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EDITOR IN CHIEF
Carlo Nicolais

EDITORIAL COORDINATOR
Massimo Dapoto

PROJECT AND DESIGN
Cultur-e
www.cultur-e.it

EDITOR
Maire Spa
Registered Office
Viale Castello della Magliana, 27 - 00148 Roma - Italia
Operative Headquarters
Via Gaetano De Castillia, 6A - 20124 Milano - Italia

PRINTER
Gam Edit Srl
Via Aldo Moro, 8 - 24035 Curno BG
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THE LEGACY OF INGENUITY SHOWS US THE WAY FORWARD

Every stone in Rome is a lesson in engineering, every ancient wall a challenge for the future. In this thousand-year-old city, the dialogue with the past is uninterrupted, almost physical: it accompanies us in our daily gestures, questions the meaning of our actions, inspires us. It is precisely from this dialogue that the book *in-genium* was born, a photographic and conceptual project promoted by MAIRE and its Foundation, in collaboration with the Parco archeologico del Colosseo. A journey through images and ideas, discovering a deep connection between the technical knowledge of the ancients and the sustainable innovation that guides our Group today.

With *in-genium,* we wanted to show how the legacy of human ingenuity - which made it possible to build aqueducts, ports, roads, and cities that have stood for thousands of years - continues to live on in the principles that guide our industrial vision. Technology, art, philosophy, and archaeology are interwoven in a work that is not only aesthetic contemplation, but also collective reflection. Because every technology, even the most advanced, always stems from a simple idea: to improve human life and create lasting value.

Within the pages of this new issue of EVOLVE, you will find some of the images taken from *in-genium*. They are profound glimpses into the past, but with an eye toward the future. We wanted to involve young talents from Italian Academies of Fine Arts to take on this visual and cultural challenge, asking them to represent the engineering of yesterday, today, and tomorrow. It is a concrete sign of our desire to build generational and cultural bridges, to cultivate a new technical imagination capable of combining beauty with functionality, sustainability with social impact.

As President of MAIRE, I firmly believe that industry must be able to educate, inspire, and influence. This is precisely why in this issue of EVOLVE we have chosen to feature a project that has its roots in history but looks far ahead. Because the future is built on the living memory of the past. And ingenuity - the authentic kind, the kind that transforms the world - is timeless.

In our way of thinking and operating, innovation is not a goal to be achieved: it is a method, a mindset, a daily habit. At MAIRE, every project, every decision, every team is called upon to contribute to a continuous evolutionary process that runs through all levels of the organization, from technological research to human capital management. The motto around which this issue is focused is «Inspire Innovation: innovation is in everything we do. » This is not a slogan, but a shared commitment that is deeply rooted in our culture and in our way of doing business.

Innovating means more than inventing. It means creating real, measurable value that is useful to those who will use a technology, a system, or a solution. And to do this, we

must abandon the idea that innovation is the prerogative of a few experts or top executives. On the contrary, it is a collective and cross-cutting process that also comes from freedom to engage in critical thinking and from a diversity of points of view. The most disruptive insights do not always come from where we expect them to. And it is often exactly this intermingling - between generations, skills, and cultures - that generates real change.

At this moment in history, when our industry is redefining its role in response to the challenges of the energy transition, it is essential for a technology company like ours to have a "home for innovation." With this in mind, we have created the Green Innovation District in Rome, our new hub of excellence that will host laboratories, industrial research activities, advanced experiments, and pilot plants. It is here that we will develop technological solutions, validating their industrial scalability and competitive value with the aim of bringing them to market quickly.

But innovation is not limited to the technical sphere. It also concerns the way we approach markets, analyze customer needs, and structure our offerings. Every new technology must be born with a clear idea of its strategic positioning, the value it can generate, and the change it can bring about. At MAIRE, technological thinking is always accompanied by an economic and social vision capable of guiding specific, long-term choices.

This vision would not be possible without people. Without the courage of those who accept risk, who know how to deal with uncertainty, who question the status quo. It is not age that defines who can innovate, but the spirit with which we measure ourselves against reality. This is the attitude we seek, cultivate, and value throughout our ecosystem today. Because only with an open, critical, and curious gaze, can we truly build an industrial future that meets the challenges of our time. It is with this in mind that we are committed to the challenge of building a new ITS Foundation, which we are launching with the idea of training young people for the new professions of the energy transition.

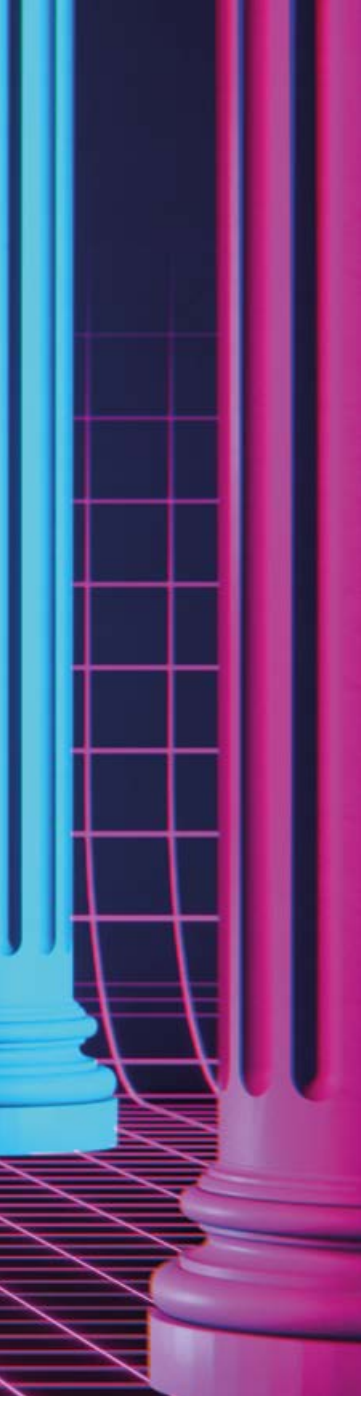
During the recent Capital Markets Day, I wanted to share not only results and projections with our stakeholders, but above all a vision. "Frame Forward," the title chosen for the event, was an invitation to frame the future, to define it through the concrete actions we are taking today. Innovation, in fact, also means knowing how to change what works, having the courage to continuously evolve even in the midst of success. That is why our Capital Markets Day is renewed every year, taking on a different form, becoming an eagerly awaited event by all, rich in content and new ideas. I showed tangible examples - from the hydrogen-powered bicycle to our plastics upcycling plant and the NX FHYVE™ electrolyzer - to explain how technology can be translated into accessible, affordable, scalable solutions capable of generating real impact in everyday life.

Today, MAIRE is a unique player in the international arena: we combine the operational experience of TECNIMONT with the sustainable technology of NEXTCHEM. This integration allows us to offer complete solutions for the energy transition, adaptable to different geographical and geopolitical contexts. The numbers speak for themselves: by 2029, we expect to reduce direct emissions by 37%, achieving carbon neutrality. And thanks to our technologies, around 700,000 tons of CO_2 have already been prevented. But in addition to our environmental goals, we want to help reignite great industrial ambitions in Italy. We want to bring chemical excellence back to our country, build a competitive technological ecosystem, and train young professionals capable of driving change.

This is our challenge, but also our responsibility: to combine ingenuity and vision to leave a lasting mark. Because only those who can imagine the future can have the courage to build it.

Fabrizio Di Amato
Founder and Chairman of the MAIRE group

THINK BIG, ACT WITH EMPATHY



In an age that pushes us to choose early, run fast, and find definitive answers, it may seem like a paradox to stop and reflect on how we actually learn, innovate, and change. Yet it is in this space of reflection that the most authentic transformations are born.

In this issue of EVOLVE devoted to **Inspire Innovation**, we have selected three books that challenge time and convention, proposing new ways of seeing the future. With *Range: Why Generalists Triumph in a Specialized World*, **David Epstein** reevaluates the figure of the generalist as a valuable resource for dealing with a complex and unpredictable world. In *Innovation and Its Enemies: Why People Resist New Technologies*, **Calestous Juma** explores the deep-rooted causes - often socioeconomic and cultural - that hinder the adoption of new technologies. And finally, **Tim Brown**, with *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation*, shows how design thinking can become a widespread mindset for generating human, concrete, participatory solutions. Three different but deeply complementary perspectives. Three tools for rethinking not only what we do, but also how we think.

Epstein: the future belongs to generalists

For decades we were told that the secret to success was early specialization. That we needed to start young, focus on one thing, accumulate hours of deliberate practice, and climb to the top. But what if all this is not true? Or at least, not always? This is the question **David Epstein**, science journalist and former athlete, asks in his book *Range. Why Generalists Triumph in a Specialized World*, which hit #1 in The New York Times bestseller list and was nominated for the Financial Times *Business Book of the Year* award.

In a brilliant and rigorous style, Epstein challenges one of the most entrenched ideas of our time: that specialization is the only path to excellence. Through an impressive body of research and success stories, he instead shows that those who excel - in sports, science, the arts, technology - **are often the generalists, those who have traversed diverse experiences**, changed paths, embraced breadth before depth.

The epitome of this approach is Switzerland's **Roger Federer**, who skateboarded, played soccer and badminton as a boy before taking up tennis seriously. His opposite? U.S. golfer **Tiger Woods**, the precocious prodigy. Yet, according to Epstein, the Federer model is far more common - and successful - than people think.

