer of them.

- Pool hydraulic systems and equipment also need to be **cleaned and maintained periodically** for best performance and efficiency.

  Whether you maintain all your water parameters manually (with a photometer for example) or use smart devices such as automated chlorinators, each of these pieces of equipment needs to be checked and cleaned **as per its specific instructions**. Maintenance and cleaning of each hydraulic system will help not only hygiene but also will provide savings and reduce wear and tear of the installations. One excellent option is electrolysis-based systems such as **Neolysis**.

  Another method is the flocculant dosage system, which facilitates the filter's performance by expanding the size of debris particles.

- Stainless steel pools are an excellent option for many construction projects, as it is a **more hygienic material than most**, requiring less maintenance and chemical products overall. It can be easily cleaned with high-pressure sprays containing specific disinfectant products.

Heating & cooling systems

The water temperature in swimming pools is a very important and delicate parameter to control. **Pool cooling and heating systems** help set the water at the **desired temperature**.

Inefficient or non-existent heating systems are the cause of uncomfortable pool environments, and can cause extra costs and environmental harm. **Heat pumps** are the best option, especially for large public facilities, as they are efficient and allow for energy savings while providing additional benefits such as an extension of the bathing season in an outdoor pool.

Using high-performance heat pumps and coolers, as well as thermal pool covers and water fountains and waterfalls, will help to maintain an ideal temperature in your pool.

To further boost the performance of your pool temperature solutions, new technology such as **Fluidra Connect** makes it possible to manage, automate and control the pool remotely, thanks to IoT technology that gives you real-time feedback on the parameters of the pool. You can also opt for using the **InnfoPool application** for real-time display of pool parameters, which provides information and peace of mind about the pool's quality.

Water treatment systems

Water treatment systems guarantee water is **clean and hygienic**, while also extending the life of all pool components and accessories and providing **energy savings** for operators.

When deployed correctly, **water treatment equipment** should be seamlessly integrated, ensuring water recirculation. Water recirculation systems can also be combined with reutilization systems which, in turn, help reusing the water for sanitary purposes or filter backwashing.

Disinfection systems remove **impurities and potential harmful contaminants** from the water. They are key to keeping the water within safe operating parameters.


Freepool2


Neolysis


Heliox UV

On the one hand, filters perform a mechanical cleaning. On the other hand, chemical disinfection operations are performed manually or by various systems (including **Saline chlorination**, **Heliox UV, Neolysis, Freepool2**), and they involve adding products to the pool, such as chlorine tablets or **flocculation** products, among others.

Additionally, these processes can be automated through **smart control systems** such as **Fluidra Connect** and displayed at the facility screens with the **InnfoPool solution**, thus effectively generating a modern **smart pool**.

At the same time, **UV installations** can significantly enhance hygiene and save water. The addition of a medium-pressure ultraviolet lamp and a flocculation system can kill harmful bacteria, while the flocculation system can conserve water. An effective disinfection system solution is **Neolysis from AstralPool**, which improves water quality and mitigates the need for excessive chlorine use. This enhances user comfort and experience, bringing a value-added aspect to pool cleaning solutions.

Filtration and recirculation systems

A pool filtration system stands as a key point for achieving a clean pool. It **removes the impurities and particles in suspension** that naturally build up in the water and ensures that the rest of the components work properly.

In fact, both choosing the best filtration technology and the most adequate filter will make sure the pool operates properly and **minimize the need to use excessive chemicals** for disinfection.

In this decision, the different types of **filter media** must be considered (sand, glass, diatomaceous earth and anthracite), along with the following three rules:

- The greater the **height** of the filter media, the higher the likelihood that dirt particles will be trapped.
- Different filter media also present different **granulometries**, meaning smaller granulometries have a greater capacity to trap particles.
- A smaller granulometry clogs up more quickly, so it needs to be backwashed more frequently.

There are other technologies for filtering and treating pool water, including the use of **regenerative filters**. These filters also operate on the principle of mechanical filtration, i.e. the filter traps particles on the surface of flexible tubes, in this case coated with perlite as filter media. When the perlite becomes saturated, the filter regenerates the filter media by vibration. These filters offer benefits such as space saving in the technical room, high water clarity, up to 90% water savings during backwashing, up to 50% energy savings and up to 30% savings in chemicals.

Additionally, **flocculation** solutions improve the performance of filtration systems by making particles large enough to settle and then be removed by filtration systems.

Having looked into these issues and the importance of the filtration system, pool operators often have to ask themselves an important question: what should I take into account in choosing the most suitable filter?

