AMORIM NEWS

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The cork oak forest: a forest 4.0

Georeferencing - from estate to estate, tree to tree, plank to plank - enables traceability up until the final product. Mechanisation of the cork harvesting process through the introduction of a cork harvesting machine that offers ultra-millimetre precision. Automation of cork handling operations between harvesting and packaging in the industrial park, which will reduce the number of people involved in piling, stacking and loading activities. Modern transport mechanisms, automated lines for choosing the raw material, sophisticated mapping of the cork planks using robotisation, laser reading, artificial intelligence, machine learning and optical vision. This is the cork oak forest: a forest 4.0

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The three main strategic vectors that define Amorim Florestal's mission are a constant search for operational efficiency in its industrial operations, product quality and business sustainability through the supply of raw materials over the short, medium and long term.

After several years of research into innovative processes in the treatment of cork discs for stoppers, our product quality procedures are now completely aligned with Corticeira Amorim's aim of guaranteeing ND (Non-Detectable) performance in all stoppers supplied to the wine market.
Amorim Florestal's ground-breaking advances over recent years are based on a permanent culture of continuous improvement and the introduction of technology in eminently traditional processes, underpinned by human experience. The company aims to expand and deepen this approach in all phases of the value chain, in order to continue to play a leading role in technological innovation and the operational efficiency of the cork extraction and preparation processes.
Notwithstanding the advances fostered by the introduction of innovative equipment in the cork harvesting process, and the introduction of algorithms, machine learning technology, robotisation and optical vision in the qualitative selection of cork, over the very short term, the search for operational efficiency should be included within the company's digital transformation agenda. This can be achieved by ensuring the connectivity of all links in the value chain, as a data-driven organisation for decision-making processes, the introduction of artificial intelligence in industrial processes and, among other factors, the agility of sustained intervention based on real time information.
In a market context of growing demand for cork products, due to general perception of its ecological credentials, high performance, durability and its contribution to sustainable development, it is essential to develop a medium and long-term strategy to ensure the production of more and better cork, as a way to leverage the current outlook and future growth of the industry.
To this effect, Amorim Florestal launched a Forestry Intervention Project (FIP) a few years ago.
The first vector, and the core foundation of the FIP is to generate greater knowledge about the cork oak tree as a way to ensure the quality of the raw material. In this context, Amorim Florestal is implementing an ambitious programme for production of extra-quality cork oak trees, based on prior selection of trees whose phenotypic characteristics are adjusted to the various forestry locations, in parallel validated by identification of the respective genetic markers, and finally reproduced on a large scale using micropropagation and somatic embryogenesis techniques. In order to foster greater knowledge about the cork oak tree, combating pests and diseases is also a fundamental element in the production of high-quality cork. In 2021, in addition to permanent accumulation of knowledge, Amorim Florestal aims to find a solution for the large-scale treatment of the pest, *Coroebus Undatus* (The flathead oak borer).
FIP's second goal is to increase cork production through good forest management practices in existing areas of cork oak forest, and the introduction of a new silviculture model based on greater densification of the cork oak forest and incorporation of a drip irrigation system. This will make it possible to shorten the production cycle and, consequently, increase the economic profitability of the subericultural activity and cork production.
As a way to sustain and promote this new silviculture model, Amorim Florestal intends to expand its activity to forestry production, and thereby contribute to a change in the forestry landscape in Portugal.

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Corticeira Amorim unveils its new corporate website

Corticeira Amorim has just launched its new corporate website (www.amorim.com). Accompanying the ongoing rapid digital transformation, the renewed website offers easy, instant and intuitive browsing.

Optimised for different devices, desktop, tablet and mobile, Corticeira Amorim's website is geared to respond to the needs of different stakeholders, including customers, partners, suppliers, investors and journalists.

Totally redesigned to provide prompt responses to the diverse challenges posed by the digitalisation of business activities, the new website has an impactful look & feel, powered by attractive images, graphics, illustrations, animations and online videos. These characteristics are complemented by a strong editorial component that combines innovation, nature and people. Corticeira Amorim's website also has a reinforced human dimension, including personal stories, testimonies and real-life experiences, as a counterpoint to the accentuated technological element. Solutions such as social media sharing mechanisms, advanced search, a good user interface, oriented to user experiences, 100% mobile responsive and browsing trackers make Corticeira Amorim's new corporate website a contemporary, dynamic and rapid infrastructure. This bilingual website (PT | EN) includes content about the Amorim Group's genesis and business evolution, together with information about cork and the cork oak forest, the various business units, innovation and sustainability, new initiatives and projects, and applications and solutions. All framed within the context of Corticeira Amorim's vision, mission and values.

ASPORTUGUESAS launch augmented reality application

ASPORTUGUESAS, a new footwear concept that uses cork as the main raw material in its production, recently launched an AR try-on application. This technology, which reinforces the presence of the 100% Portuguese brand in the digital universe, allows customers to virtually try-on all products using Augmented Reality. The IOS application aims to offer a real, effective and on-time experience to consumers, while trying to mitigate the differences between online and offline purchases.

The process is simple: just choose a pair of ASPORTUGUESAS from the list of 3D models listed on the brand's website or in the new application, point the camera of the mobile phone or other electronic device at one's feet, and the user will immediately see how they look when worn. The effect is instantaneous, and can even control any slight movement of the user's feet. In addition, the AR try-on app is prepared to follow the consumer's footsteps, automatically by changing the camera angle.

ASPORTUGUESAS, officially launched in March 2016, combines innovation, creativity and sustainability. Produced from cork, a 100% natural, ecological, renewable, recyclable and reusable raw material, ASPORTUGUESAS currently incorporate other materials, that are also ecological.