The heart of Range's argument is that today's world, defined as "wicked" rewards not those who have specialized in a closed, repetitive system like a chess game, but those who can **connect ideas, change contexts, and face the unknown with mental flexibility**. In an age of accelerated change, it is not only necessary to be able to repeat what works: it is necessary to invent what does not yet exist. One should go around «having a lot of apps open in one's brain at the same time. »

A new figure is emerging: **the systems thinker**, capable of building broad mental models by drawing on different fields. Epstein finds traces of this in **Leonardo da Vinci**, **Charles Darwin**, and **Steve Jobs**. People who, before arriving at their great discoveries, failed, explored, and abandoned well-trodden paths. And that is precisely why they were able to innovate.

From one who rejects specialization to another who faces the fear of change to a third who puts the human experience at the center: three complementary visions for dealing with a changing world. Here are some future lessons learned from the thinking of David Epstein, Calestous Juma and Tim Brown.

Range is therefore a manifesto for those who do not identify with a single label. For those who love to experiment, change, make mistakes, and start over. It is a book that **restores dignity and strength to the "hybrid profile"** and invites us to cultivate breadth, not as inefficiency, but as a valuable resource for facing the challenges of the present.

As **Bill Gates** wrote about **Range** «if you're a generalist who has ever felt overshadowed by your specialist colleagues, this book is for you.»

Juma: why do we fear innovation?

Why do people resist change, even when change could improve their lives? This is the key question posed by **Calestous Juma**, Kenyan scientist, Harvard professor, and one of the world's leading experts on technological innovation and science policy, in his book *Innovation and Its Enemies*.

Juma analyzes the history of nearly 600 years of technology and draws a powerful and timely message: resistance to progress is never just a matter of security or moral values. More often than not, it is a socio-economic and identity-based reaction. People, institutions, and industries tend to oppose what they perceive as a threat to their power, their earnings, or their culture. **The real driver of fear is not novelty, but the loss of what is familiar.**

In the book, Juma presents a series of emblematic cases: from coffee, feared by religious leaders for its "intoxicating" effect and its ability to create alternative social spaces to mosques, to margarine, opposed by the dairy lobby. From agricultural tractors, opposed by horse breeders, to GMOs, developed to reduce pesticide use but obstructed by a cross-party front of governments, activists, and public opinion. In all these examples, the author shows how **mistrust in institutions and feelings of exclusion** are the main drivers of resistance.

According to Juma, many technologies are rejected not because they are useless or dangerous, but **because they alter the existing balance**. In a world where the benefits of innovation seem to be concentrated among a few, while the risks are more widely distributed, it is natural for social divisions to arise. It is precisely this tension between innovation and stability that represents one of the most delicate challenges for contemporary public policy.

The author therefore calls for a new paradigm of innovation governance: one that is more transparent, inclusive, and participatory. It is not enough to communicate new technologies better: **we need to actively involve those who will benefit from them and, above all, those who fear they will suffer a loss**. Farmers, for example, must be heard in debates on GMOs while citizens must be involved in decisions on artificial intelligence and renewable energy.

The stakes are high, Juma explains: «In an increasingly complex and uncertain world, the risks of doing nothing may outweigh the risks of innovating.» That is why it is essential that scientists, entrepreneurs, and policymakers work together to facilitate the adoption of useful innovations and counter the inequalities that fuel fear.

Innovation and Its Enemies is a profound and accessible essay that combines history, sociology, and politics into a single grand narrative about humanity and its relationship with change. A must-read for anyone who believes **that innovation must be not only technological, but also social and cultural**. Because innovation, if it is not shared, risks becoming just another form of exclusion.

Brown: design thinking as a strategy to change the world

«There is nothing more frustrating than coming up with the right answer to the wrong question.» When we think of innovation, we often imagine ingenious ideas that spring from extraordinary minds in a flash of inspiration. But the reality is quite different: innovation is a process. And in this process, design thinking plays an increasingly decisive role. This is explained by **Tim Brown**, CEO of IDEO, one of the most influential companies in the field of design and innovation, in his book *Change by Design*.

According to Brown, design thinking is not reserved for professional designers. It is a method, indeed **a mindset, that can be adopted by managers, entrepreneurs, educators, and leaders in every field**. It is a human-centered approach to problem solving that starts by listening to people and their needs, integrates creativity with analysis, and arrives at new, feasible, and sustainable solutions.

The book is full of real-life examples drawn from IDEO's own experience. In one case, a team redesigned the shift change of nurses in an American hospital: not by starting with an Excel spreadsheet, but by observing reality through the eyes of the patient. In another, a bicycle component manufacturer discovered a new market segment - occasional adult cyclists - simply by rethinking the emotional experience of riding a bike. In both cases, **innovation did not come from technology, but from empathy**.

Brown strongly emphasizes the importance of *prototyping*: build, test, fail, repeat. It's not just about designing objects but about putting ideas to the tests in real life, including through simulations, role-playing, and modelling. It's a way to learn quickly, make corrections along the way, and arrive at effective solutions more quickly. Brown writes: **"Fail early to succeed sooner"!**

But there's more. Design thinking is also **an organizational culture that rewards collaboration**, curiosity, and freedom to experiment. In one emblematic passage, Brown recounts how a young engineer at Hewlett-Packard disobeyed a direct order from top management to develop a new type of screen. That rebellious act led to the invention of the first large-screen monitor, ushering in a new era for computing.

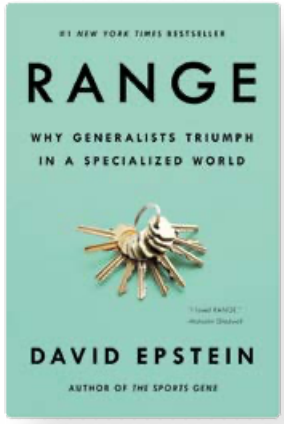
One of the most powerful concepts in the book is that value today is shifting from the product to the experience. People don't just want to buy something, **they want to participate, to be involved**, and to identify with the service or brand. The task of design, then, is not just to create beautiful objects, but to orchestrate meaningful experiences.

Change by Design is more than a manual: it is a manifesto for democratic, participatory, and accessible innovation. Brown does not want everyone to become designers, but he does want everyone to start thinking like a designer. Because in a complex and ever-changing world, **the most valuable skill you can have, is not having all the answers, but knowing how to ask the right questions**.

EXCERPTS OF THE FUTURE

The job of the designer, to borrow a marvelous phrase from Peter Drucker, is «converting need into demand».

[Tim Brown]



In a wicked world, relying upon experience from a single domain is not only limiting, it can be disastrous.

[David Epstein]

Technological tensions are often heightened by perceptions that the benefits of new technologies will accrue only to small sections of society while the risks will be more widely distributed.

[Calestous Juma]

The methods used to fight coffee in the Middle East (in the 16th century) are very similar to the methods used to fight GMOs in the modern day.

[Calestous Juma]

The risks of doing nothing may outweigh the risks of innovating.

[Calestous Juma]

Fail early to succeed sooner.

[Tim Brown]

Design thinking starts with divergence- the deliberate attempt to expand the range of options rather than narrow them.

[Tim Brown]

Much of the concern is driven by perceptions of loss, not necessarily by concrete evidence of loss.

[Calestous Juma]

There is nothing more frustrating than coming up with the right answer to the wrong question.

[Tim Brown]

We learn who we are in practice, not in theory.

[David Epstein]

If an idea becomes a piece of private property, it is likely to grow stale and brittle over time.

[Tim Brown]

The more confident a learner is of their wrong answer, the better the information sticks when they subsequently learn the right answer.

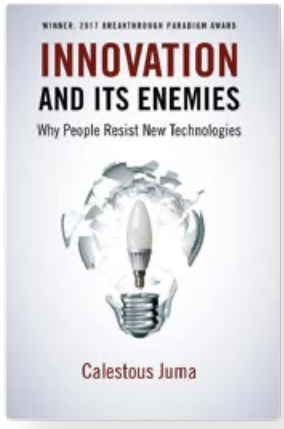
[David Epstein]

The quickest way to find out who your enemies are is to try doing something new.

[Calestous Juma]

Exploration is not just a whimsical luxury of education; it is a central benefit.

[David Epstein]



It is difficult to accept that the best learning road is slow, and that doing poorly now is essential for better performance later.

[David Epstein]

Excerpts from:

- David Epstein, *"Range: Why Generalists Triumph in a Specialized World"*, Riverhead Books
- Calestous Juma, *"Innovation and Its Enemies: Why People Resist New Technologies"*, Oxford University Press USA
- Tim Brown, *"Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation"*, HarperBusiness

THE FUTURE IS NOT AN ALGORITHM

In his latest book, **"Al verde. Manifesto dei tempi moderni"** (Rubettino publisher), Roberto Sommella - director of MilanoFinanza and its website milanofinanza.it, well-known economic editorialist and president of the non-profit association "La Nuova Europa" - paints a powerful and at times disturbing picture: humanity poised at a crossroads, between the arms race and the unregulated digital revolution, where even the most sustainable choices are at risk of turning into new inequalities.

Sommella, a long-time advocate for a culture of knowledge and solidarity in Europe (he is the founder of the "School of Europe" in Ventotene), offers a veritable **manifesto for the return to Homo Sapiens:** a call for awareness, moderation, and critical thinking. These are also the central themes of this interview, where the focus of innovation is inexorably connected to the democratic, cultural, and social stability of our time.

Mr. Sommella, let's start with your book "Al verde", published last October. What prompted you to write it, and what signs led you to anticipate many of the issues that are now at the center of the debate?

