

How to choose the right concrete plant for your project.

Technical buying guide.

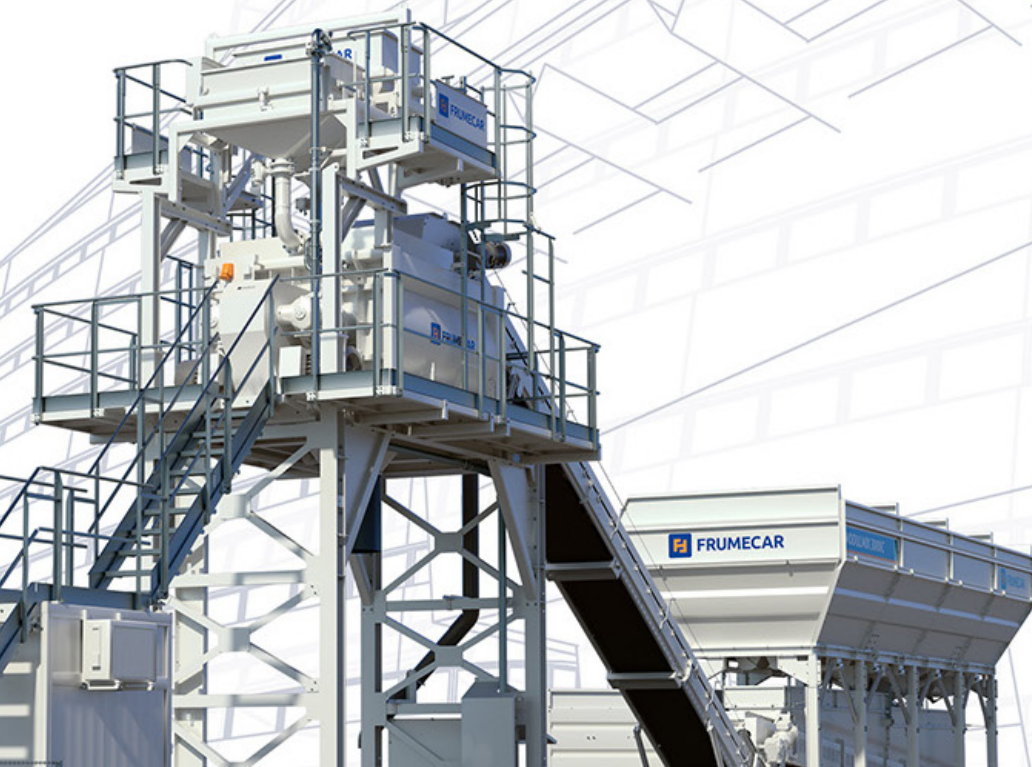


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How to choose a concrete plant for your business

All businesses have tools at their disposal in their markets to achieve their goals. How to acquire these tools is a complex decision that involves risks, but it is a prerequisite for the survival, stability and growth of our company.

This is especially true for the purchase of a concrete plant. Such a decision requires addressing technical, financial and logistical considerations. However, the most important line of analysis will be to clarify precisely what type of business we have and, above all, which market we are targeting. This analysis will then establish parameters that will guide the final decision.

This white paper is aimed at assisting you in this process, providing you with a coherent and objective framework to work from to enable you to assess all the aspects involved in acquiring a concrete plant.

We will start in **section 1** with the most basic aspects: establishing what the components of concrete are and the processes to which they are subjected. In **section 2**, we will see that a concrete plant requires knowledge of, implementation of, and compliance with various regulatory frameworks. **Section 3** will describe the machinery that deals with the various processes - the different plants and the various kinds of mixers - and how new technological advancements help in managing and monitoring them.

In **section 4**, we will discuss which solutions best fit your company: whether it is a concrete sales business, a plant that supplies concrete to a construction site or a factory that produces concrete parts.

In **section 5** we will deal with the plant's logistical framework, the interweaving of factors of a very different nature: legal, technical, environmental, climatic, etc. We will emphasise the critical elements to which special attention must be paid: mainly the mechanisms and processes of production control.