An example of the full adoption of circular economy practices in the production of ASPORTUGUESAS includes an upper made from recycled plastic, recovered from the oceans. Kyaia's decision to enter this joint venture with Corticeira Amorim in 2017 made a decisive contribution to these developments. ASPORTUGUESAS are now available worldwide, including throughout the United States of America, Canada, Japan, South Africa, Philippines, Australia, South Korea, New Zealand, China, Israel, Russia, Dubai, Hong Kong, Taiwan and Barbados, in addition to the entire European continent, ASPORTUGUESAS also seeks to alert citizens about the planet's environmental issues, contributing to a *positive footprint* for a more sustainable future.

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We have not yet managed to harmonise the interests of ecology and the economy

Researcher and full professor Miguel Bastos Araújo is a specialist in biogeography and the impact of climate change on biodiversity. In this exclusive interview, he discusses the financial mechanisms for protecting biodiversity, which can work with a model similar to the carbon market. The 2018 Pessoa Prize winner also warns about the complexity of the environmental crisis.

An issue that often goes unnoticed by most people is the link between biodiversity and climate change. How would you explain the importance of this relationship to non-specialists?

There is a perfect interaction between the two. On the one hand, the climate controls the amount of energy available to enable ecosystems to function, thereby affecting the quantity and quality of biodiversity that may exist in each location. On the other hand, biodiversity shapes the climate by affecting the regional dynamics of the atmosphere, the carbon cycle, water cycle and amount of sunlight that is absorbed or reflected into the atmosphere. In this way, correct management of nature and biodiversity can constitute an important ally to help mitigate ongoing climate change.

As a biogeographer, what would you highlight about the cork oak forest, and its importance for the Western Mediterranean Basin, and, in particular, what is its relevance in terms of ecosystem services?

The cork oak forest is an Iberian savannah - one of the least fragmented and richest biodiversity ecosystems in southern Europe. Unlike the African savannah, whose dynamics are controlled by large wild herbivores and carnivores, cork oak forests are maintained by domesticated herbivores and managed by man, in order to generate products that have tradable value. However, the savannah and the cork oak forest are functionally similar and both are essential for the preservation of the biodiversity in each of these territories.

The so-called biodiversity decade (2011-2020) fell far short of expectations, and none of the Aichi biodiversity targets were achieved in full. Why did this happen and what do you expect for the post-Aichi period?

I think it will be difficult to counter the idea that biodiversity has been moving away from political priorities for decades, and that many investments have been made that contradicted the actions which are necessary for biodiversity conservation and promotion. More specifically, there are three core problems that have been identified to explain the failure to attain the Aichi targets. First, the multiple dimensions of the concept of biodiversity. Biodiversity represents all the biological variation that exists in Nature, but it is a difficult property to measure. As such, it is difficult to communicate the intended objectives and even more so to monitor the success or failure of the proposed measures. Secondly, and despite the fact that different

countries have committed themselves to specific measures and targets, the necessary monitoring and control mechanisms have not been created. So a large amount of the homework remains to be done in 2020. Finally, there is a more complex and structural issue. We have not yet managed to harmonise the interests of ecology and the economy. For most people, conserving biodiversity is therefore viewed as an opportunity cost for economic development. I would say that resolving this obstacle is the biggest challenge ahead.

You coordinated the 2030 Biodiversity study. What is the objective of this scientific work and how can it be articulated with political decisions?
The study aims to help the Portuguese government to define priorities for the national biodiversity policy for the period until 2030, while assisting the Portuguese teams that will accompany the biodiversity dossiers during the Portuguese Presidency of the European Union (PPUE) and in the 15th Conference of the Parties to the UN Convention on Biological Diversity (COP15), that will be held in China at the end of 2021.

What are the main action lines of this study?
The study is divided into five essential action lines: biodiversity and climate; biodiversity and territory; biodiversity and coastal and inland waters; biodiversity in the oceans; and biodiversity and people, with an emphasis on the financial mechanisms that underpin biodiversity policy.

One of the most daring proposals in this study is the creation of a mechanism that will remunerate ecosystem services, similar to that which exists in the carbon market. How would it work and what would be its immediate effects?
It is still premature to disclose the details since the work is expected to be completed in November 2021. But the problem we aim to address is, on the one hand, internalisation of biodiversity degradation costs within economic activity and, on the other, remuneration of economic activities that generate biodiversity benefits. It is about correcting market failures which encourage activities that have a negative impact on biodiversity, while activities that are beneficial for biodiversity have difficulty in affirming their viability, even though they generate non-monetisable positive externalities, in the form of environmental services on which the functioning of society depends.

Has this model been implemented in other countries?
The idea does not differ substantially from the principles that underly the carbon market, but there are few cases where this has been applied to biodiversity. We know of examples in Australia and Finland, and it is possible that there are others that will be identified and reviewed in our work. The principle is very simple and can be illustrated with an example. If a manager of a territory creates natural capital as a service provider of pollination, e.g. managing areas of autochthonous vegetation that favour pollinating insects, the manager of a territory who simplifies the territory, by sterilising it with insecticides that destroy pollinating fauna, will have to pay an amount that is proportional to the resulting degradation. This amount will be used to remunerate managers who create value for biodiversity, among other benefits, that an intensive manager needs for his crops. If these mechanisms are effectively implemented, the economic signal given to the manager of the territory must be sufficiently forceful to encourage him to adopt more sustainable practices. This is a matter of attributing a monetary value to the degradation of biodiversity and its associated services, thereby altering the sums made by people who haven't yet realised that destroying the natural heritage can be expensive.

Ten years ago, Corticeira Amorim lifted the veil on this topic, by launching a study on the positive externalities of the cork oak forest. What role do companies play in raising awareness? Can the private sector be a driver of change?
Undoubtedly. The environmental crisis poses an unprecedented level of complexity and its resolution implies convergence between all actors involved. In some cases, citizens place pressure on States which in turn place pressure on the private sector to reinforce their sustainability standards. There are also cases where a section of the private sector is one step ahead of citizens and the States themselves.