When I started writing Al Verde, I felt that something profound was changing, not only on an economic level, but also on an anthropological level. Sustainability was becoming a pretext for introducing new inequalities, rather than a driver of justice: I felt as if I were facing the convergence of multiple crises. On the one hand, there was a **digital revolution** advancing at an unprecedented speed, often without rules. On the other, the race for **environmental sustainability** which, if not well managed, risks turning into new constraints for ordinary people, generating further inequality. The example I give in the book is clear: we have created a world in which it costs less to build a tank than to produce a car. This is a paradox that says a lot about where we have ended up... In this context, the reference to the **Ventotene Manifesto** was a natural one for me: today, it needs to be rewritten in a contemporary vein. We need a Europe that returns to being an ethical as well as an institutional guide.

According to Roberto Sommella, director of MilanoFinanza, innovation is not enough; we need a new vision for mankind: «Sustainability? It cannot become an pretext for introducing new inequalities. »

In your book, you talk about "machines that produce wealth and inequality" and "men who generate wars." In this scenario, where does the role of innovation fit in?

I think that innovation, in itself, is neither good nor bad: it is simply a tool. The meaning we attribute to it depends entirely on the use we decide to make of it. What worries me, however, is the speed at which this innovation is developing today, a speed that far exceeds the capacity of regulatory and institutional systems to understand, absorb, and regulate it. We find ourselves in a situation where technology is evolving at lightning speed, while rules, bureaucracy, and even institutional culture remain anchored in analog, slow, and often ineffective models.

This widening gap creates a profound imbalance: not only does it disorient people, but it also threatens to fuel new forms of exclusion and social uncertainty. I believe we need to create a new **pact between innovation and regulation**, a conscious balance that allows us to reap the benefits of technological progress without sacrificing people's rights, dignity, and security. Institutions, laws, and even the education system must learn to move with greater agility, keeping pace with the transformations underway, but without losing sight of the need to protect the common good.

Innovation cannot become an end in itself, nor can it become a technocratic dimension that regulates itself without limits. We cannot

Roberto Sommella
Director of MF MilanoFinanza

allow decisions to be made by algorithms alone. This is why I insist that, alongside the drive for technology, we must cultivate a human dimension: ethical, critical, and social. In a word, innovation must remain a human project, not just a digital one.

In this issue of EVOLVE - focused on the culture of innovation - we talk about *in-genium* a project by MAIRE and its Foundation that explores the profound continuity between the genius of the ancient Romans and the challenges of sustainable innovation. How important do you think it is to transfer this not only to products or processes, but also to the way we think and act, as individuals and as a society?

I believe it is absolutely critical. Innovation should be an opportunity to improve people's quality of life, simplify what is complex, and offer new solutions to old problems. But for this to truly happen, it cannot be confined to a technical or technological sphere. It must become an integral part of the way we think, work and live. This is where the real cultural challenge lies: to make innovation not just a question of products, but a widespread mindset that permeates every layer of society, from schools to the world of work and institutions.

If we do not incorporate an ethical dimension into innovation, we risk reducing it to an instrument of power or, worse, exclusion. I believe it is essential to build a shared culture of innovation that can hold progress and responsibility, development and inclusion together. We cannot think that machines alone can decide what is right, useful, or convenient.

Human beings need roots, meaning, and an environment where they can fully express their creativity and ingenuity: initiatives such as MAIRE's ***in-genium***–which combine the knowledge of the past with the challenges of sustainability and contemporary innovation–are a virtuous example. **To truly face the future, we need a new humanism of innovation.** A different way of looking at progress, one that does not push man aside, but puts him back at the center.

Indeed, one of the risks is that innovation will depersonalize us, reducing us to "digital profiles." How can we innovate without losing touch with what makes us human?

I believe the first step is to return to recognizing a simple but fundamental truth: ingenuity is not born in the cloud, but in human experience. Artificial intelligence, digital tools, and automated processes can help us in a thousand ways, but they can never replace what makes us truly human: the ability to think critically, to create, to feel empathy, to connect with others on a real level, not just a virtual one.

In recent years, especially during the pandemic, we have experienced a technological acceleration that has led many to believe that everything can be done remotely,

> **“Artificial intelligence and automated processes can help us in a thousand ways, but they will never replace what makes us truly human: the ability to think critically, to create, to feel empathy, to connect with others on a real level, not just a virtual one.”**

impersonally, connected but not really present. But it was also during that time that the limits of this vision became abundantly clear. I am referring in particular to the younger generation, the so-called **"Covid generation"**: boys and girls who found themselves deprived of the social aspect of school, of human contact with teachers and peers, and of the possibility to grow through direct interaction. We asked them to adapt to a digital world without really guiding them through that transition. And this has left wounds, in many cases deep ones.

Today, more than ever, we need to restore value to our actual presence, to work that is experienced in a physical, concrete, relational way. We cannot think that a connection is enough to create a sense of belonging, motivation, community. **Companies have a fundamental responsibility**: they must not merely pursue the latest technology available, but they must also create spaces for well-being and continuous training, space for personal growth. Institutions must ensure that innovation is not just a race for efficiency, but a social, cultural, and inclusive project.

In this sense, I believe that a paradigm shift is needed: fewer rules and more knowledge. Less bureaucracy, more free thinking, universities, and debate. Because **we may not have Silicon Valley, but we have what I call Freedom Valley**: the valley of rights, critical thinking, and democracy. This is our true capital: that which comes from the body, from common space, from living together. True innovation also means preserving this heritage.

In closing, which sectors are currently seeing the greatest investment in digital innovation?

Those most affected by digital innovation undoubtedly include artificial intelligence, robotics, biotechnology, and everything related to the energy transition. Finance is also undergoing a profound transformation, I would go so far to say a dematerialization: tools, languages, and even market logic are being redefined.

The problem, however, is that all this is happening at such an impressive speed that it runs the risk of leaving the human aspect uncovered–and often behind. As I mentioned earlier: if these developments are not accompanied by an ethical vision, a public narrative capable of restoring meaning and responsibility to innovation, then they become soulless technical processes. The future cannot be left in the hands of algorithms, to a technocratic dimension that regulates itself without limits. It must be a choice, guided by awareness and the will to build a tomorrow in which digital technology does not replace humans, but empowers, complements, and respects them. Alongside the drive for technology, we must cultivate a human dimension: ethical, critical, and social. In a word: innovation must remain a human project, not just a digital one.

"AL VERDE", A MANIFESTO FOR MODERN TIMES

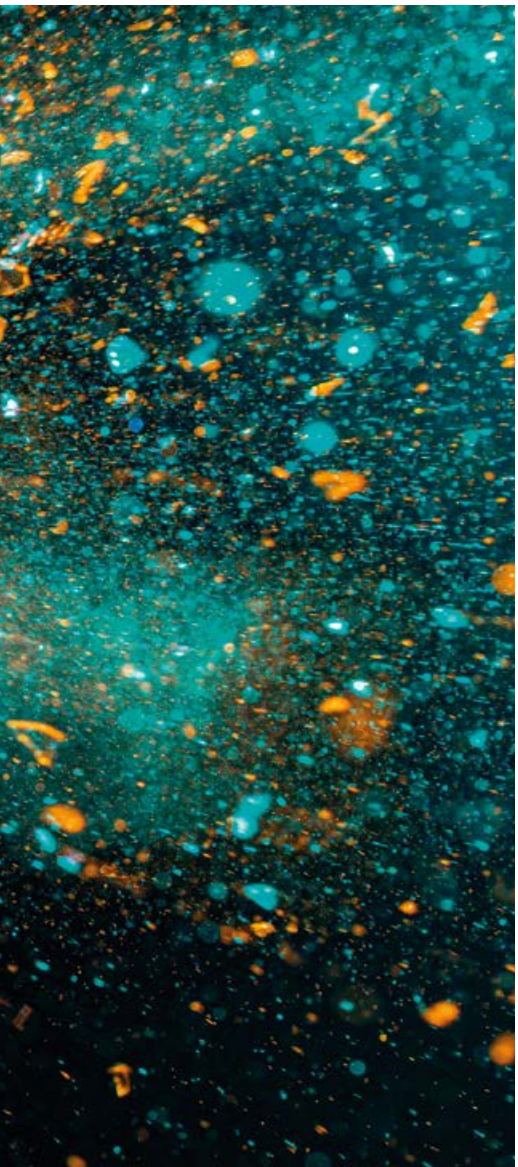
In his latest book, Roberto Sommella talks about a new world under construction where cars will be a luxury item, where it will be more profitable to manufacture weapons than vehicles, and where AI is expanding without any restrictions on emissions.

Starting with the question «How can we save the planet, Europe, and ourselves from new digital inequalities? », **"Al verde. Manifesto dei tempi moderni"** (Rubettino publisher) is an essay-manifesto in which the director of MilanoFinanza warns of the emergence of a new global order in which progress threatens to produce new forms of poverty, excluding the most vulnerable from the technological and ecological revolution.

In the book, the author highlights a paradox: laws designed to combat pollution–from electric cars to green homes–risk worsening the living conditions of millions of people. With a lucid and provocative style, Sommella identifies three key figures of our time: Homo Digital, Homo Faber, and Homo Sapiens. According to the author, the latter has the most difficult task: to rediscover the road to awareness, critical thinking, and balance between technology, the environment, and social justice.