All of the above will require planning how resources are to be allocated and forecasting the return on investment. **Section 6** will outline the main economic aspects of a plant's business, aspects which are both general to any enterprise and specific to the activity itself.

Frumecar is concrete, but its commitment is to people, to companies. It is our firm belief that facilitating an informed decision for our clients will be mutually beneficial. This white paper is the result of that conviction.



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Concrete, the starting point.

1. CONCRETE, THE STARTING POINT

1.1. Composition.

Of course, concrete is the product made in a concrete plant. Knowing its manufacturing process, its ingredients, its varieties and its uses is the first task when it comes to choosing a plant.

Concrete is a mixture that combines several components: cement, aggregates, additives and water. The result is a strong, resistant, durable and above all versatile material. Adaptability is one of the main features of concrete as a building material. This quality is obtained by varying the proportions of the primary components, by changing the method by which they are mixed or poured during construction, or by adding other ingredients that modify the original properties, either for technical or aesthetic purposes.

- A concrete production plant is a cycle where the elements that will produce concrete go through three main stages: **storage, batching and transportation**. The shape of this cycle will result in different types of plants.
- It is therefore essential to know the components of concrete and how they are handled in a plant.



1.2. Aggregates.

These are the basis of concrete. They make up between 70 and 75 % of the material within concrete. Aggregates are inorganic, granular and inert materials, which means that they do not intervene in the chemical process of setting and hardening of the concrete.

Storage. It is stored in containers called hoppers that can be set in different ways - in line, in square or tower block -. There are two filling ways: directly using a ramp with a loader or a dump truck, or by using automatic stocking systems.



Batching and transportation. The aggregates pass from the storage hoppers to the weighing hoppers, where the precise quantity of material is selected, depending on the batching recipe. From there it is transported to the truck mixer, in the case of dry mix plants, or to the mixer installed in the plant in case of the wet mix plants.

1.3. Cement.

This is the element that binds the aggregates together, due to its conglomerating properties. The most commonly used variety in concrete is Portland cement. Cement is a powdery, inorganic, artificially obtained material. It reacts to water forming a resistant and stable mass. The Portland variety is made of limestone, clay and gypsum, which are very cheap materials and are also optimal thanks to their binding capabilities.

Storage - Silos. Cement is always stored in silos. These can be vertical (gravity discharge) or horizontal (forced discharge) in the case of plants with height or assembly limitations.

Batching and transportation. The cement is transported from the silos by screw conveyors to the cement scale and from there to the mixer or the concrete mixer truck.

1.4. Water.

Batching and transportation. There are two ways of introducing the water:

- In **stainless steel scales** that allow also that recycled water is used.
- With a flow meter counter that allows water to be added during the process.

1.5. Additives.

These are substances that are added to the concrete during mixing to achieve a new characteristic. Examples are plasticisers and fluidising agents (which modify the consistency of the concrete) and retarders and accelerators (which modify the speed of setting).

1.6. Additions.

They are substitute - or complementary elements - that are added to cement, before mixing, to modify its characteristics. They can be fly ash, blast furnace combustion residues, fillers, or microsilica.

On our website you can find [more information](#) about different varieties of concrete and their characteristics.

If you want to be at the forefront of the trends in the concrete sector, log into the [Frumecar blog](#) and you will be able to access all the articles with the latest news.





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Laws and regulations governing the installation, maintenance and production of a concrete plant.

2. LAWS AND REGULATIONS GOVERNING THE INSTALLATION, MAINTENANCE AND PRODUCTION OF A CONCRETE PLANT

Purchasing a concrete plant is technically complex, but also regulatory complex. When a company buys a plant, it has to review, among other things, local ordinances on building permits, environmental protection, fire safety, and solid and liquid waste regulations, especially water.

Recently, Spain implemented new legislation, RD 163/2019, which establishes a mandatory certification on production control - the ITCP -, i.e. the obligation to carry out external audits of various aspects such as the technical training of specialised personnel, material and storage control, facilities (both batching and mixing), transport, manufacturing and supply processes, documentation and traceability, and the control of environmental aspects.