When we think about the scale and severity of the climate crisis, we tend to be pessimistic. Is there still time to reverse the cycle? How?
We must be aware that the timeframes involved in climate change processes are reversible but within time scales that transcend the programming of human activities. For example, assuming that we would not be able to meet the targets of the Paris Agreement, which are not trivial, the levels of CO2 concentration are reversible, but within time scales ranging from 100 to 300 years. However, the rising sea levels, resulting from the melting of the glaciers, can only be adjusted within a time scale of thousands of years. When we insist on the need for energy transition and decarbonisation of the economy, the objective is to avoid more serious mismatches within the climate system. Because we know that once the process of climate change gets underway, it lies beyond our will and ingenuity to stop it.
The degradation and simplification of biodiversity is recoverable on scales that are even more intangible to us. In previous mass extinctions - there have been five, before the current one - it took several million years to recover levels of biodiversity comparable to those that preceded the extinctions. On the other hand, the biodiversity that evolved from mass extinctions has always been very different from the previous one. We could say that they are Pandora's boxes that shouldn't be opened carelessly, because once the ensuing processes are unleashed, we don't know how to stop them or what the final result will be.

The cork oak forest

A FOREST 4.0

If the cork oak forest is a forest with a future, it must be underpinned by technological innovation, at all levels of the production chain. From cork harvesting to preparation of the raw material, a portrait of this ground-breaking process, which is radically reconfiguring the cork industry from the bottom up.

Over the last 150 years, the processes inherent to cork harvesting and the industrial processes related to preparation, selection and treatment of cork have always been done in the same way. Cork was always removed with an axe, and the cork plank was removed by hand, loaded onto a tractor, and selected by taking a "slice" from each plank to analyse it with the naked eye. In summary: from extraction to entrance to the factory, cork has been processed solely via manual processes, whose modus operandi has remained constant over the last 150 years. In this context, any technological intervention would be disruptive by definition. The world has changed. And even in the imperturbable cork oak forest, some significant changes have taken place.

For an organisation like Amorim Florestal - which, while supporting the cork oak tree, forest and forest production, has the mission of guaranteeing supplies of more and better cork to Corticeira Amorim's other units - it is important to question why this process has always been like this, what it means, and the potential for innovation.

The other driver of innovation is necessity. As Paulo Américo, the CEO of Amorim Florestal, explains, "there is a permanent search for operational efficiency and this leads us to search for working methods that are more efficient and more effective, leading to cost reduction. It is critical to ensure that part of these efficiency gains can somehow be transferred to the forest producer, resulting in an increase in profitability for those who produce the raw material."

Geo-referencing tree-to-tree

There are currently 10,000 estates in the Iberian Peninsula that have cork oak forest areas classified by Amorim Florestal. This means that today, in terms of information management, Amorim Florestal has already classified the location and size of each estate, the harvesting year, and the forest producer's profile. The next step, which hasn't yet been implemented, is the traceability of each cork plank to the final product. This is the challenge and the point where the technology, which is still in development, can be totally disruptive. The plan is essentially to introduce technology that enables information to be managed not at the level of the estate, as is currently the case, but that can be applied to each cork oak tree, or, if we want to go even further, to each cork plank. Today, in a estate with 5000 cork oak trees, the quality of the cork is assessed using a sample of 150 trees, which is then extrapolated to the whole. If there has been a history of transactions (for example, cork that was purchased from that estate in the previous cycle) the information will be fine-tuned a bit more. But it continues to be an estimate, and is insufficient. In order to improve the purchasing process, it will be necessary to build a much more powerful database, which changes the reference from the estate to the tree and from the tree to the plank, while simultaneously introducing traceability that delivers information throughout the entire process, from plank to plank. This is the goal, and the challenge underway.

The mechanisation of cork harvesting

After completion of the purchasing process, we enter the second phase of the value chain, where technological innovation plays an increasingly decisive role: the moment between harvesting the cork and its entry into the factory. Pilot programmes have already been implemented on the ground. One of the principal objectives of technological innovation at this level is to reduce the number of operations, through consolidation. Diagnosis of the current situation: cork is handled ten to eleven times, from the moment that it is harvested from the tree until the start of the manufacturing process of the stopper.

Cork has been harvested in the same way for hundreds of years, requiring millimetre accuracy, so that the axe only penetrates by exactly the right amount, without touching the inner bark, and therefore without damaging the tree. On the basis of a prototype that required further refinement, Corticeira Amorim continued a project with a €200,000 investment, which has made it possible to produce an extraction machine that introduces mechanisation of cork harvesting. This machine, that has been patented, incorporates humidity sensors that enable advance detection of the moment when the blade is about to reach the inner bark (which has a different moisture content from the cork) and stops the cutting process in order to avoid injuring the tree. Ultra-millimetre precision.

Over recent years, the equipment has been tested and optimised, and has been received with great enthusiasm by forest producers. It is now possible to introduce the technology within the cork harvesting process. The objective is to extend this mechanism to all forest production. In other words, within two to three years, we will pass from the current 10% to around 60-70% of all cork purchased by the industry that will be extracted using this technology. Amorim Florestal is investing in this equipment, and is assuming part of the costs associated to introducing the machines in the cork harvesting process. It is estimated that introduction of this technology will enable forest producers to reduce their operating costs by between 25 and 30%. This machine also democratises the type of manpower that can be used in the cork harvesting process, while ensuring even greater precision, and therefore protection of the cork oak tree. After the cork is extracted, while still in the forest, it must be collected, loaded, stacked, and once again loaded in a truck. All of these cork handling operations are currently achieved manually. The idea is to introduce new technology that makes it possible to move from the cork plank unit to the "bale" unit, using a press for the cork planks that will optimise the transport from the forest to the cork yard. In addition to this technology, a loader has also been introduced that increases the efficiency and safety of the cork loading process. This giant shovel (which looks like a bucket) makes it possible, with extreme rigour and even delicacy, to move 1500kg of cork and place it on top of the truck, without breaking any of the planks. The tool is developed and is being tested to be used in the next harvest. "We believe that these two innovations can offer a very important breakthrough in the process and in the sector", summarises Paulo Américo.