INNOVATION IS A CULTURE. THIS IS WHERE THE ATTITUDE THAT EMBRACES "NEW" THINKING BEGINS

From strategy to the adoption of emerging technologies: Chief Technology Innovation Officer Antonio Batistini shares how MAIRE transforms innovation into a collective process, focused on the future and the market.



« *I*nnovation is in everything we do. We improve as we learn and engage others to maintain this mindset. » This motto - at the heart of the new issue of EVOLVE - is dedicated to the theme of innovation as a strategic and cultural driver within organizations. At MAIRE, innovation is not just a goal: it is a day-to-day approach, a way of being and acting that spans all levels of the company, from technological research and operational practices to the management of our human resources.

To better understand how this vision translates into concrete, future-oriented processes, we met with **Antonio Batistini**, the Group's Chief Technology Innovation Officer. At MAIRE, he is the soul of the Innovation Management Team, a broad and articulated structure that coordinates the Group's main levers of innovation: from the Green Innovation District, the future heart of research and development activities, to the management of the innovation portfolio, including intellectual property, open innovation partnerships and the entire technology development chain. Its task is to make innovation a systemic, continuous, and scalable process inspired by real market needs.

Let's start with a definition: what is innovation really, in your opinion?

Indeed, innovation is often confused with invention. Innovation is not synonymous with invention, however. Innovation is the combination of three fundamental elements: an invention, the value it creates for the company, and the value it brings to the customer who chooses to use it. These three elements must coexist.

It's like a Venn diagram with three circles: innovation only occurs where the three areas overlap. And this applies not only to a product or technology, but also to a business model or customer experience. Improving the perception or use of a product at the end customer level can be an innovation: even better if it generates profitable and sustainable growth for the company.

Consequently, innovation is not merely a new invention, but the ability to create something that also has distinctive value for those who use it. If this element is missing, it remains an academic invention, an end in itself. Furthermore, innovation does not belong to any one person in a company, not even the CTO. It is not a process dictated from above, nor is it the prerogative of an "enlightened" few. It is an inspirational and collective process, where anyone can propose an idea or make a contribution.

How is the innovation process structured within MAIRE?

Clearly, for an idea to become a viable and marketable innovation, it is necessary for it to follow a structured path. At MAIRE, we work to

optimize this process using the *"stage and gate"* model, which involves stages of validation and progressive decision-making, from the definition of the idea (Technology Readiness Level 1) to industrial implementation (TRL9).

The culture that fosters an innovative ecosystem must be simple and focused. It is essential that innovation be supported from the top down, starting with top management and extending all the way down to new young engineers. Above all, it must stimulate divergent thinking: we cannot afford to have everyone thinking the same way. Critical thinking and diversity of opinion are fundamental to true innovation. If everyone thinks the same way, no one will bring anything new to the table.

Innovation requires imagination, but it also requires speed. We cannot afford endless processes: if it takes too long to bring an idea to market, the return on investment drops to zero. Therefore, you must also have a corporate culture that accepts risk. The most significant innovation often comes from what seems "far removed" from what has always been done. This is where truly sustainable solutions are found.

How important is the market in steering decisions on innovation, and what personal characteristics does it take to truly innovate?

Innovation must always be driven by the market. It cannot be developed in a lab and then launched without listening to real needs. You have to start from dissatisfaction, unheard desires, and the limitations of current solutions. If you make something that nobody wants, that doesn't solve a problem or that doesn't bring real benefits, you're not innovating, you're just inventing something disconnected from reality. The more you are able to observe the limitations of current solutions objectively – that is, without starting from the technological solution – the more you will be able to respond effectively to concrete processes or problems with innovative products and solutions.

An example? No one explicitly asked Steve Jobs to invent the iPhone. But he recognized the emerging need for greater mobility, accessibility to information, and instant communication. He brought existing technologies together in a new and cohesive way, creating the world's best-selling phone. This is innovation: it's not about inventing penicillin every hundred years but combining existing solutions more effectively to meet real needs.

Doing this requires people with a certain mindset. In fact, a culture of innovation requires rapid learning and non-linear thinking. You can't get stuck analyzing every last decimal point; you need the ability to combine elements that have never been combined before to generate truly innovative and *disruptive* solutions.

Those who innovate also need to be resilient. Innovation is a path full of obstacles, setbacks, and deviations from the ideal linear path. It is a continuous *"roller coaster"* ride made up of partial successes and moments of failure. It takes the ability to analyze these failures constructively, identify the critical issues, and start again with strength and clarity.

At the core, there is always the human being. Innovating means having the courage to question the status quo. If you accept everything as it is, innovation does not happen. You also have to be able to work under pressure and in uncertainty. As I often say, *"When we innovate, we don't know what we don't know."* We are faced with problems that we did not even know existed, either because they did not exist before or because no one had ever really analyzed them. Those who lead innovation projects must possess two skills: technical and commercial. It is necessary to thoroughly understand the distinctive element that creates value and to know how this value can be expressed sustainably in the market.

Is innovation a question of age or is it more about a certain mindset?

The idea that only young people are prone to innovation and that older people are more conservative is a misconception. It is not age that determines the ability to innovate, but rather mindset. It is a personal predisposition, a cognitive style, a natural curiosity that can be found in anyone, regardless of their age.

Those who really want to innovate must abandon expressions such as "it is impos-

sible" or *"we will never succeed."* These phrases must be eliminated from the vocabulary of anyone involved in innovation. Apart from the idea of living forever, in principle everything else is possible. Maybe not today, maybe a hundred years from now, but every problem has a potential solution, perhaps yet to be discovered, perhaps to be achieved through a different innovation.

The real challenge lies in the ability to connect seemingly unconnected dots. Sometimes a solution designed for one area–such as the medical field–finds application in a completely different sector, such as the automotive industry. It is the versatility of concepts, platforms, and insights that generates innovation. And this type of vision is not tied to age, but to an open mindset capable of seeing things from unexpected perspectives.

On the contrary, those who work in an overly linear or consequential manner run the risk of becoming stuck in what is already known. But innovation requires openness, a critical mind, lateral thinking, and the ability to accept risk. And these qualities can be found as easily in young people as they can in older ones: what really matters is attitude.

> **Innovation requires openness, a critical mind, lateral thinking, and the ability to accept risk. And these qualities can be found as easily in young people as they can in older ones: what really matters is attitude.**

You make a distinction between strategic innovation and incremental innovation: what is the difference between them and what value do they each have?

They are two distinct and complementary approaches, both of which are fundamental. Strategic innovation drives the achievement of business objectives through significant investment in research and development. It is typical of companies that are ready to take high risks to generate new and disruptive solutions. Incremental innovation, on the other hand, builds on existing knowledge and technologies and aims to progressively improve products or services. It is low risk and low cost but can have a significant impact over time through the accumulation of small changes. Both forms of innovation can coexist within an organization, at different times and in different contexts. There are no A-list engineers and B-list engineers. They are all professionals of equal value, simply with different mentalities and approaches.

I, for example, would not be able to devote myself to incremental innovation for long: I would get bored. But there are colleagues who find this kind of work motivating and satisfying, achieving concrete results in a short amount of time. Seeing the fruits of their labor quickly applied in the field, while keeping the company competitive, is a powerful driver for many people. It is important that our organization allows people to move from one area to another if they wish. There should be no rigid barriers. Everyone can find their place based on how much they want to put themselves out there and challenge themselves.

I would add that incremental innovation often comes from those who are most in touch with the

market. These are the professionals who, by closely observing customers and application contexts, are able to pick up on weak signals, valuable insights, and needs that perhaps no one else has yet detected. And that can also be the starting point for a strategic idea. It's a continuous cycle. Those who work in strategic innovation often have less direct contact with the market. This is why synergy between the two worlds is essential. An open, cross-functional structure is needed, where operational and creative skills can interact. This is how a truly innovative ecosystem is created.

How does this vision fit into MAIRE's organizational structure?

Those who deal with the market, customers, and different regional contexts on a daily basis have a privileged perspective. Differences in resources, geographical configuration, and technological availability can generate original thinking and help identify new ideas.

MAIRE is a large multinational group that is evolving towards an increasingly matrix-based structure. Sister Companies must continue to do business, manage profit & loss (*an accounting document summarizing a company's revenues, costs and profits over a period of time, ed.*) and develop incremental innovation, which is necessary to maintain competitiveness in existing markets. At the same time, a cross-functional group is needed, working across the entire company, dedicated to strategic innovation.

This group must be flexible and capable of bringing together the skills and experience present in all business lines and across different regions, creating cross-functional and multidisciplinary teams. The definition, validation, and development of new ideas will have to go through this process – and will then be translated into new products – while marketing will be entrusted to the Business Units. In a culture of cross-functional communication, there is room for growth in the ability to work in cross-functional, cross-regional, and cross-business line teams: at MAIRE, this is already underway, and we are investing in it with determination. The goal is to establish a uniform innovation process for the whole Group, with a dedicated and responsible team that fosters communication, cross-fertilization, and shared responsibility between different functions.

In this scenario, what role will the new Green Innovation District play?

In this phase of cultural and operational transformation that we are leading, it is vital for a technology company like MAIRE to have a "home of innovation." That is why we are creating the **Green Innovation District**: it will be our advanced hub where research and analysis laboratories will be consolidated, with activities ranging from initial experimentation (TRL1-TRL4) to the construction of pilot plants to demonstrate the scalability of technologies.

