



HOW AN ARTIFICIAL TURF PITCH IS CREATED

MondoTufting Production Plant in Borja

Inauguration date: 2002

Indoor Surface: 16,200 sqm

Turf
(Spain)

Those who manage a [football pitch](#) with **natural turf** know it very well: **maintenance costs** and **risks** due to weather conditions are **enormous**, which can prevent the ability to taking full advantage of an investment of this magnitude. The situation changes dramatically when you choose to use **artificial turf**, because of on one condition: the turf has been produced and installed by those who understand and can provide the customer with the best of their knowledge in the field. **Mondo** has proof it can do all this due to their **65 years of experience** in manufacturing rubber flooring surfaces.

THE ADVANTAGES OF ARTIFICIAL TURF

An artificial turf pitch made properly can offer performance identical to those of a natural grass pitch, while offering additional benefits: **durability**, **low maintenance costs**, significant **savings in water** and **no limits related to extreme weather conditions or heavy use**. How is all this possible? To tell us about it is **Mondo's artificial turf Research and Development Manager Manuel Testa**. "There are years of research behind the production of a single fibre of artificial turf. Mondo has always had a passion: **approach the production of their surfaces on all aspects**.--This means searching for and selecting the most suitable raw materials by **contacting the manufacturers directly** (not retailers), analysing in depth the characteristics of the materials and developing unique formulas to have total control at every stage of the production process. "

THE BORJA PRODUCTION PLANT

The analysis, research and production of artificial turf surfaces are concentrated in a single plant: that of **Borja**, in Spain. This is where the **Mondoturf FTS3** system is created, consisting of the latest generation of **fibre 4NX**, the **Fine Tuned Panel**, sand and **Ecofill** infill.

It was a hot July day when we decide to fly to Spain where we were welcomed by the plant manager Luis Cerdan. "The site covered an area of 6,000 square meters when it opened in 2002, but now occupies 16,200. Here we produce **20 different types of fibre that we export to 60 countries**" he explained.

Our journey to the discovery of artificial turf could not have started better. Luis Cerdan knows every corner of the plant, greeting each worker that we met with familiarity and stopped several times to discuss, advise or share a quick joke. "They are our people - he explains - and even if this is all

automated, the human factor is invaluable". After all, a football pitch is also a stage of life and it is reassuring to know that a never ceasing human path is at the basis of its creation.

STARTING FROM THE INGREDIENTS

Behind the simple bounce of a ball on an artificial turf surface lies a very complex task. "The work begins with the **selection of raw materials** - says Manuel Testa. - Our R&D department conducts a **series of tests** to study the behaviour of the various components. Once the right ones are found, mixed in the correct doses, the actual production can start. But it's a bit like what happens with cooking: even if two chefs have the same ingredients and the same instrumentation, they will always produce different dishes, because they are the ones that make the difference. Making the difference in our case, compared to other manufacturers, is **Mondo's enormous wealth of experience**."

TWO LABORATORIES

A **chemical laboratory** and a **technical laboratory** were created in the Borja plant. These are two key areas dedicated to specific tasks. The first performs **quality controls on the raw materials** and studies their characteristics. The second deals with the physical tests on the materials produced. Testa shows us the equipment and runs his hands across samples of artificial turf with the expertise and passion of a craftsman. "Thanks to the technical laboratory we are able to study the behaviour of our turfs before starting the final production. Thus we can correct the tension if we notice that something isn't quite right. **Our machines are the same as those used for the certification testing of federations**, this results in a considerable saving of time waiting for results, because we perform the tests in-house. Our expertise and instrumentation are also recognized by manufacturers of raw materials that often send us products to be tested prior to marketing. In this way we are the first to get our hands on innovative materials, with a **substantial competitive advantage**."

THE PRODUCTION PROCESS, THE BIRTH OF THE FIBRE

The production of an artificial turf surface follows a very rigorous path. After controlling the raw materials, we proceed with the **dosage of the ingredients** for the production of the fibre. For this purpose Mondo uses a **gravimetric dosing system** that guarantees the same dosages every time, eliminating any human error. The doser slowly mixes the ingredients (polymers, dyes, stabilizers, etc.). The mixture then passes into the hot **extruder** that transforms the compound into a fibre and places it in a **cooling tank**. "The fibre is then dried and ironed, - explains Testa - but its structure is still unstable and so we are able to **intervene on the molecular orientation** to impart specific characteristics. If we were to produce a fishing line, therefore with a high tear-resistance, we need perfectly aligned molecules, like a kind of chain. That line would also be easily divisible in its length, because the bond between one chain of molecules and another is weak. However, the fibre for a football pitch receives stresses from all angles but is never pulled. For this we give a cross-linked orientation to the molecules which allows to bond them together better and withstand the stresses of boots and ball."

THE CREATION OF THE COILS

The fibres, gradually brought to room temperature through a system of rollers, arrive to the **winder** that in groups of six or eight (depending on the product to be produced), twists them slightly on themselves to compact them into a single fibre and winds them around cardboard cylinders. "Once the pallet is complete - says Testa - the coils are transported to a machine that performs the **tufting** or rather the stitching of the fibre on a sheet called the **backing**". Each coil contains approximately **7 Km of fibre**. Controls are performed on the semi-finished product during this phase that allow to verify, once again, the quality of the material produced.

THE TURF TAKES SHAPE

Once stitching is completed, an **adhesive** is applied under the turf to permanently secure the blades of grass. The operation, performed hot, is fully automated and utilizes a glue whose formulation has been developed in the Mondo laboratories. "We like to have total control over what we produce - says Testa with pride - we never leave anything to chance, not even the glue". After fixing the tufts of grass, the turf is perforated at regular intervals to allow the drainage of rain water, after which it is rolled, closed and ready to be transported to its destination. On average, **30-35 rolls** are needed for a **normal artificial turf football pitch**, each of which covers an area of **240 square meters**.

LAYING THE SURFACE

Mondo's work does not end with the production of the surface. Once transported to its destination, the turf is unrolled and installed by workers who have years of experience and hundreds of installations under their belts. "Since 2002, our factory has produced more than **21.3 million square meters of surfaces**, equivalent to about **3,000 football pitches** - explains Luis Cerdan. - But we also produce surfaces for **tennis, paddle, rugby** and landscape grass".

"The installation accuracy - says Manuel Testa - is also measured by the ability to unite the edges of the various rolls. Our workers always keep the same distance between two tufts of grass over the entire length of the seam that are completely invisible once the work is completed". But the pitch is not finished yet. The surface must be **filled with performance rubber and sand** in order to keep the blades of grass upright, give uniformity to the surface and ensure the technical features that make **Mondoturf FTS3 system** one of a kind.

ADVANTAGES OF THE MONDOTURF SYSTEM

The production of an artificial turf surface is fascinating without a doubt, with research, passion and the desire to overcome ones limits contributing to



its creation. But what are the practical advantages of a surface like this? Firstly, a pitch created with this technology can stand up to **1728 hours of play per year, compared to the 200 hours of a natural grass pitch**. Reduces water consumption by 90% and requires minimal maintenance, significantly reducing management costs. "Despite the excellent performance achieved - commented Testa- the studies in our laboratories continue unabated". So what does the future hold? "We are studying new totally natural materials that will further reduce the environmental impact of our surfaces. But this is a secret!" he adds with a smile.