Automated cork selection line

After being loaded onto the truck, the cork is transported from the forest to the cork yard. Amorim Florestal currently has 1,100,000 m2 of cork yards distributed across the Iberian Peninsula, which is a good example of the scale of the process. Cork requires space in order to stabilise (on average this takes one year). Technology plays a fundamental role in how operations are carried out within this immense space. The process of separating the cork (cork for natural cork stoppers, for discs and for granules) begins in an open-air cork yard. This is the first step in a more elaborate selection process, where important advances in terms of truly breakthrough automation processes are being introduced in the sector.

At the same time that it improves the efficiency of operations, the technology delivers important improvements in people's working conditions, since the cork yards are located in places such as the Alentejo, which have major thermal amplitude and where people work in the open air. Currently, the workers have to go to the cork, i.e. the working teams go to each pile to select the cork planks, one by one. The process that is currently being set up, to be implemented in August this year, reverses this logic: the cork is transported to the worker, using a mechanised cork selection line, where an optimised transport mechanism carries the cork piles in different points of the yard to the separation belt. In other words: operations in the cork yard are centralised in a single point, through the introduction of a mechanised and automated line and modern cork transport mechanisms.

This belt delivers obvious gains in terms of efficiency, control, work rate and ergonomics. Cork travels to the worker, who simply has to select it. All the tests conducted to date indicate very significant productivity gains.

Sophisticated mapping of the cork plank

We then advance to the final stage of the cork selection process, which was traditionally achieved manually (so-called "tracing") involving an operator who qualitatively classified each plank, evaluating its characteristics in terms of thickness and porosity. This manual process has now practically disappeared, and has been replaced by automated, mechanised and state-of-the-art production lines with a laser reading of each cork plank, that determines the calibre of the cork with surgical precision, and 100% reliability, throughout its entire length. The entire plank is mapped completely, to the point that, if there are two different thicknesses on the same plank, it can be cut and separated into two different categories. This technology also makes it possible to move towards a qualitative classification of cork (in terms of its porosity, yellow stain, number of holes, clay) which enables us to ensure complete reliability. All of this sophisticated mapping is achieved through algorithms, machine learning technology, robotisation and optical vision, which provides a complete view of each cork plank. Combining all these parameters, based on objective criteria, a degree of classification efficiency of the planks is attained - from 70 to 80%.

But it doesn't end here. At the end of this mechanised line, there are specialised operators who check the selection made by the machine. Workers who confirm or recorrect the assessment of the 20% of planks that the machine still cannot classify correctly. As so often occurs in an industry such as the cork sector - which works with a unique 100% natural material - the extremes meet. Man and machine collaborate to help cork attain its full potential.

In other words, despite the introduction of this cutting-edge technology, there is still an important degree of subjectivity in the entire process. The variability in the quality of the cork throughout the plank (a large reading surface) is a challenge for the machine / algorithm. The machine can't yet respond to all fields, despite all the technology that is available and the undeniable benefits that it brings.

(...) The entire plank is mapped completely, to the point that, if there are two different thicknesses on the same plank, it can be cut and separated into two different categories.

The unstoppable digital transformation

Corticeira Amorim has a firm commitment to digital transformation, which has gained new momentum since 2015 through implementation of MES (Manufacturing Executing Systems) in all its business units. This huge challenge arose from the need to create an integrated system, that would be capable of linking the production process, at the base, to the ERP (Enterprise Resource Planning) systems, in particular the SAP, at the top of the pyramid. A common language that optimises the transparency of processes, supports decision making and improves efficiency.

Amorim Florestal is where it all began, as Corticeira Amorim's first unit to implement the MES system. As Amorim Florestal's CFO, Marco Castelo, explains, MES enables data collection to be automated by giving management "more information to be able to make more and better decisions". Currently, in Amorim Florestal's cork disc section, all equipment is connected and automatically records production and consumption. This makes it possible to ensure that stocks remain up to date, and thereby take better decisions. This process offers great benefits, the most immediate of which is that there is no longer any need to do so-called "month-end closing process", because the inventory is controlled practically, in real time. Another positive aspect of the MES is not only that it collects information, it also shares it with those working on the ground, in real time. At Amorim Florestal, various devices were installed on the factory floor that monitor production activity in real time and allow operators to "know which machines are working well, and which are not and which machines are producing," explains Marco Castelo.

At Amorim Cork, more than 100 km of network have been implemented in all units, and over 1,000 machines connected to implement a system that brings a competitive advantage to the company. Amorim Cork has now implemented the MES system in eight units in Portugal and four units abroad (two in the United States, one in France and one in Italy), and the shop floor management tool will soon be in operation in Catalonia. In the words of Luís Gonçalves, the executive in charge of Digital Transformation "the transition from the previous system of manual recording to online recording, practically in real time, has been a tremendous challenge". Prior to implementation of the MES / SAP, the only way to compare the records with the actual situation in the factory was to produce a monthly inventory, that was subject to human error and frequently revealed deviations.

Real-time information

Today, thanks to the MES, the information is much more accurate and transparent. At Amorim Cork's factories, operators enter the records (for example, how many stoppers are produced on which machine) into the MES system, in kiosks distributed around the shop floor. After 15 minutes, i.e. practically in real time, this information is available online, in the SAP, where it can be accessed and analysed. At present, similar to the situation in progress at Amorim Florestal, Amorim Cork has already entered the project's second phase, which consists of democratisation of information - through the installation of dashboards on the factory floor - to place it "at the company's service". The integrated system was also recently implemented at Amorim Cork Composites - in July 2020, in Portugal, and in January 2021 at a company

unit in the United States. Referring to the overall Group, the project director, Miguel Martins, believes that the introduction of "a single and integrated system", like the one that exists now, is fundamental: "in order to be able to embrace a new ambition". This new system, together with the MES, makes it possible to have a "more integrated vision, more efficient processes and greater visibility, that allows us to have a more analytical perspective of the business". It is easy to realise the magnitude of this operation in a company such as Amorim Cork Composites, that has a tremendous level of diversification of products and materials (with more than 19,000 different references in the systems at present). "The fact that we have the greatest number of products, the greatest diversity, the greatest number of different industrial processes, massively complicates the entire operation and somehow justifies the additional time that we will need in order to reap all the benefits", sums up Miguel Martins.