These systems will be instrumental in collecting valuable data - kinetic, modeling, durability, and cost-effectiveness - which will form the basis of our technology packages, known as technology e-books, which will then be licensed or marketed. But innovation is not just about developing the technology: from the outset, it is essential to accompany this process with in-depth market analysis. We need to clearly define our business assumptions and competitive positioning, as well as understand in which market segment our solution truly adds value.

It is not enough to say, *"I have found a way to depolymerize PET."* We need to understand: what market segment do I intend to target? What alternatives already exist? Where is my solution really distinctive? It is precisely at this stage that it becomes crucial to develop a robust business plan that goes beyond the income statement and includes a marketing strategy, positioning, the value generated for each player in the value chain, and how this value will be shared.

Only by integrating technological development and business strategy can we reduce the risk of developing a solution that, however brilliant, has no real application because it is outdated, too expensive, or poorly aligned with customer needs. To truly succeed, innovation must culminate in a complete package: the technology e-book and a business plan capable of measuring the return on investment in research and development.

What does Open Innovation really mean?

Today, we no longer live in a closed world: all regions of the world often work on the same technological challenges. Thinking that you can solve everything on your own, within your own organization, is unrealistic. You need the ability to look around, observe those who have already developed effective solutions, and activate collaborations by investing, acquiring, or building technical-commercial alliances. This approach accelerates innovation and reduces internal risks and costs, which sometimes may not deliver the desired results.

However, what we commonly refer to as Open Innovation is actually a much broader concept. It is not simply about acquiring technology: that is a specific action, an accelerator. Open Innovation only really works when it is part of structured supply chains, where each player knows its role in the value chain. In this context, skills do not overlap but complement one another: everyone contributes to part

Rendering of the GID,
Green Innovation District, Roma

of the process and benefits proportionately, without conflict.

If, on the other hand, the companies involved are competing for the same market segment–as is often the case in current projects– then a 'poker' climate, one of competition rather than collaboration, is created. People watch each other, but without revealing their cards, without anyone really contributing. In this case, it is no longer Open Innovation, but an opportunistic strategy that betrays its original spirit.

Let's close with an extremely current issue. Can artificial intelligence really help innovation? How is it being used at MAIRE today?

Artificial intelligence can be a valuable ally in accelerating certain stages of innovation, but it cannot replace them. For example, using advanced platforms such as *PatSnap*, we can perform highly complex patent analyses. By entering a question or topic, the system analyzes all existing patents in a matter of seconds and provides a clear overview: which areas are already covered, where there are gaps, and which needs remain unmet. It does not give you the solution, but it helps you identify the so-called "white space", or the margins where innovation can take place.

The same applies to *Lux Research*, which we use for technology scouting. It is a very powerful platform, capable of cross-referencing data from startups, research centers, and scientific publications. This allows us to quickly map who is working on specific topics or technologies and get an up-to-date picture of the scientific literature.

However, these technologies are no substitute for the human mind. AI is a tool, but it cannot generate the creative act of "connecting the unconnected." Strategic innovation, in particular, is moving into uncharted territory. Returning to the quote from earlier: "We don't know what we don't know." And if you don't know something, you can't ask artificial intelligence about it, because you don't even know what to look for. Artificial intelligence helps, it speeds things up, but it does not create. In the end, real innovation is still entirely in the hands of human intelligence. Perhaps one day we will come up with something different, but for now, the human mind remains irreplaceable.

INSPIRE INNOVATION

Innovation is in everything we do.
We improve as we learn, and we engage others to keep that mindset.

Innovation is an essential part of MAIRE's approach: it is the pillar that must guide decisions, activities, and objectives, just as it guides the reality of the Group. It is a continually evolving aspect that must constantly progress and develop through experience and the acquisition of new knowledge. For this very reason, innovation also requires the active involvement of the people around us, in order to maintain and foster a culture based on the sharing of ideas aimed at progress.

COPILOT, A JOURNEY WITH HUMANS IN THE LOOP

At MAIRE, artificial intelligence is not an end in itself, but an ally. It is part of a cultural and organizational journey centered on people, as demonstrated by the **"Humans in the Loop"** project. The title, inspired by the book of the same name by Franciscan priest Paolo Benanti, is already a statement of intent: in an era driven by AI, human intelligence remains the true protagonist.

Born from the vision of CIO **Michele Mariella**, "Humans in the Loop" represents the heart of the digital transformation of MAIRE, a group with a presence in 50 countries and more than 10,000 employees. The strength of the project lies in its participatory approach: more than 4,000 employees have been actively involved in rethinking processes, tools, and work habits. **Not a top-down revolution, but a shared change** based on trust and responsibility.

Technology at the service of people

One of the most emblematic examples of this philosophy is the adoption of Copilot, the digital assistant powered by artificial intelligence. MAIRE has created ***Engage*, an internal community of Copilot users** who have been asked not only to try out the tool, but also to contribute to the writing of a veritable "Digital Constitution": ten guiding principles for the responsible use of AI.

In the initial phase, rigid metrics were avoided, leaving room for observation and creativity. The results? They were concrete: **up to 5 hours per week saved per employee on repetitive tasks** and the emergence of a new mindset that goes beyond the concept of simple individual efficiency. Quality procedures were rewritten to incorporate Copilot prompts, involving all departments, from communications to the legal department.

This evolution has been made possible through a strategic partnership with **Microsoft**, which has provided not only technology but also ongoing support through experts, account managers, and trainers. Thanks to this approach, MAIRE has been able to expand the use of Copilot **from 300 to 2,000 licenses**, assigned through an internal call-to-action that generated a remarkable adoption rate.

Shortly after licenses are assigned, **introductory training** is provided to illustrate the main features and explain how to customize the user experience. The training is led by an in-house team with extensive technological experience and in-depth knowledge of practical applications in the business environment, which are illustrated during the sessions. The adoption team provides regular support, identifying the most relevant use cases. The most effective prompts and applications are developed, tested, and then shared with the entire company.

Copilot Challenge: ideas that make a difference

To reinforce the collective value of this endeavor, the **Copilot Challenge** was created, a corporate challenge that invites MAIRE teams from around the world to present their most innovative use cases.

The Copilot Challenge is an internal challenge launched at the end of 2024, designed to promote and **reward the most creative uses of generative artificial intelligence** within the MAIRE Group. The initiative aims to stimulate collaboration among people, fostering the creation of innovative solutions.

Team participation was a fundamental requirement, emphasizing how collaboration is a key enabler for developing use cases to be shared across departments. The challenge involved **more than 130 people, organized into 38 teams, and generated more than 45 use cases**. The proposals were evaluated by the directors of the Group's main functions, based on criteria such as ease of implementation, impact generated, and the possibility of extending them to other departments. The winners will be rewarded with development and training opportunities on the topic of artificial intelligence.

The Copilot Challenge is a unique opportunity for MAIRE employees to **demonstrate their innovative skills** and actively contribute to the Group's digital transformation. Collaboration and innovation are at the heart of this initiative, which continues to evolve and promote the adoption of new technologies within the organization.

For MAIRE, true innovation comes from the bottom up, from shared creativity and a new way of experiencing technology. Because, as the *Humans in the Loop* project reminds us, **AI does not replace humans but amplifies their capabilities**. Together, it is possible for us to work better, with greater intelligence. And, above all, with greater humanity.

GREEN INNOVATION DISTRICT: THE HEART OF SUSTAINABLE INNOVATION

MAIRE's new epicenter of technological innovation, designed by NEXTCHEM as a center of excellence for the development of solutions supporting the energy transition, will be located in the Group's historic headquarters in Via di Vannina, Rome. The Green Innovation District (GID) will embody an evolutionary vision where people, technologies, and sustainability will intertwine to build the future of industry.

The project covers a total area of approximately 9,000 square meters, of which 1,400 will be dedicated to laboratories and 2,700 to pilot plant areas, divided into three buildings currently undergoing renovation and construction, which will house up to **20 of the Group's pilot plants**. These facilities will enable the testing of advanced technologies for the production of hydrogen, bioplastics, sustainable fertilizers, alternative fuels, and innovative materials.

But the GID is not just a physical space: it is a collaborative platform involving over **200 professionals** at full capacity and promoting an ecosystem open to interaction with the academic and industrial worlds. **Strategic partnerships with universities in Milan, Rome, and Salerno** are already in place, which are collaborating on the development and testing of future technologies. This is a concrete example of how cross-fertilization between research and business can generate valuable innovation.

As President **Fabrizio Di Amato** stated: «This district will be the beating heart of our research and development activities. The pilot plants will not only demonstrate our technological capabilities but will also act as catalysts for the commercial scalability of innovations. » This approach sees the GID as an experiential and learning center, where knowledge is translated into concrete solutions.

The district is part of a broader process of transformation initiated by MAIRE over ten years ago, based on the convergence of the **circular economy, green chemistry, and digitalization**. Today, this journey is being further strengthened by the introduction of artificial intelligence tools, which are being organically integrated with human work.

«In this phase of cultural and operational transformation that we are leading, it is essential for a technology company like MAIRE to have a "home of innovation". This is why we are creating the Green Innovation District, » explained Antonio Batistini in the interview featured in this issue of EVOLVE.

With this in mind, the GID is the perfect place for technology and talent to come together to build a new industrial culture.

The Green Innovation District is, therefore, much more than an R&D center: it is a symbol of MAIRE's commitment to a low-emission future based on experimentation, training, and continuous improvement. A **replicable green district model** capable of generating value for society, the environment, and future generations.