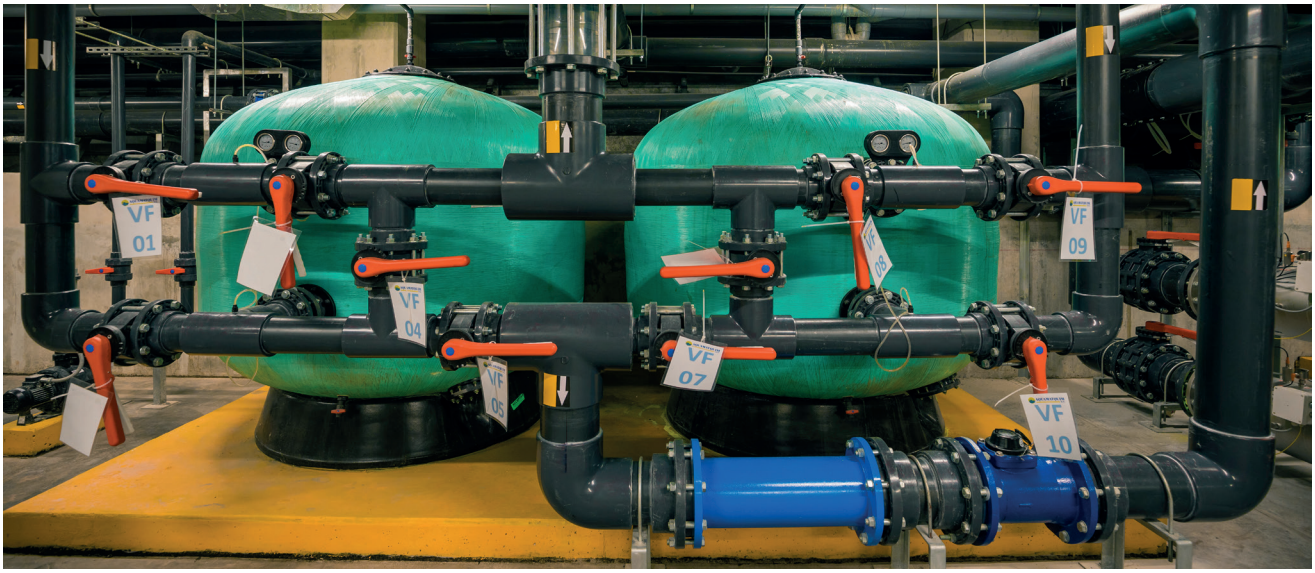
To summarize, these are the main factors for taking this decision:

- The combination of the pool's volume, the turnover time and the filtration speed will determine **the size of the filter required.**
- The height of the filter media, based on the fact that the greater the height, the higher the likelihood that particles of dirt will be trapped.
- Environmental **sustainability**, bearing in mind that a suitable filtration system for a pool can give rise to huge water savings. In this case, the most viable options are those that allow air washing and that have built-in nozzle plates as the filter collector system.
- The reduction in **filtration hours, backwashing needs, filter media replacements or maintenance** issues all tend to be highly in-demand.

Having smart, sustainable recirculation technologies, with water reuse and reduced consumption, is also essential. Their aim is to keep the water transparent and to give it a

thorough physical and chemical treatment. To do so, they collect the contaminated water so that it can be filtered and disinfected, and then return it to the pool basin. In addition, they have the following advantages:

- They thoroughly circulate the water in such a way that "dead spots" are avoided and ensure that the whole of the surface water is recirculated.
- They achieve an even **distribution of disinfectants** and other products.



Improving air quality

The use of efficient air heating pumps and **dehumidifiers with UV disinfection capabilities** offer pool operators the possibility of obtaining a fresh, crisp, and clean-feeling swimming environment.

Lighting elements

Swimming pool lights are key for user experience, generating **unique atmospheres** according to the needs of each operator to improve user safety. Today, the options for colors, intensities, contrasts and shadows among swimming pool lights are endless.

As such, subaquatic and ambient light can become an essential element for user experience, generating aesthetically pleasant and original environments.

At the same time, the generation of **attractive atmospheres** invites users to extend their visit to the installations, which also turns into potential higher expenses for adjacent business, such as bars and restaurants. Thus, an adequate choice in swimming pool lights adds value for users and increases their loyalty.

Besides, adequate lightning in water installations increases user **safety**, as it can help avoid **accidental slips** or falls that result in injury, and is crucial for **practicing sports.**

Options in lightning for swimming pools include:

- Halogen lamps (the most conventional option)
- LED lamps (the most advisable in terms of environmental impact and energy consumption, as well as a longer lifespan)

Distribution and frequency of swimming pool lights' elements should also be considered, including the number of spotlights, their height, and achieving lightning balance.