Although the process is still in the beginning, the overview is extremely positive and important benefits are expected in the future, in terms of intercompany transactions, the visibility of all processes and freeing up time for people to perform more analytical and less transactional functions.

Change management

Amorim Cork Flooring was the last unit to begin the transformation process. The fact that it came last brought various advantages, as explained by Rui Fernandes, the executive in charge of implementation of MES / SAP in the unit, because he was able to learn from the experience of the other units and anticipate problems. He stresses the importance of "change management", which at Amorim Cork Flooring includes organising internal sessions. In terms of the MES, the level of automation at Amorim Cork Flooring is already highly advanced, and a large proportion of the factory has automatic registration (direct connection between the system and the equipment), which introduces tremendous reliability in the counting processes. With the new systems in place, it is possible to focus on the processes and fine-tune all necessary details, in order to reap the maximum benefits. That is now the team's main focus. In the opinion of Rui Fernandes "one of the main benefits is clearly the issue of transparency, which is now available, at the same level, for everyone. Another advantage is the huge amount of data available. We now need to digest all this. And correlate the data".

Green message in a stopper

It began with our natural stoppers, and was then followed by sparkling wine, micro-agglomerate and bartop stoppers. All Amorim Cork product families have now been certified with a statement of their negative carbon balance. This offers a significant competitive advantage over the competition. The first CO2 certificates for operations were issued six years ago, unprecedented in the industry, and only for the best customers of natural cork stoppers.

The CO2 certificates of operations provides customer with information on the carbon balance of all cork stoppers purchased from Amorim Cork. This project - one of the candidates for the Corticeira Amorim 2020 Sustainability Awards - has a much greater ambition, expanding its reach, relevance and impact. The idea is to leverage this competitive advantage. To achieve this goal, it has been essential to achieve direct involvement of sales teams worldwide, and thousands of customers, in the dissemination of relevant information regarding the contribution to climate regulation - by Amorim Cork and more than 9,000 customers, who are responsible for the viability of forests.

By involving the sales structures in the USA, Chile, Argentina, South Africa, Australia, Portugal, Spain, France, Italy, Germany and Eastern European markets, it will be possible to share valuable information with customers about the potential for annual CO2 sequestration associated with each of these customers, when they purchase cork products, also including the supporting rationale (available at https://www.amorim.com/pt/sustentabilidade/studies/).

Issuance of these CO2 certificates for operations - it is estimated that 14,000 certificates will be issued this year - allows for a much stronger and wider dissemination of the message of cork's inherent sustainability, a critical theme for any industry, and highly valued in the wine sector. This is a key point in Amorim Cork's differentiation and positioning that reinforces its worldwide leadership, as a benchmark for sustainable development issues and a credible partner to help each customer reduce its environmental impact. Customers proudly mark their stoppers with carbon balance data, thereby registering their positive contribution to the planet.

Wise Recover: on the path of the circular economy

Through the Wise Recover project, Amorim Cork Flooring is strongly committed to the circular economy. Reuse of Hydrocork and Amorim Wise Inspire 700 products, means that it is no longer only waste from cuts and sandings that are reincorporated into operations, but all types of waste. 925 tons of cork per year are reincorporated into the industrial process.

What used to be simply viewed as waste, is now reused and reincorporated in the industrial process. The end is a new beginning. This is the circular economy premise that Amorim Cork Flooring implements throughout its industrial operations, now not only including waste resulting from cuts and sanding, but also using other types of waste, in particular recycling of the Hydrocork and Amorim Wise Inspire 700 ranges, when the product and / or the semi-finished product does not comply with the specifications.
The project began in 2018 at the Oleiros industrial unit and its success and potential has meant that it has been nominated for Corticeira Amorim's 2020 Sustainability Award. At present, this waste is collected at the factory, but industrially the conditions have been created so that the recycling process can be extended to Hydrocork and Amorim Wise Inspire 700 products that have already been installed and need to be replaced. Due to the product's intrinsic characteristics and durability, this extension of the Wise Recover programme is a medium-term project. But it is undoubtedly the next step and the next challenge to be tackled. Everything will depend on the distance between the site where the floor is installed and the factory. In other words, it will only make sense when the floor to be replaced is close enough to the factory so that the carbon footprint associated to the transportation does not cancel out the positive carbon balance that is sought.

Delfim Martins

Manuel Martins

Passion for the Amorim Group

From the cork plank to *business intelligence*, there are three generations of the Martins family working at Corticeira Amorim. This is a large family, from Santa Maria de Lamas, whose experiences and memories are inextricable from the company's own history, and have accompanied its evolution. There are many stories to tell, from the 1960s to today.

The brothers, Delfim and Manuel Martins, joined the company in 1960 and 1963, respectively. Of humble origin and with limited schooling, they were progressively promoted, due to their hard work and passion. Delfim Martins started working in the "planks" unit, before he turned 14, and worked throughout the entire value chain within Amorim & Irmãos until he became one of Mr. Américo Amorim's trusted cork buyers. He travelled around the Mediterranean basin from one end to the other, in search of the finest cork, and is very proud of his career achievements, working "for many years in a row". While some of the family members have in-depth knowledge of the cork oak tree, others have an unparalleled understanding of cork. Looking back at his 53-year career at the Amorim Group, Manuel Martins is proud to have learned "everything there was to learn about cork stoppers. I can go to any part of the world and I'm not afraid to talk about cork with anyone". Like his brother, cork led him to travel around the world. Between 1976 and 2016 he ran Portocork, which led to many unforgettable adventures, for example relocating to Germany without speaking a word of German and being lost at the airport, until he sorted things out himself. His "trouble-shooting" attitude came to the rescue and it is this spirit that he transmits to his successors. That and his team spirit – his passion for Amorim.