MAIRE. GROWING WITH VISION: THE FUTURE IS BEING BUILT TODAY

Innovation, for MAIRE, is not just a question of technology: it is a guiding principle that runs through every area of the company, from design to plant construction, from talent development to the creation of a sustainable industrial ecosystem. It is an integrated approach that brings engineering, digitalization, and energy transition together to generate concrete and lasting value. It is with this vision that the Group approached Capital Markets Day 2025, a key moment for sharing results, strategies, and future trajectories.

Capital Markets Day was kicked off by Chairman **Fabrizio Di Amato**, who introduced the theme "Frame Forward" as a vision and a concrete commitment to the future. «Our goal is to frame the future starting with what we are doing today, », he said, reaffirming the desire to accompany stakeholders through the strategic journey made up of specific actionable steps. Through three examples - a hydrogen bike, the NX FHYVE™ electrolyzer, and the upcycling plant in Brescia - he showed how MAIRE technologies are already transforming the energy transition into tangible solutions.

CEO Alessandro Bernini got down to business with a look at the 2024 financial results: "It was our best year ever." With revenues up 38%, close to €6 billion, and EBITDA up 41%, MAIRE has shown that it knows how to combine operational solidity and sustainable growth. Consolidated net income reached €212 million.

But it's not just about numbers. The Group's strategy is based on a "double exposure" approach: traditional energy markets on one side and the accelerated development of decarbonization technologies on the other. It's a combination that makes MAIRE resilient and ready to take on complex global scenarios.

With an order book exceeding €13 billion and an average book-to-bill ratio of 1.5, the Group is looking to the future with confidence. In the first few months of 2025 alone, new orders worth over €3.5 billion have already been received. This growth has also required a

strengthening of skills: the workforce has increased by 50% in two years, exceeding 10,000 people. «Our people are the real driving force behind what we are sharing here today, » Bernini recalled.

Making the transition a reality, on a large scale

The talk given by **Giovanni Sale**, SVP Corporate and Business Strategy at MAIRE, provided the strategic framework for the Group's innovation trajectory, starting with three driving forces that define contemporary society: Feed, Move, and Make. Global production of virgin plastic is set to exceed 730 million tons in 2040, with less than 10% currently being recycled. MAIRE is responding with upcycling, transforming plastic waste into high-quality materials thanks to its Brescia plant and NX Replast technology. «That truck you see here, - Sale explained while commenting on a video - returns to the plant full of waste, closing the cycle. ».

«Innovation is in everything we do. » Capital Markets Day 2025 showed how the ability to innovate is fueled by strategic vision, targeted investments, and an engineering culture ready to take on the challenges of the energy transition.

This is supported by a heritage rooted in Giulio Natta's chemistry. MAIRE is now a leader in polyolefin plant design, as demonstrated by the innovative ExxonMobil plant in Texas, which produces a polymer designed to facilitate recycling.

Moving on to the topics of Feed and Move, Sale pointed out that the world's population will reach 9.7 billion by 2050, with food demand increasing by 30% and energy demand tripling. The answer lies in the diversification of available sources: MAIRE is working with leading energy companies to build low-carbon plants, such as Hail & Ghasha in Abu Dhabi, as well as exploring new carriers such as methanol, ammonia, and even CO_2 recycling through e-fuels. Vision and practicality come together in the project E-Factory for Chemistry: an integrated plant powered by new-generation nuclear reactors that will supply clean electrons to the chemical industry. This initiative has been made possible thanks to its collaboration with Newcleo.

NEXTCHEM: concrete innovation for a sustainable world

Managing Director of NEXTCHEM, **Fabio Fritelli**, drew attention to the technological heart of the Group. 2024 saw a doubling of results compared to 2022, with revenues of €358 million and profitability among the best in the industry. The strategy is based on three pillars: technological breadth (over 30 proprietary technologies and 2,500 patents), application flexibility, and the ability to offer integrated solutions. There are also three key segments: Sustainable Fertilizers (with a focus on efficiency and emissions reduction in the urea and ammonia sector), Low Carbon Energy Vectors (where SAF, methanol, and hydrogen are the drivers of cleaner mobility), and Circular Solutions (where mechanical and chemical recycling, together with biopolymers, are the answer to the problem of plastic).

Through GasConTec, NEXTCHEM has acquired the license for Mexinol, which will be used in the world's largest low-carbon methanol plant. With HyDep, it will launch a 30 MW electrolyzer in 2026, and with MyRemono, the first plant for recycling plexiglass, extendable to polystyrene. «Technology is just the starting point, » concluded Fritelli. « What matters is knowing how to industrialize it quickly, flexibly, and sustainably. »

TECNIMONT: excellence in execution at the service of transition

Alessandro Bernini then shifted the focus to TECNIMONT, the Group's operational heart. "This is where our capacity for execution meets our bold vision." With re-

venues of €5.5 billion and EBITDA of over €300 million in 2024, the IE&CS division confirms a trend of steady expansion. TECNIMONT offers the full spectrum of EPC services, from FEED studies to predictive maintenance. The integrated approach with NEXTCHEM enables turnkey solutions, from technology to project financing, thanks to the MET Development division.

"Selectivity" is the watchword: each project is carefully evaluated, with a preference for lump-sum contracts in established markets and flexible models elsewhere. The adoption of artificial intelligence, according to the "humans in the loop", principle, is transforming industrial engineering. TECNIMONT's competitiveness is also strengthened by the digital evolution of construction sites. Thanks to advanced simulation models, resources and time can be optimized. «With AI, we can anticipate bottlenecks and monitor in real time, » explained Bernini. The goal is to reduce unforeseen events and improve overall quality.

In today's global context, supply chain resilience is crucial: MAIRE boasts a network of qualified suppliers built up over decades and aims to strengthen it further, also to meet local content requirements. Finally, the construction phase is entrusted to selected subcontractors who are continuously trained to ensure safety, quality, and efficiency.

We are determined to continue creating value, year after year, by increasing returns and strengthening our technology business - said CEO Alessandro Bernini - And if this future is the one we want to see, well then, MAIRE has already started to build it.

A plan for the future: ambitious goals set for 2034

In closing, CEO **Alessandro Bernini** presented the new ten-year strategic plan for 2025-2034. After two consecutive years of exceeding its targets, MAIRE is aiming for revenues of over €11 billion and more than €1 billion in EBITDA by 2034, with a 10% margin. 70% of the business will be related to sustainability. NEXTCHEM will grow up to 25% annually in the first five years, stabilizing at 15-20% in the second phase. EBITDA will fluctuate between 22% and 27%. TECNIMONT will reach 10 billion in revenues, with EBITDA doubling.

The plan foresees up to €1 billion in investments over ten years, divided equally between the two BUs. It will be allocated to innovation, digitalization, expansion of engineering capacity, and implementation of the MET Zero plan. Cash generation remains solid: €1.9 billion expected by 2034, with a payout ratio rising to 66%. The workforce will increase by 60%, with new engineering hubs and ESG performance-linked reward systems.

«We are determined to continue creating value, year after year, by increasing returns and strengthening our technology business, » Bernini concluded. «And if this future is the one we want to see, well then, MAIRE has already started to build it. »

«WE AIM TO BECOME AN AI-DRIVEN ENTERPRISE»

In this issue of Evolve - dedicated to the motto "Inspire Innovation" - MAIRE's ambition to transform itself into an AI-Driven Enterprise takes shape through the strategic vision of its Chief Information Officer, **Michele Mariella**. In a recent interview with *Industria Italiana* magazine, Mariella explains how at the heart of this evolution is an investment of more than €1 billion over the next ten years to boost technological innovation, with a focus on energy transition, digitalization, and the circular economy.

The goal, Mariella emphasizes, is to «develop an AI agent orchestration system» capable of **transcending the logic of individual copilots to achieve intelligent, coordinated collaboration between digital agents**. The project integrates solutions such as digital twins, predictive supply chains, GenAI, and the extensive use of data, in collaboration with technology partners such as SAP and Microsoft. «The present and the future depend on our ability to be an AI-driven enterprise, » reiterates the CIO, who is leading a structural transformation of the Group's entire IT and production system.

A key pillar of this transformation is **NextPlant**, the proprietary digital platform designed to support the creation of natively digital, sustainable, and highly efficient industrial plants. NextPlant integrates tools for plant design, procurement, construction, and management. The goal is to **accompany every phase of a plant's life cycle**, ensuring traceability, cost reduction, and a drastic decrease in carbon footprint. «New plants must be designed to minimize environmental impact throughout their entire life cycle, from initial design to decommissioning, » explains Mariella.

Alongside NextPlant, MAIRE is building an **integrated digital ecosystem** that serves as the foundation for developing generative artificial intelligence solutions. This environment not only automates complex tasks, such as document control–already reduced by 80% in terms of effort–but also **extracts strategic value from the data generated daily** at every stage of the project. It is a true digital network that connects departments, systems, and people, making the flow of information more fluid, rapid, and intelligent.

Another key innovation is the **digital twin**, a dynamic digital replica that enables real-time simulation, monitoring, and optimization of construction and operational processes. «It's a digital projection that evolves alongside the actual plant, » explains Mariella. Used in both the commissioning and operational phases, the digital twin helps

According to Michele Mariella, Chief Information Officer of the MAIRE Group, digital transformation is the driving force behind building more sustainable, efficient, and integrated industrial plants along the entire value chain.

detect discrepancies between the theoretical model and reality, correct them quickly, and improve energy management and efficiency. MAIRE also applies a servitization approach: data collected in the field is used to continuously update the services offered, improving the customer experience and the reliability of the plants.