04 CRITERIA FOR DECISION-MAKING

Decisions regarding the elements outlined above should be guided by a key principles and criteria, such as:

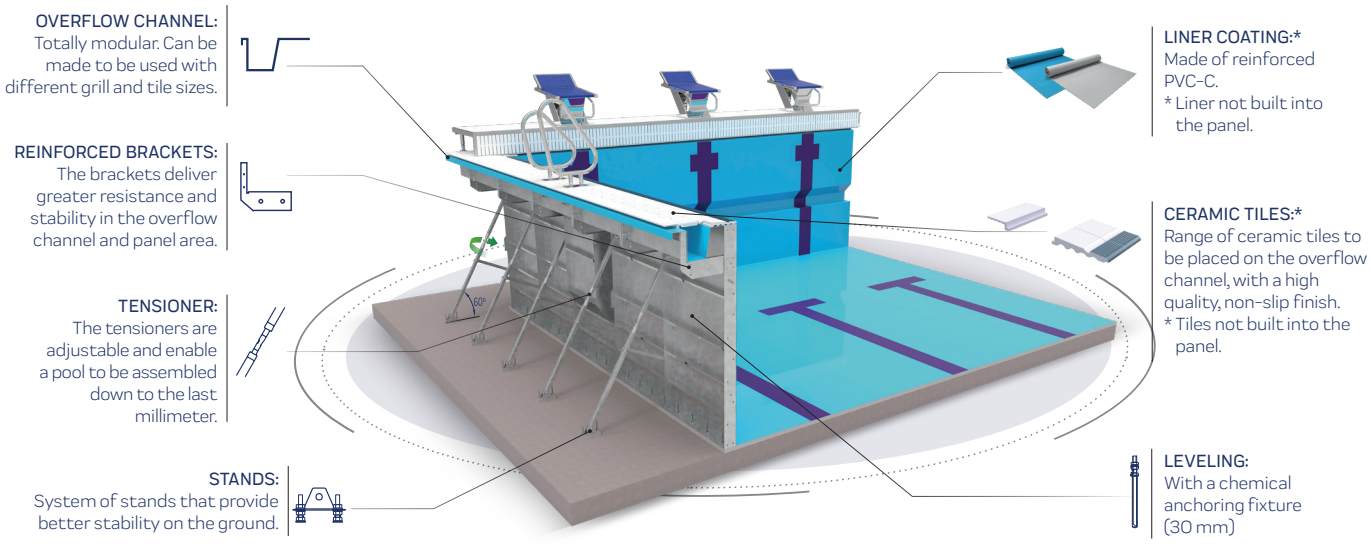
- **Efficiency**, that is, achieving the best possible results using the least amount of resources
- **Automation possibilities**, including automated maintenance programs for pH balance, disinfection, etc; and smart technologies such as **Fluidra Connect** to enhance maintenance processes
- **Easy to implement**
- **Low maintenance** needs and costs
- **Versatility**
- **Sustainability**

Picking panel systems for the pool's construction is one example of swimming pool choice that would fulfill all these criteria.

Modular panel systems such as **Skypool** and **Bluespring** can rapidly generate a pool basin and coping finish, while also providing sleek aesthetics, a quick installation and significant resilience in chlorinated and corrosive environments.

The adaptability and easy installation of panels makes them perfect for swimming pool renovation projects, too.

The final result is a refreshed, safer, and more durable swimming pool that can be fully compliant with **World Aquatics** (former FINA) standards.



05 THE ROLE OF PROFESSIONAL POOL DESIGNERS AND ENGINEERS IN DECISION-MAKING

The role of professional aquatic specialists is to use their **engineering and design expertise** in advising swimming pool operators on the best options, which should ideally be in line with their project's needs and potential limitations.

Fluidra offers complete **360º solutions** by working hand in hand with our clients. A team of experts with extensive experience in the conception and design of aquatic projects will make your project come true right from the start.

Our design approach is conceived through four **design phases:** Consultancy, Concept design, Developed design and Detailed design. All in compliance with international standards and fulfilling the client's schedules.

Throughout the design process, our experts work with some of the most advanced design tools and **technologies** such as CFD (Computational Fluid Dynamics), Fluidra Live Virtual Reality (VR), and BIM (Building Information Modeling).