Bernardino Martins is the nephew of Delfim and Manuel and is one of the representatives of the second generation of the Martins family working for Corticeira Amorim. Even today he keeps the toys that he received for Christmas, offered by the company to employees' children. At a time of relative scarcity, these toys meant the world to him. Bernardino had completed Year 9 at school, but didn't want to study any more and he got assistance to join the Amorim Group from his father, António Pereira do Couto, who was married to Delfim's and Manuel's older sister. He started working in the planks unit, which was the usual route. That was back in 1980. A great deal has changed in the way that cork has been processed since then.

Inês Martins

Bernardo Martins

Susana Martins

Missing the factory floor

When he was about 20 years old, he had the opportunity to leave the factory and enter the offices of the newly created, Champcork. Bernardino had worked in several positions, and had comprehensive in-house knowledge of the factory, as he himself sums up: "starting with the delivery of toilet rolls to each worker" (one toilet roll was distributed each month to each worker). He was the perfect choice for the Human Resources team. For almost one year, he combined two positions, working more than 10 hours a day, then moved to the office. Today, at 57, and still working for Human Resources, but more distant from the factory, he misses his former close connection with his fellow colleagues, leaving his desk. Bernardino Martins still has many dreams to fulfil, and inside Corticeira Amorim his daughter, Daniela, is following in his footsteps. At Amorim Cork, she has been in charge of the stopper marking department for three years, and is a proud representative of the third generation of the Martins family.

Like her cousin, Bernardino, Inês Martins' childhood memories are closely linked to the Amorim Group. Her father, Alírio - Delfim's and Manuel's younger brother - worked as a driver at the company. When the Christmas presents were distributed, her father transported them. "I remember a little plastic duck with wheels, many games, strollers, wind-up toys and trains", she recalls. Inês is now 58 years old and has worked with the company for 42 years. Her career is exemplary in the sense that she never gives up and always tries to excel. As the oldest of her siblings, she didn't have the opportunity to study as a young woman. Her uncle Manuel helped her join the Amorim Group, where she started cleaning and serving coffees. Then she started working as an operator, and only later did she move to Portocork's quality control / laboratory department, where she still works. Her ascent through the company required major sacrifices. She took advantage of the "New Opportunities" programme to finish Year 12 of schooling and graduated as a quality control technician. All done after the hours spent at work and with two children to raise. She provides a great example of tenacity, dedication and gratitude: "My happiest moment was joining the Group. Everything I learned here, and the amazing people who taught me things, gave me life lessons, guided me to the best paths, the sense of conviviality, people and friendships." Although things have changed, and today there are many new faces at the company, she thinks that it is this family environment that she will miss the most when she retires.

The maths whizz of the Martins family

Susana Martins, Manuel Martins' daughter, has charted a completely different path from her father and uncle. She is one of the maths whizzes of the Martins family. Ever since she was a little girl she dreamt of working for the Amorim Group. An Economics graduate, Susana, 45, is currently in charge of Amorim Cork's consolidation area and Business Analytics area. In other words, she handles numbers, produces data-driven reports and her responsibilities have increased since the implementation of SAP. Susana joined the company at the age of 22, straight from university. She couldn't imagine anything else: "my father's influence was extremely important. He was always proud of his career at Amorim". Although he is now retired, her father continues to live and vibrate with the Amorim family.

The company is the subject of many family conversations. Susana believes that this will continue to be the case: "today the market is completely different from our parents' experience. People stay with the company because they like what they do and feel pride and passion for what Amorim does, and feel involved with the organisation itself, it depends on things like that." In the Martins family, this "passion for the Amorim group" seems to be here to stay. Susana's youngest son, who is only 4 years old, already senses this "curiosity" for Amorim. And although he is still very young, he knows how to distinguish the wheat from the chaff. "When my father opens a bottle of wine, he immediately checks whether the cork has the Amorim symbol and says: "Grandad this one is from Amorim, it's from Mum's company", explains Susana. "If my father opens a bottle with a cork from any company other than Amorim, my son immediately says: "don't drink it". We don't know, because he's only 4 years old. But I see that he has some potential, because he already perfectly distinguishes the Amorim brand." She says proudly, with a big smile.

The revelation generation

Let's call them Generation Y, "millennials" or "digital natives". The name isn't important. It's all about talent, something that these four young employees of Corticeira Amorim are brimming with. Let's call them the "revelation generation", because they reveal their ambition, curiosity, creativity, non-conformity and so many other characteristics typical of their age, which they believe are part of the secret of their success. "I never take "no" for an answer!", says João. "Being open to changes, trying new areas. Don't be afraid to pass on knowledge to others", suggests Ricardo. "Being resilient" is Mariana's motto. "Never lose your passion for what you do, every day", emphasises Joana. Here are the four nominees for Corticeira Amorim's 2020 Revelation Award.

Stocks, algorithms and predictive models

Mariana Jesus Santos is only 24 years old. She is the youngest nominee. Born in Santa Maria da Feira, she assumes that she always had "the ambition to do an internship and work at Amorim". And she succeeded. After studying Engineering and Industrial Management at the University of Aveiro, she began an internship at Amorim Cork Flooring (ACF) in 2019, in which she developed a "centralised stock management" project. She created algorithms that enabled internalisation of in-house management of global stocks. "We tried to create an algorithm for forecasting each article's sales history. The algorithm always gives us a stock level for each item in an automatic and more efficient manner". Mariana's predictive model is now applied globally by Amorim Cork Flooring. Among tables, analyses, references and many numbers, the important thing "is to do what you like, choose an area that makes sense to you and don't do anything just for the sake of it". Upcoming challenges? Perhaps transport logistics. "I've been fascinated by this area since university".