Within this digital framework, the supply chain also plays a strategic role. With over 100 terabytes of data handled per project and thousands of global suppliers, MAIRE has adopted digitalized supply chain management through SAP–in particular with SAP Ariba for purchase to pay and negotiations–supported by internally developed tools for material management and document management. Predictive analytics now makes it possible to anticipate delays, optimize procurement, and monitor supplier performance in terms of safety, sustainability, and financial strength. «**The digitization of the supply chain allows us to be responsive even in complex scenarios**, such as geopolitical crises or logistical closures, while maintaining efficiency and competitiveness, » says Mariella.

The path is clear: integrate artificial intelligence in an ethical and comprehensive way, empowering people and improving the productivity of the entire organization. It is with this in mind that the **"Humans in the Loop"** program was created, combining human expertise and machine learning to ensure adaptability, accuracy, and governance. The final step? A system capable of orchestrating intelligent agents that operate in natural language and can act sequentially or in parallel, following flexible and dynamic logic. «**This approach closes the gap between humans and machines** and enables an AI that truly understands the business context, » Mariella concludes. A powerful vision, one that fully reflects the meaning of the motto **"Inspire Innovation"**.

in-genium.
THE LEGACY OF INGENUITY, BETWEEN STONE AND STEEL

Luca Campigotto, Roman Forum, 2014

In Rome, every stone is a fragment of the past. Every ancient street you walk down, every wall still left standing, tells the story of a legacy that has never truly been left behind. The relationship with the ancient past - for anyone who lives in this layered and powerful city - is an ongoing, daily, inescapable encounter. The ancient walls and consular roads that one crosses every day bring life to a heritage whose constant presence never stops posing questions. A permanence that provokes, that demands to be heard: as if it were an invitation, or perhaps a challenge, to read the present through the lens of the past.

It is through this dialogue with time that *in-genium* was created. *Gazes into technology past and future*, a photographic and editorial project promoted by the MAIRE Group and its Foundation, in collaboration with the Parco archeologico del Colosseo. A visual and conceptual exploration that spans archaeology, philosophy, art and technology to show how the ingenuity of the ancients continues to speak to the present and can even point to new ways forward. *«The technical knowledge of the ancient Romans preceded many aspects of modern industry. Keeping in mind the high-quality work of yesterday's pioneers gives greater meaning to our work today and adds further impetus to our strategy for the future, »* stated **Fabrizio Di Amato**, President of MAIRE and its Foundation, whose words unveiled the significance of *in-genium* with power and clarity. Not just a photographic publication, but a visual and conceptual journey. An act of collective reflection.

Imagining solutions, transforming reality

This book, published by Silvana Editoriale and available on the publisher's website and in bookstores, takes its name from the Latin term *in-genium*: **the ability to imagine solutions, to influence reality, and to transform it**. This knowledge built the Roman Empire and is now evident in energy transition technologies and in contemporary industry, which is questioning its ecological, aesthetic, and social role. The work is centered around six key concepts - *design, measure, channel, mix, lift, and re-use* - which also serve as keys to understanding the evolution of engineering from antiquity to the present day.

The genius of Nero's design of the **Domus Aurea** (*to design*); the measurement of the sacred and the beautiful between the **Curia Iulia and the Roman Forum** (*to measure*); the water systems of the **Horti Farnesiani**, **House of the Vestal Virgins**, **Fontana delle Pelte** and **Cloaca Massima** (*to channel*); the **cement works at the Temple of Venus and Rome** and the methods of mixing natural pigments in **rustic mosaics** (*to mix*); the system of **underground hoists in the Colosseum** for lifting the scenery for shows and the vertical construction technique of the drums of the **Trajan Column** (*to lift*) ; and finally, the **Domus**

Sponsored by MAIRE and its Foundation with the Parco archeologico del Colosseo, this photographic volume recounts the profound continuity between the genius of the ancients and the challenges of sustainable innovation.

Tiberiana, an example of "circular economy" (*to re-use*): these are the themes and concepts that give shape to the book.

The photographic section opens with photos by **Luca Campigotto** (a Venetian photographer known for his evocative night-time images of urban and wild landscapes) and continues with a selection of images taken by three teams of photographers from the Academies of Fine Arts in Rome, Milan Brera, and Catania during an immersive artist retreat. **Carmelo Nicosia**, a photographer from Catania and lecturer at the Academy of Fine Arts in Catania, in addition to his own photographs, coordinated the work of the photographers who took part in the artist retreat, which also included photographers and lecturers **Cosmo Laera** and **Alessandro Imbriaco**.

The volume develops a photographic narrative that weaves together the archaeological landscapes, captured by the photographers, with images of industrial landscapes from the MAIRE Archive, displayed in evocative diptychs where past and present mirror each other.

«Even the world of industrial production can provide an important key to understanding our lives, our thinking, and our plans for the future - emphasizes art historian **Nunzio Giustozzi** - *These images capture the sublime quality inherent in technology, a hyper-real beauty that transcends science and, perhaps, verges on the poetic. »*

Alongside the powerful photographs, texts written by **archaeologists, architects, renovators, and philosophers** accompany the reader on a journey that is as visual as it is conceptual. The common thread is the powerful act of designing a project: in *pro-jecting* oneself forward there is the possibility of a future. Forward, not only in space but also in time, there is the ability to imagine tomorrow. This is underlined by the words of philosopher and semiologist **Ilaria Gaspari**, which accompany each heading, suggesting that designing is not just calculating, but caring. It means leaving a mark. As she writes: «*In designing, inventiveness encounters the joy of making a mark and bears witness to the ability to imagine a future. »* It is in this tension that engineering rediscovers its most human dimension: that of a gesture that does not simply build but dreams up the form of what does not yet exist. A knowledge that is also desire, which is expressed in matter but originates in the soul.

Dario De Biaggio,
Rustic Mosaic, 2024

Rome, where every stone is a view into the future

«The Parco archeologico del Colosseo is home to monuments that represent enormous traces of human presence in the area. They are the result of the Latin in-genium: the ability with which man has always sought to design solutions by shaping the surrounding environment, » explain the project curators **Carlo Nicolais** (Director of Institutional Relations, Communication, and Sustainability) and **Massimo Dapoto** (Group Communication Manager) of MAIRE.

Imagination and vision become tangible thanks to the exhibition hosted during the Christmas holiday season in the Colosseum Archaeological Park: an exhibition that has allowed the public, right among the ruins of imperial Rome, to rediscover the profound meaning of the **dialogue between ancient engineering and contemporary sustainability**. *«This dialogue between past and future not only enriches the knowledge of our heritage but also stimulates reflection on how cultural heritage can inspire solutions for the technological and sustainable challenges of tomorrow, »* emphasizes **Alfonsina Russo**, Director of the Colosseum Archaeological Park. The photographic works, displayed in the very heart of the places they depict, have become lenses and mirrors: tools to take a closer look at the ties between technical culture, creative ingenuity, and ecological vision. The entire story is told in a podcast produced by Chora Media and narrated by Jacopo Veneziani, art historian and presenter, who accompanies listeners through words, sounds, and suggestions.

Training and engaging the humanist engineers of the future

One of the most significant aspects of in-genium is the direct involvement of young people. An entire generation is called upon to examine the legacy of ingenuity

and restore its vision. « *I am particularly pleased with the contribution of the photographers from the Italian Academies of Fine Arts,* - said **Fabrizio Di Amato** - *an opportunity for young talent to meet the challenge of representing yesterday's, today's, and tomorrow's engineering in the service of the energy transition. I am convinced that this initiative will be an inspiration to the humanist engineers of the future that we are helping to train, and whom we truly need.* »

A fruitful alliance between experience and possibility, in which industry becomes teacher and art becomes active thought. This is also the deeper meaning of the project: to cultivate imagination and responsibility through tools capable of inspiring and educating.

With the involvement of the younger generations, *in-genium* reinterprets Roman remains as tangible manifestations of technical knowledge that is, first and foremost, a form of imagination. **From the Domus Aurea to the Cloaca Massima, from the Colosseum's elevators to the Domus Tiberiana**, every ancient structure is interpreted as a human gesture that attempted to bring order to the world and make it habitable. Today, faced with an environment that is no longer hostile but fragile, chemical and industrial engineering is called upon to perform a new task: no longer to dominate nature, but to rebalance it, find new sustainable forms of production, and reuse resources and materials in a circular vision.