The regulatory framework is not unequivocal. Laws and regulations come from different administrations: local, regional, state or transnational such as the European Union. However, in many cases, international standards, such as ISO standards, converge with national standards and become part of national legislation (as happens in Spain with UNE standards).

In any case, it must be borne in mind that a concrete plant is not an isolated unit, but that, depending on the type of activity, different types of machinery will necessarily operate in it, machinery which in turn is subject to legislation and regulations: machines for distributing and spraying concrete (concrete pumps), for compacting and levelling it (vibrators), for the production of pre-cast concrete, or for the preparation of reinforcement (in the manufacture of reinforced concrete).

It is also important to know that the concrete sector has professional associations that grant quality certificates - in technical aspects and also in others such as safety and occupational risk prevention - which, although not compulsory, are the entry passport for the activity in many national markets.

As we pointed out, in practice these three levels (national, international and professional) tend to unify their directives. For this reason, comprehensive proposals such as [Frumecar](#) with its focus on industry 4.0, digitalisation and smart systems, provide you with a control instrument that ensures compliance with laws and professional standards, and gives you a greater degree of peace of mind for your activity and your business.



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*Plants from their
technological perspective.*

3. PLANTS FROM THEIR TECHNOLOGICAL PERSPECTIVE

3.1. Dry mix or wet mix.

Once we know what concrete is and its technical production process, we must be clear about what we want to do with the plant in order to choose one that best meets our objectives; and, in this respect, the technological perspective is particularly relevant.

With our goals in the forefront of our minds, the first technical criterion we must consider is whether our activity requires a **dry mix or wet mix plant**. The two methods differ in the concrete mixing process:

- In **dry mix** plants or **dosing plants**, the main components of the concrete are fed separately into the truck mixer in the appropriate proportions (in the **batches** prescribed in the recipe, hence the term **batching** plant). However, the mixing is carried out inside the concrete mixing truck during its transfer to the construction site, so that on arrival at the destination point the mass is homogeneous and ready to be poured into the mould, pump, bucket or formwork.



CONCRET Family, high-tech, compact dosing-dry mix plants.

Dry mix plants, since they do not require an on-site mixer, are cheaper. However, they do result in higher fuel consumption, which is ecologically and environmentally damaging.

It should be noted that this method of making concrete is only permitted in some countries, including Spain, the United Kingdom, Australia, Israel, U.S.A, Italy and Latin American countries.

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If you want to know more about the dry mix plants offered by Frumecar, please click on this [link](#).

- In **wet mix** plants, on the other hand, the concrete is mixed in an on board of the plant static **mixing** machine, not in the mixing truck.



ECA Family, mixing plants designed to go where your business needs them.

The concrete is then poured, either into a transportation truck or onto any other receiving element. There are different types of mixers and different concrete receiving systems.

Wet mix plants are mandatory in almost all of Europe, Asia and most of Africa.

Use this [link](#) to find out more information about our wet mix plant catalogue.

3.2. Mixers (which ones and what are they for).

When referring to wet mix plants, we said that their defining characteristic is that the mixing of the concrete components is carried out at the plant itself, instead of in the concrete mixing trucks. They are called also ready-mix plants.

There are different types of mixing machines, depending on the type of concrete you want to end up with. For example, **horizontal twin-shaft mixers** provide a very homogeneous concrete and are the highest recommended for high production plants, especially because of their high strength and mixing speed.

In contrast, **turbo mixers**, or **vertical shaft turbo mixers** or also called **pan mixer**, are used to produce ready-mix concrete and pre-cast concrete elements, thanks to their gentle mixing and the distribution of their mixing arms. This results in a uniform mixture that does not disintegrate the materials. This model is also suitable for the production of concrete to be transported in trucks.

A third type are **planetary mixers**, named because of the rotation of its blades which resembles the orbit of a satellite around a planet which then orbits the sun. They are used to produce pre-cast concrete parts and for dry mixes.

At Frumecar we choose the ideal mixer for each type of plant. You can take a look [here](#).