The digital transformer

João Wandschneider Sousa, who won the Revelation 2020 Award, is a digital transformer. What does that mean? He explains: "being a facilitator of the path that we are all following, transforming the Group's needs into solutions that are transversal and allow us to make the most of each person's potential". Working at Amorim Cork since 2017, he rose to prominence due to his role in implementation of the MES and SAP systems, in the Group's various companies, including in France and in the United States, which made it possible "to improve the quality of information and, above all, have visibility almost in real time". When he first joined the company, production records "were introduced into the system on a monthly basis, based on paper records produced by the operators". Three years later, you never even see paper! With a degree in Mechanical Engineering from the Faculty of Engineering of the University of Porto, his principal distinguishing characteristics are his critical spirit, ambition and ability to train and captivate people. Despite his role in working with numbers, systems, formulae and software, the way he describes his role in the company assumes a strong human dimension. Happy with this distinction, he adds that "the people in the group were, and continue to be, very receptive to the enormous change that the new systems have brought, but I would like to highlight those who have more years of experience. It's amazing how easily people in their thirties or forties have adapted to the new reality".

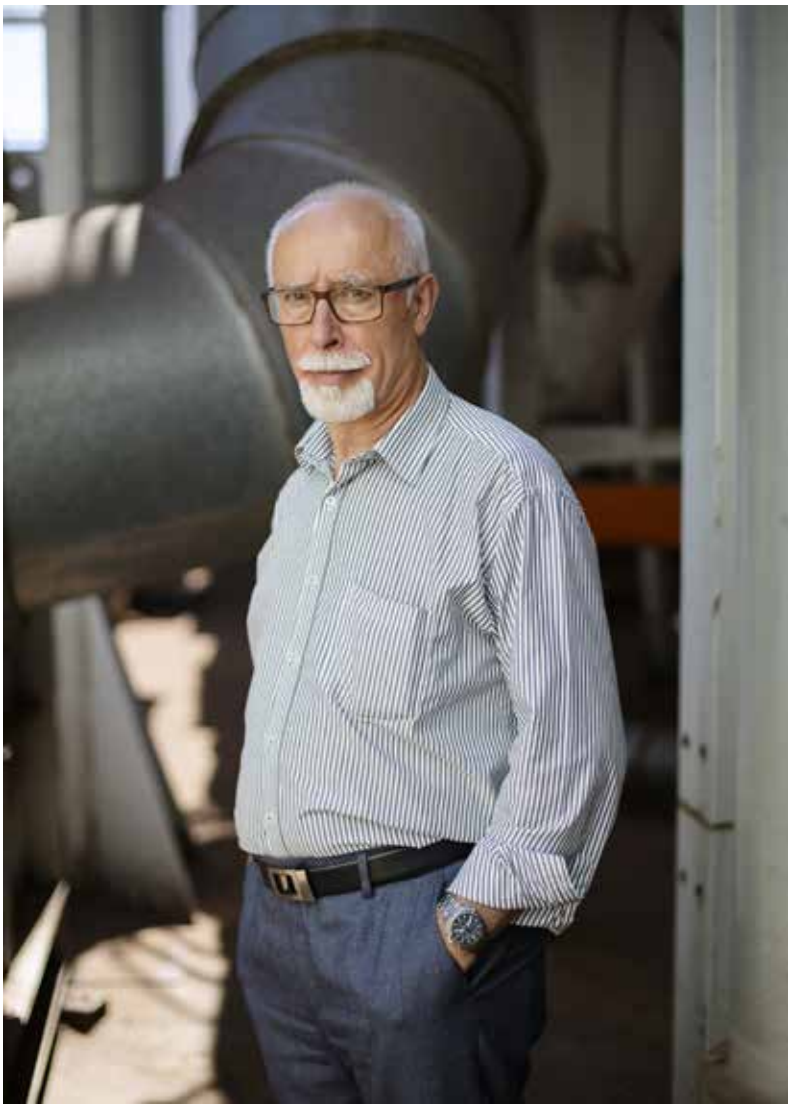
An all-terrain curriculum

Ricardo Brandão was the young employee chosen by Amorim Florestal to compete for the Revelation Award. 30 years old, he is the only nominee who didn't study engineering. He grew up in Santa Maria da Feira, but, unlike Mariana, knew little or nothing about the world of cork. He studied in the Algarve, where he graduated in Biomedical Sciences, but didn't pursue this field professionally. He is currently in charge of production of the cork preparation area, at the Coruche Unit, where he has successfully managed to adapt to all changes, such as implementation of the MES and SAP systems and, more recently implementation of the new automated preparation line, which earned him this nomination. At Amorim Florestal, Ricardo has already done a little bit of everything. He began working in the laboratory in Coruche, "doing research about TCA". A short while later he moved to the Salteiros factory to work with the industrial director. He subsequently left the factory for the "woodlands", to "learn how to evaluate cork and understand how the entire buying process unfolds". He finally established himself as an industrial manager. All of this in the past five years, in which he has also completed a postgraduate degree in management. He has a true all-terrain curriculum, with strong pros and cons. There is no doubt about his passion: "managing 40 people, the whole environment, is very enriching". "Without people, there is no emotion!