Using **BIM methodology** has a number of **advantages** over traditional design approaches:

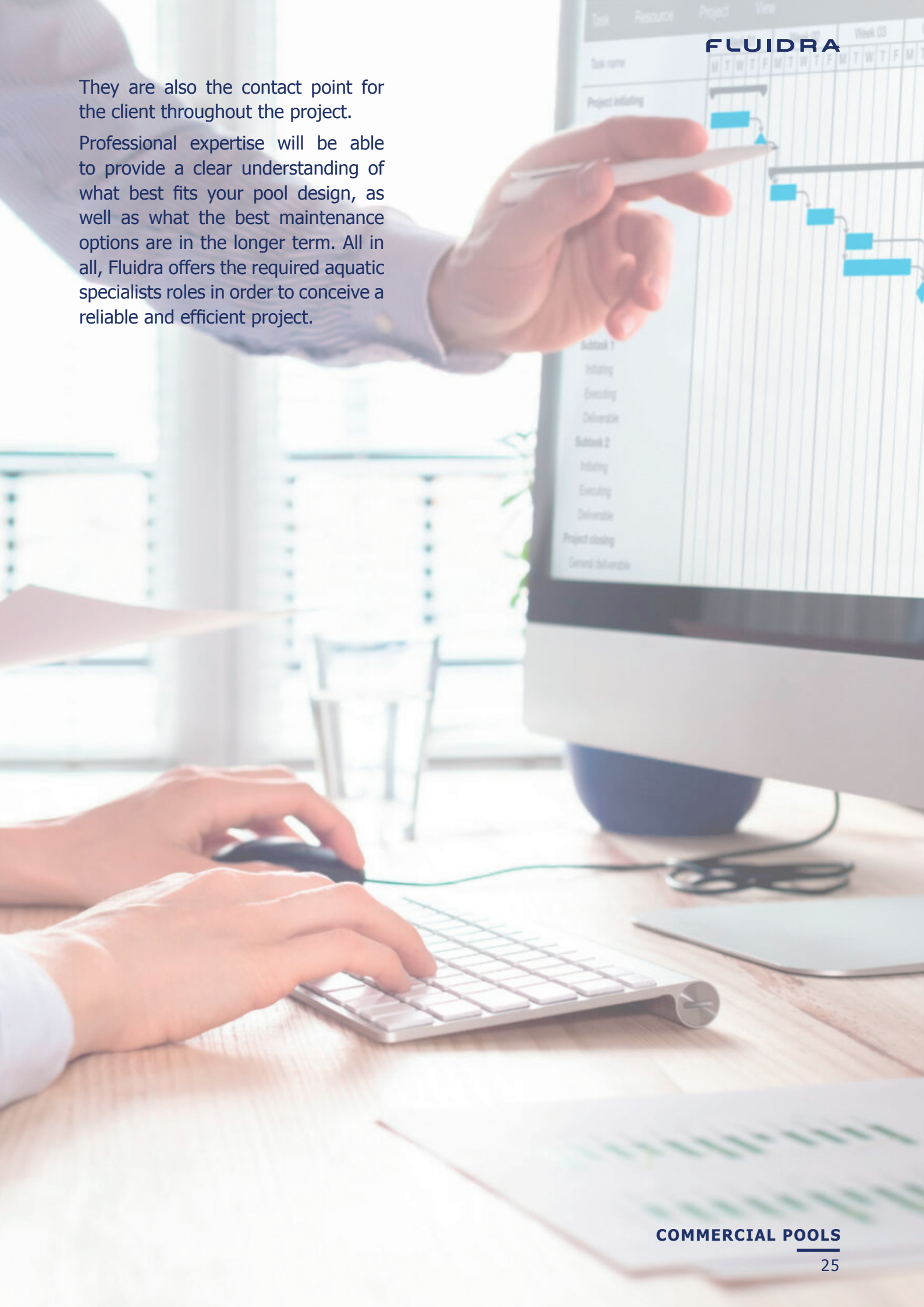
- Allows investment decisions to be made by comparing the functionality, scope and cost of the solutions.
- Allows the comparative analysis of energy and environmental requirements in order to choose design solutions.
- Facilitates collaborative development between different design and construction teams.
- Improves quality assurance and data sharing to streamline the design process
- All the parties involved are aware of the installation data, from the design phase to its demolition, including its construction, use and maintenance.
- The access to all this information facilitates good decision making, which avoids last minute changes with higher costs.

Also, the figure of **Project Management** is crucial. A project manager helps turn an aquatic project into a success by managing the installation and supervision of the works end-to-end. The project manager schedules, coordinates, monitors and provides support from start to finish to all the different parties involved in the project while complying with the highest quality standards within the established timeframes.

Fluidra has a team of on-site project managers specialized in top-level aquatic projects. They are involved from the beginning of the design phase until the delivery of the project to ensure that work is executed correctly, keeping to the schedule and in line with the client's wishes.

They are also the contact point for the client throughout the project.

Professional expertise will be able to provide a clear understanding of what best fits your pool design, as well as what the best maintenance options are in the longer term. All in all, Fluidra offers the required aquatic specialists roles in order to conceive a reliable and efficient project.



"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".

FLUIDRA

www.fluidra.com

Fluidra projects

Fluidra projects

Fluidra Group

Fluidra Tik Tok