3.3. Plant control: automation as a guarantee of efficiency.

A concrete plant is not only a complex piece of machinery, but it is also the centre around which various processes and activities - of a technical, accounting and legal nature (already discussed in the previous point) - revolve. These processes and activities must be monitored simultaneously in order to ensure its correct operation.

It is therefore essential to address the issue of how to control all these aspects and dimensions. The larger the project, company or construction site for which one or more concrete plants are purchased, the more important this becomes.

The answer lies in automation. For more than a decade now, the management of concrete plants has benefited from the development of what is known as Industry 4.0. Artificial intelligence (AI), big data and the internet of things (IoT) make automation processes safer and more efficient.

Examples of specific uses of these technologies in the concrete sector are real-time automated connection between plants and concrete mixers thanks to the internet of things, the use of artificial intelligence algorithms for real-time decision making, virtual reality (VR) devices for remote training of operators and augmented reality (AR) for plant management support.

HOW TO CHOOSE THE RIGHT CONCRETE PLANT FOR YOUR PROJECT.

Of course, the benefit of new technologies is not limited to the technical aspect alone. Other important aspects are quality control and the monitoring of reports, which are decisive elements in order to always comply with the many regulatory standards that, as we have already explained, are involved in the operation of a concrete production plant.

In addition, automation gives a new dimension to commercial management as it enables better coordination with demand: knowing what customers and the market need in real time.

Frumecar has the - [K2 and K2 Central](#) - automated systems at its disposal for the integral management of its concrete plants. Systems that provide solutions for each of the needs that arise throughout the manufacturing process.

The **K2 System** allows the complete automatic control of the entire concrete production process. This includes:

- The creation and management of recipes.
- Production planning.
- Concrete mixing and batching.
- Quality control.
- Commercial management.
- Monitoring and reporting.

The **K2 Central System** is designed for installations with more than one plant. With K2 Central, plants operate from a single centralised control panel. All K2 functionalities are thus executed in a coordinated manner; moreover, it allows the management to be joint or independent depending on your needs.

All our plants are equipped with [RealScale](#) a specific control system for batching on scales, a crucial element in achieving the desired concrete variety with the highest quality standards.





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*Choose the solution that
best suits your business.*

4. CHOOSE THE SOLUTION THAT BEST SUITS YOUR BUSINESS

Purchasing a concrete plant is a decision that is integrated into the type of business and the activities for which it is required. In principle, there are two types of companies using concrete plants:

- Companies whose final product is concrete. These may be construction sites that need a plant to have a close and stable supply or companies that sell concrete to other companies.
- Companies that use concrete to manufacture their final product. This is the case for the construction business of pre-cast concrete parts, generally beams (or structural building elements), but also parts for roads and railways or for signalling, such as milestones or imposts.

If the concrete is the final product to be delivered to the customer or to the construction site, two types of plants are used: **fixed plants** or **on-site plants**.

The second type of company uses **pre-cast plants**.

4.1. Fixed plant (for the sale of concrete).

As the name suggests, these plants are designed and installed to be located in the same place for their entire life span. They are the kind of plants that have a large output over a long period of time.



MODULMIX Family, high efficiency plants for large producers.

They are expressly recommended for businesses where multiple types of concrete are manufactured, such as special concretes, as their size makes it easier to handle different formulas with various components and additives.

However, they are more demanding than other types of plants, a logical consequence of their larger size. It should be noted that more additional space has to be reserved for the stockpiling of aggregates and cement. In addition, attention must be paid to the management of the land where the plant is placed, logistics and local regulations (both for the construction work necessary for its installation, as well as for its management and operation). And it requires knowing and assessing data such as the distance of aggregate and cement supplies, and the regular and sustained availability of water.

It should be noted that the installation and use licenses - and the requirements to obtain them - can lead to an excessive increase in investment, for example, if you have to undertake some kind of civil works, such as fencing, asphaltting, clearing land or opening roads.

All these elements must be taken into consideration and put in relation to the expected production capacity in order to calculate the profitability of the plant. In fact, it is very important to foresee whether expansions will be needed in the future, which requires a prospective analysis of the evolution of the market and the business itself.