Chemistry between people and projects

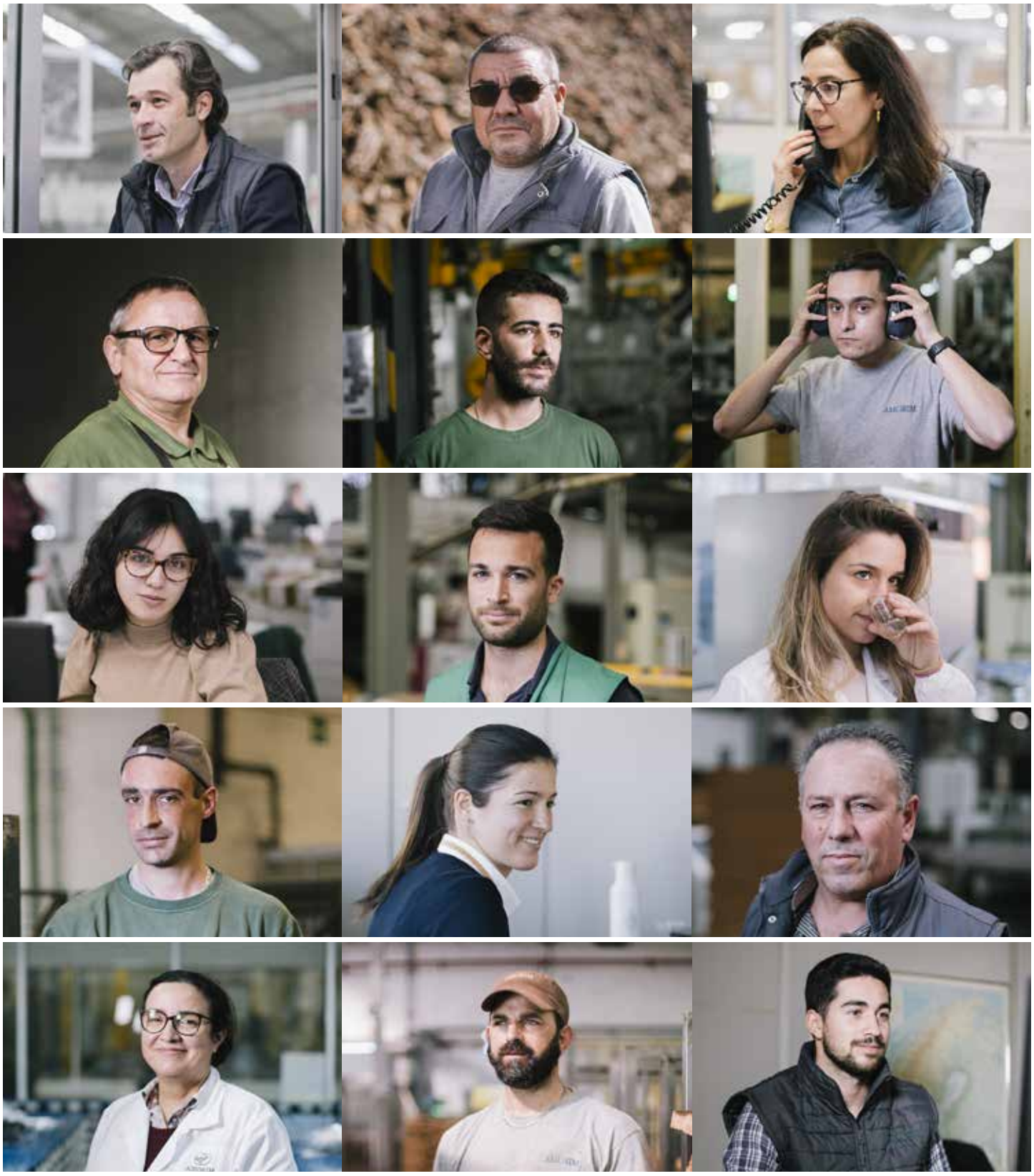
Joana Trindade is the Product and Technical Manager at Amorim Cork Composites (ACC). After completing her BSc degree in Chemical Engineering from the University of Porto, she joined the company in 2019. She isn't yet 30 years old, but she already has a long curriculum, including a master's degree in Catalysis from the University of Munich and work at Procter & Gamble. She quickly stood out due to her technical ability, and high market and customer orientation. But the main reason she has been nominated for the Revelation Award is because of her role in the projects, Corkeen and Amorim Sports, Amorim Cork Composites' most recent joint ventures in the construction area. Despite all the technical aspects involved in her role, the chemical engineer admits that she is passionate about project and people management, a passion that she believes is a big part of the reason for her success as a professional and the area that she would like to increasingly dedicate herself to. She leaves a word of advice to the other potential "young revelations" who may be reading this: "everyone leaves university with a greater or lesser amount of knowledge. There has to be enthusiasm, capacity for delivery, passion for work. These are the most differentiating characteristics". Perhaps it is this vision that makes Joana, in the eyes of Amorim Cork Composites, "a true ambassador for the company and cork".

Fernando Oliveira: the ambassador



Fernando Oliveira, Amorim Cork Composites' sales director, won the 2020 Career Award for (almost) 50 years of work, dedication and delivery to Corticeira Amorim. Unanimously considered to be one of the principal executives responsible for the Amorim Group's expansion in Asia, Fernando Oliveira was based in Bangkok, Thailand, for over 10 years, where he made a huge contribution to the increase and diversification of sales of cork in the Asian market. "I was Amorim's ambassador to Asia. Everyone contacted me for any matter: 'Do you know this firm? Do you know this contact?" Fernando Oliveira joined the Amorim Group, in 1971, as a young man. In his early years with the company he was impressed by "the spirit of unity that existed between the four brothers" of the family's third generation: José, António, Américo and Joaquim. "I think that was what led to the growth and expansion of the Amorim Group. Because we know that, as a rule, companies tend to collapse or dissolve due to rivalry between brothers or partners". He was also surprised by "their dedication to work, without any ostentation, as if they were normal employees. Mr. Américo did not eat in the directors' restaurant - he always ate with everyone else in the canteen", he recalls, emphasising one of the Group's main values: humility. Looking back, he recalls the intelligent rendezvous meetings on Sundays. "Mr. Américo sometimes asked: 'Look, what are you going to do on Sunday afternoon? Show up at my house in Granja at around 15:30 / 16:00'. When he asked, we already knew what it was about and said we would go. We would have a coffee or an orange juice at the poolside bar. He would ask a few dozen questions, which implied 15 days of work. That was how he gave out instructions". Looking ahead, Fernando Oliveira envisions a "safe passage of the spirit that comes from well before 1963", which nowadays is reflected in a continuous "commitment to research and development". "With the advantages of the geographical location and the circular economy of the raw material, cork, I see a really promising future, not only for Amorim Cork Composites, but for the entire Group".

Our People



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