4.2. On-site plants.

On-site plants are those that are designed for projects that are time-limited or that do not need, or cannot use a fixed plant for budgetary, logistical - space shortage - or installation and commissioning time reasons. They are also known as mobile plants, as they can be assembled and disassembled quickly and easily.

They can be either [dry mix plants](#) or [wet mix plants](#). The former requires less space as they do not have an on-board mixer and the mixing is done in the concrete mixer lorries. The wet mix plant is the most suitable if the distance from the point of manufacture to the point of use is short, or when the characteristics of the infrastructure to be carried out require the concrete to be pre-mixed.



EMA Family, a wide range of applications for medium and high-production outputs.



Purchasing a **concrete plant** is a decision that is based on the type of business and activities for which it is required.

- If the final product is concrete: **fixed plants or on-site plants.**
- If concrete is used to manufacture your final product: **pre-cast plants.**

As we saw earlier, twin-shaft mixers are the most suitable for this category of plants, as they produce very homogeneous concrete very quickly.

On-site plants can be cheaper and, above all, easier to resell once the project is completed. This makes them very attractive from a financial point of view. Another positive feature is that they do not usually require major civil works, which simplifies regulatory and licensing issues.

A key factor is autonomy. Due to the transitory nature of the construction sites, there are aspects that need to be planned with precision, such as the frequency of delivery of aggregates and cement. If the supply is not regular and stable, very large silos, for example, will be needed.

Mobility within the site is yet another factor that must be carefully considered. For example, in the construction of infrastructure such as motorways or railways, the frequency with which the plant is moved has to be carefully planned in order to maintain an optimum correlation between the rate of concrete pouring and the duration of the logistical processes of disassembly, transport and reinstallation. In the same sense, the distance to pouring points must be evaluated.

A project that moves frequently is more susceptible to weather, climate and environmental variations. Logistics and operations need to be adjusted to accommodate different contexts and situations. This means that a road can pass through towns, rural areas or protected areas. On the other hand, climatic factors, especially humidity and heat, directly affect the quality and properties of the concrete, which will require the use of additives (retardants or accelerators, for example) depending on each case.

Another element to consider is redundancy. For example, in the construction of some infrastructure such as bridges, the nature of the work may demand continuity of operations, i.e., the work cannot stop until it is complete. In view of this, the option could be to acquire a second plant and, in addition, to have remote control technologies that minimise accidents, stoppages and errors.

At Frumecar we have an extensive catalogue of mobile and on-site plants to cover all your needs. Check this [link](#) for more information.

4.3. Pre-cast plant.

In contrast to concrete sales plants or on-site plants, concrete is not the end product in pre-cast concrete plants, but the raw material for the production of pre-cast concrete parts.



Depending on their size and location, fixed or mobile plants can be chosen. The size of the plant naturally influences the choice of plant type.

The wet mix plant is necessary in this case and, as far as mixers are concerned, the most suitable for this type of plant are planetary mixers or vertical shaft mixers, as seen above.



FASTMIX Family, the most versatile concrete plants on the market.

The standard pre-cast concrete element is the concrete beam, but other structural support elements for floors and roofs are also produced, such as joist systems, vault systems, pre-cast slabs, ribbed elements, slabs, and caissons.

Pre-stressed concrete (used for construction elements that support high loads, such as bridges, dams and skyscrapers) is the most commonly produced. In fact, it has resulted in an unprecedented development of pre-cast companies by allowing the production of very light and robust parts, which are therefore easy to transport. Of course, traditional reinforced concrete components are still produced, which are more suitable for uses that do not require as much support, such as floors, walls, terraces or corridors.

The concrete must be linear to ensure uniformity of production. Therefore, very precise and fine-tuned procedures are required, as there can be no fluctuations in quality. This makes control mechanisms fundamentally important.

With pre-cast companies in mind, Frumecar offers specific solutions, from complex installations to basic models such as our family of [FASTMIX](#) plants.

Frumecar also has the [FRUMEBLOCK](#) system at its disposal designed, not only for pre-cast plants, but for any other type of plant. With FRUMEBLOCK you can easily and conveniently produce pre-cast concrete blocks from your production leftovers. For more information about FRUMEBLOCK please [contact us](#).

Frumblock A convenient, simple and cost-effective way to make the most of your surplus concrete.





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Logistics.



5. LOGISTICS

A concrete plant is a triple logistical challenge: because of its own physical size (the machinery that composes it), because of the environmental elements that make its operation possible (the land, the availability of water, the communication routes) and because of factors derived from the process of concrete production (or concretes in the case of large plants).

5.1. Types of plants depending on their logistical nature. Stocking.

Depending on the first challenge, and depending on the space available, you can choose between vertical and horizontal plants. Their difference is defined by how raw materials are moved and transported within the plant.

- **Vertical plants.** The batching is gravity-fed, and the direction of production is from the top of the plant to the device where the concrete is poured - a container, or the concrete mixer truck itself (especially in the case of dry mix batching plants). It is ideal if you don't have a lot of land.
- **Horizontal plants.** In these, the raw materials are conveyed horizontally, normally from the ground to the final concrete receiving element.

Regardless of the type of plant, one thing to consider with special care is what type of stocking to use. To fill the hoppers where the aggregates are deposited to be transported, either to the doser or directly to the mixer, a very common system is to make a ramp. The material is brought up through it with a loader. Problems arise because the ramp takes up space, which is often scarce, and because additional human resources (to operate the excavators, for example) needs to be allocated that may be required for other tasks.

The **automatic stocking** system is an alternative to loader filling. Instead of using a loader bucket to reach an unloading point, the aggregates are unloaded directly into a receiving hopper and, via a conveyor belt and a distribution belt, are unloaded into the storage hoppers, minimising space and the need for additional resources.



A concrete batching plant is a threefold logistical challenge:

Because of its own **physical size**.

Because of the **environmental elements** that make its operation possible.

Because of the factors derived from the **concrete production** process itself.

5.2. Technical and environmental factors that limit production.

The next two factors - the strictly technical factors of production, on the one hand, and the surrounding environment, on the other - must be assessed and analysed from the perspective of their contribution to the smooth flow of production.

From this point of view, it should be noted that the production bottleneck (the one that determines the plant's activity) is the speed of production control, which varies significantly from the speed of the strictly technical processes of concrete production. This means that the actual production capacity of a plant does not only depend on things like the speed of movement of aggregates and cement through the screw conveyors to the mixers, the mixing time inside the mixer, or the speed of pouring the final ready-mix concrete into the concrete truck mixer. These factors must also consider:

- The **type of batching**, whether it is mixed in the plant or dosed into the concrete mixer trucks for mixing.
- The **concrete's formulation**. As the number of elements added to the concrete (additives, aggregates and cements) increases, the time required for the various components to stabilise increases and, as a result, the process slows down.
- **Moisture measurement** systems, both for aggregates and inside of the mixer.
- **Surrounding conditions**. The quality of the water supply (if it is too far away from the discharge area, losses due to the condition of the pipes, etc.), damaged cement silos, problems with the filling of the aggregate hoppers, etc., all have a negative influence on the final rate of production.
- The **type of mixing**, which may vary depending on the country, local standards or for regulatory reasons, may delay production.
- Each **type of concrete** has its own production times.
- The **reception capacity of the concrete mixer truck**, whether it receives ready-mixed concrete or if it is used to produce it, slows down or speeds up the production process.

5.3. Logistics and regulations.

The regulatory aspect has already been discussed above, but it is necessary to stress again that local laws influence the physical layout of the plant and its logistics, mainly for environmental reasons. Dust emissions are often the key element. If they are excessive, it may be necessary to install filters and extraction systems, to cover the machinery (to install an enclosure) or even to confine it in a warehouse.

Some countries, such as recently Spain, have passed strict regulations on recycling, specifically on the management and treatment of leftover concrete. Frumecar offers a wide variety of [recyclers](#) that provide a technological and logistical response to this legal framework.

Preserve your assets while protecting the environment with **Frumecar's concrete recyclers.**



ECONOR 30, Frumecar's high-capacity recycling model.



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6. INVESTMENT PARAMETERS THE CONCRETE PLANT AS A MEANS OF ECONOMIC PROFIT

6.1. Investment.

A concrete plant, as already mentioned in the introduction, is a tool, an instrument. Therefore, the primary task when considering the acquisition of one or more plants is to define the general objectives that the instrument is intended to serve.

The goal, of course, is for the investment to result in an economic benefit. It is therefore essential - given the size of the investment required (direct and indirect) for the acquisition, installation, maintenance and use of a concrete plant - that the economic viability of the project be studied.

At Frumecar we believe in mutual benefit and collaboration with our customers, as our commitment does not end with the sale of the product. For this reason, we want to emphasise some of the economic and financial considerations that a company acquiring concrete production plants should study before undertaking its purchase.

In order to know what real investment we will have to face, we must not only think about the cost of the plant, but we must also consider a series of costs associated with it.

To determine the economic-financial viability of the project it will be necessary to calculate the balance between costs and revenues, depreciation, the profit and loss statement and cash flow.

Some concepts are applicable to any company: financial costs and operating costs.

6.2. Financial costs and operating costs.

Financial costs. They can be the company's own or those of third parties (those requested from credit institutions).

Operating costs:

• **Variable costs**

- Raw materials Cements, aggregates and additives, mainly.
- Energy: Electricity and fuel, both for assembly and disassembly as well as for use.

- **Fixed Costs**

- The rental price of the land.
- Operators.
- Maintenance costs. Cleaning of the facilities, the maintenance of the machinery and other expenses such as periodic checks of firefighting resources.

- **Additional costs**

- Insurance, public and environmental liability.
- Occupational health and safety.
- In some countries, specific insurance for operators.
- Consumables.
- Telephones
- In some areas, drinking water is a key and unavoidable expense.

6.3. Specific items for a concrete plant.

There are also a number of items specific to a concrete plant that are worth noting.

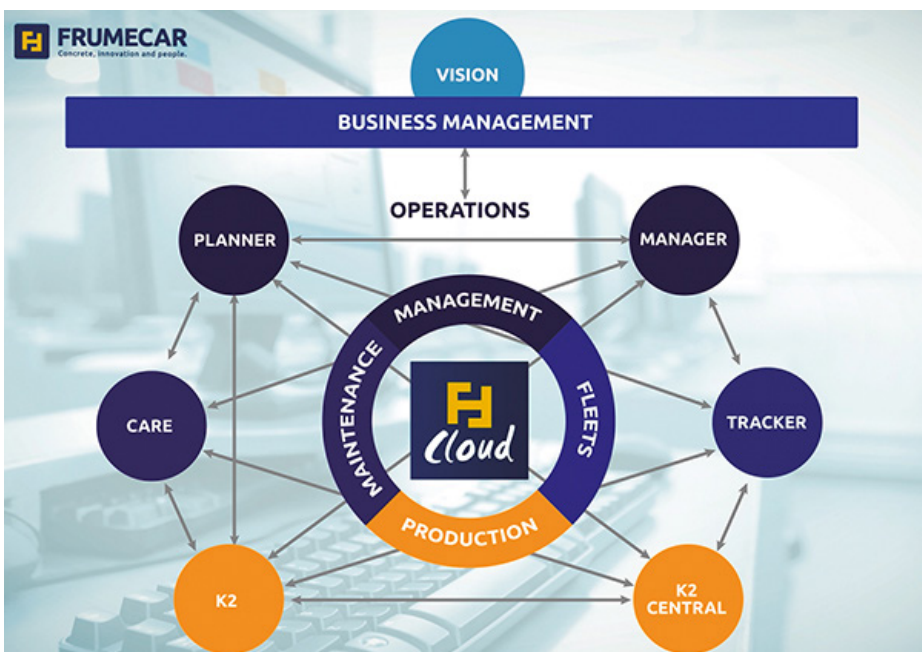
- **Engineering.** This includes the study and management of the project, licenses (activity, work, opening, operation) and permits (environmental and administrative authorisations).
- **Plant investments.** Civil works (if any), space clearing, roads, electricity, fencing, water supply, fire prevention systems (and sometimes dust emission).
- **Auxiliary equipment.** These are the machines and devices that make it possible for the main machinery to function correctly. For example, excavators.
- **Amortisation.** Machinery drops in market value as it is used. This is calculated by subtracting from the purchase price the expected sale price at the end of its use. This result is the scrap or salvage value. When undertaking the purchase of a plant it is very important to foresee amortisation because it is a very important percentage of the investment that can be recovered. This is true if your business is a concrete sales business, but especially if it is an onsite batching plant. That is why it is so important to contract with companies like Frumecar, which has a comprehensive approach that includes maintenance and automated and remote control. They not only take care of your business and your equipment, but also of your investment.

HOW TO CHOOSE THE RIGHT CONCRETE PLANT FOR YOUR PROJECT.

In summary, we can set some critical points, or milestones, to attend to in order to plan, from a financial point of view, our plant:

- Project cost.
- Cost of the plant.
- Civil engineering works.
- Energy efficiency.
- Personnel - assembly, commissioning, etc.
- Enclosures.
- Licences.
- Vehicles or accessories.
- Distribution fleet.
- Operating costs: raw materials, operators and energy.

At Frumecar, within our [Intelligent Systems](#) division, we put the [Frumecar Cloud](#) in the hands of our customers, a platform of advanced applications and systems designed for the optimisation and management of concrete production companies, which helps you to have financial control of your company and facilitates decision making.



As we have seen, a concrete batching plant is not only a piece of advanced machinery, but it is the backbone of a complex environment in which economic, financial, productive, technological, logistic and legal dimensions, among others, are linked.

To purchase a concrete plant judiciously, more than just its technical characteristics must be considered. A concrete plant is influenced by many aspects and all of them must be taken into consideration to make it a profitable tool for your company.

Of all its dimensions, the search for economic benefit, as we pointed out from the beginning, is key when it comes to articulating a purchasing strategy. The rest of the aspects (legal, technical and productive) must be balanced with the economic and financial ones, in order for your project to be successful.

That is why we have prepared this white paper: to help you familiarise yourself with the world of concrete plants in all its facets. Reading it will clarify many concepts, but it will also raise new questions. Don't worry, that's normal. Contact us: we will clarify your doubts and provide you with the best solution for your business.

[iCall us](#) and tell us about your project!

Sources: Frumecar Engineering and R&D Department. Frumecar Technical Guides. Automation of concrete plants, Frumecar website Articles: Industry 4.0 and concrete manufacturing; Smart Industrial IoT Industrial Monitoring and Control System, Carlos Torregrosa Bonet (vice-president of Frumecar). The Victor Yepes Blog. Wikipedia. BOE RD 163/2019. European Directives for Self Compacting Concrete. UNE-EN List of standards referring to concrete. Article: Municipal activity licence, concrete plants and additive tanks (ANFAH). The European Guidelines for self-compacting concrete. Summary guide to RD 163/2019 (ANEFHOP). Guide to Pre-cast Concrete Slabs (ANDECE). Practical Guide to Environmental Qualification (Andalusian Regional Government). Article: History of concrete (Polytechnic University of Cartagena). Gonzalo Benítez Villanueva TFG (Polytechnic University of Madrid). ARCO MET7. EcuRed. HISPALYT.

About Frumecar:

Frumecar is a Spanish company dedicated to providing manufacturing, transportation and digital technology solutions for the concrete industry, worldwide.

At Frumecar, we offer our customers comprehensive solutions with a wide range of products and services: concrete batching plants, concrete mixers, recyclers and our Intelligent Systems business line (a set of state-of-the-art digital tools for plant and fleet management)

Our goal is to offer concrete producers high-tech solutions that make their business more profitable and efficient, therefore all our production processes are optimised, integrated and automated to make them as cost-effective and high-level as possible.

We are dedicated to getting you prepared for all the changes that digitalisation brings to the concrete industry. Quality, constant innovation and service vocation are our fundamental pillars.



C/ Venezuela P, 17/10
Polígono Industrial Oeste
30169 Murcia - SPAIN

+34 968 890 000

frumecar@frumecar.com

frumecar.com