An aesthetic of responsibility

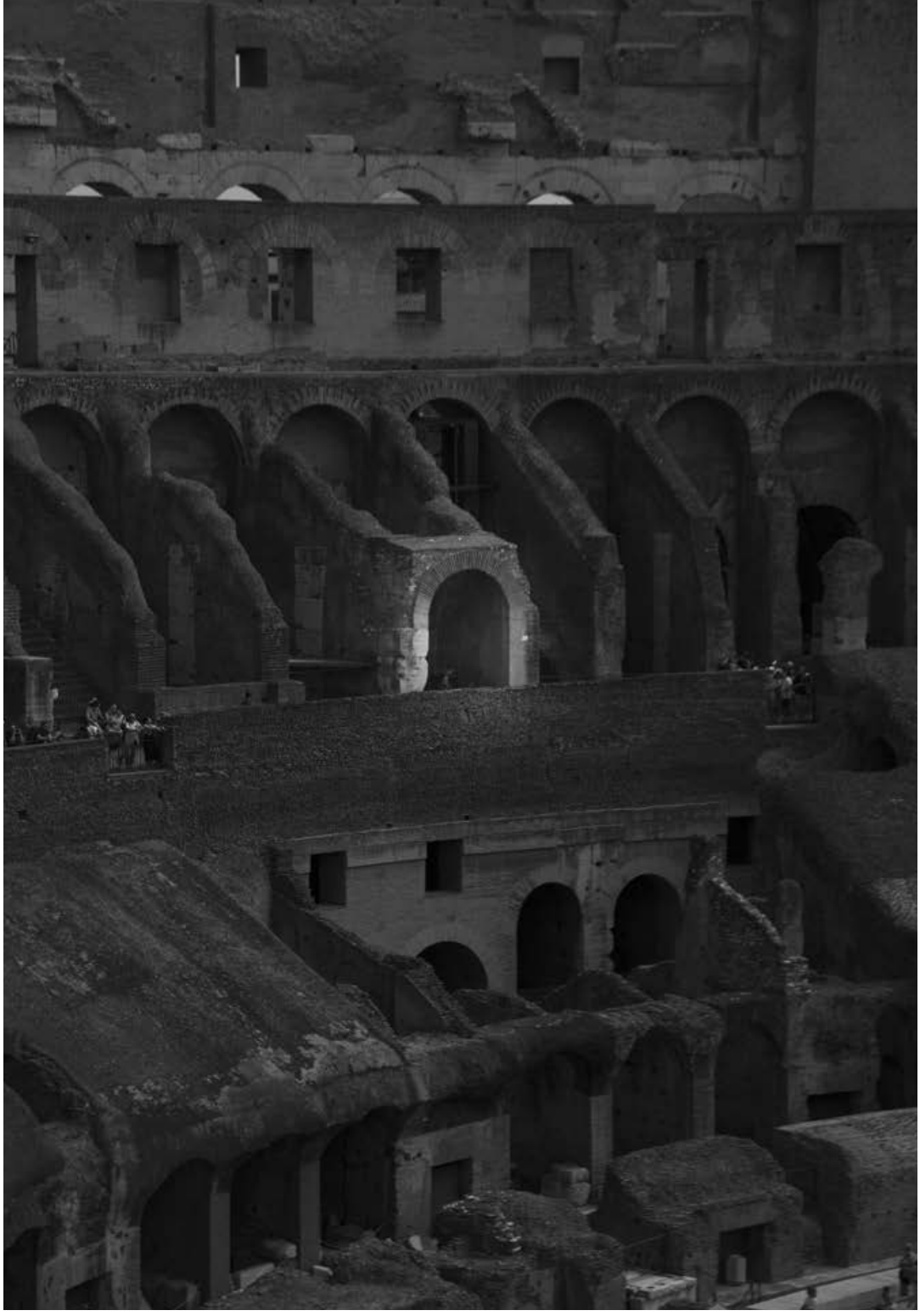
in-genium also represents an invitation to think of industry as a **space for culture**. The project itself is an example of how a company can promote aesthetic reflection, artistic experimentation, and spiritual research. Not only economic and social capital, but also symbolic and cultural capital.

We need new artist retreats, new courageous experiments that help us imagine what does not yet exist. Ideas that allow us to dream again, as in **Adriano Olivetti**'s vision: «*We dream of a free community where man's dwelling is not in conflict with either nature or beauty.* » It is in this vision that the profound meaning of *in-genium* lies: not a simple homage to the past, but an act of poetic design, aimed at a more harmonious, more conscious, more human tomorrow.

Questioning the past to build the future

In-genium finds its narrative and symbolic power in the encounter between past and future. The images of the present do not overshadow those of the past but rather question them. Ruins are not just remnants of the past but still have lessons to teach. The artistic gesture does not merely document, but revives, reinterprets, and designs.

In a world that is reflecting on its direction, *in-genium* reminds us that all authentic progress starts with an age-old question: **how do we want to live in our time?** It does so through the language of beauty, the ethics of design, and a forward-looking vision. Because perhaps that is precisely what design is: projecting hope forward, in concrete form, one stone at a time.



Gabriele Barbagallo,
Colosseum, 2024

in-genium. GAZES INTO TECHNOLOGY PAST AND FUTURE

Carmen Cardillo,
Roman Forum, 2024

On the right: Giuseppe Calabrese, Composition with Temple of Castor and Pollux and Head of Oriental, 2024

At the bottom: Carmelo Nicosia, Domus Aurea, 2024

Cosmo Laera,
Details of the Domus Tiberiana, 2024

Noemi Comi,
Statue of Aura, 2024

**On the top: Alessandro Imbriaco,
Out of focus Roman Forum, 2024**

**At the bottom: Luca Campigotto,
Arch of Septimius Severus, 2016**

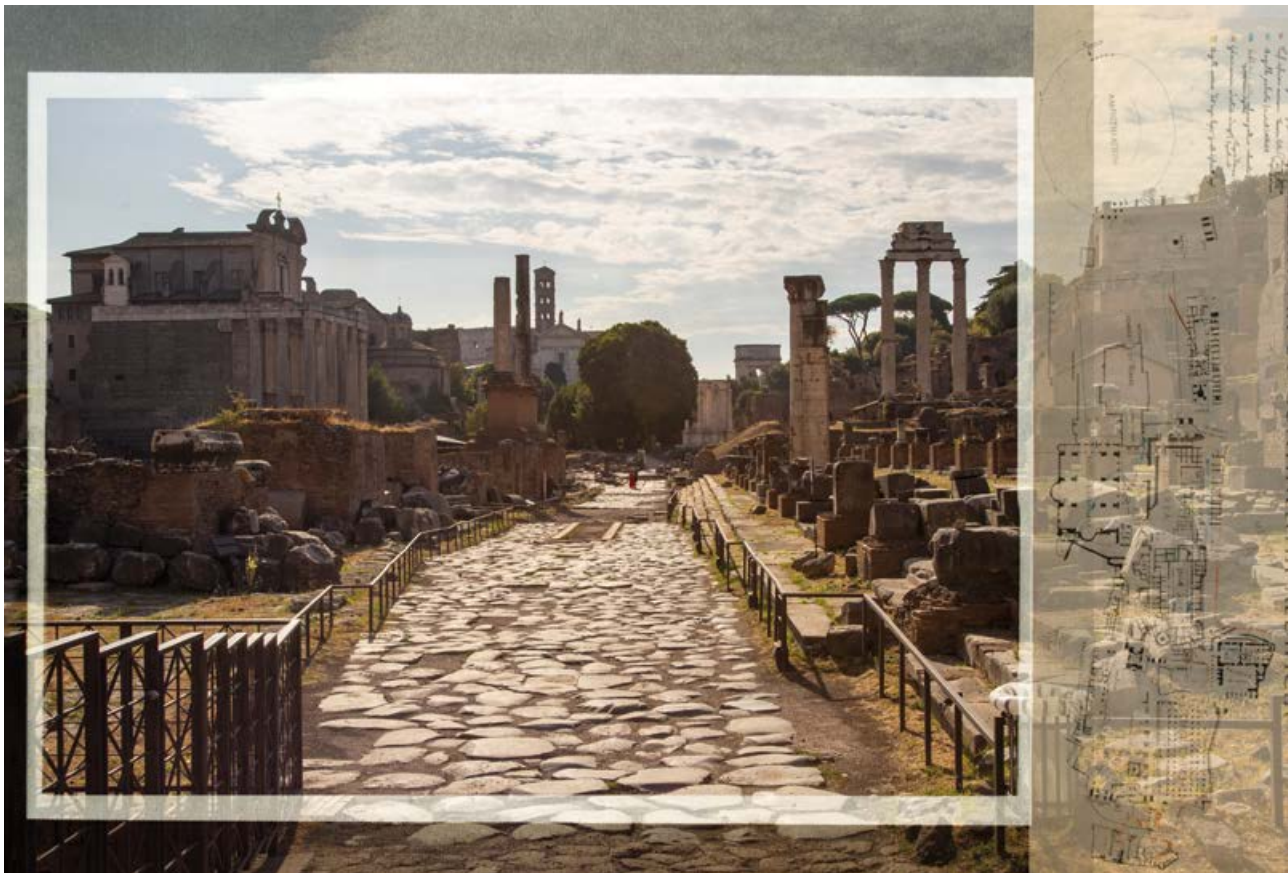
Cosmo Laera,
Modern lift at the Colosseum, 2024

On the top: Marco Agostini,
Composition of elements of the Horti Farnesiani, 2024

At the bottom: Carmelo Nicosia and Gabriele Argentino
Domus Aurea, 2024

On the left: Noemi Comi, Trajan's Column, 2024

At the bottom: Carmen Cardillo, Via Sacra, 2024



Gabriele Barbagallo,
Detail of Trajan's Column, 2024

With the 5xMille donation to the Fondazione MAIRE - ETS, engineering culture meets education, inclusion, and sustainability. It is not just a donation: it is a choice to make a real contribution to the future.

5XMILLE: BUILD THE STORIES OF THE FUTURE WITH US

« *The goal was not to limit ourselves to a conventional message, but to create a genuine invitation to participate,* » explains **Irene Di Amato**, member of the Board of Directors and Communication and Fund Raising Manager of the Fondazione MAIRE - ETS. «We want to involve people in a project that speaks to their conscience and skills, that inspires colleagues and the community to contribute in even different ways: with time, experience, memories, and expertise. Because every gesture - big or small - can build the future. »

It is from this collective vision that the **Fondazione MAIRE** - ETS's 5xMille campaign was born, created around the message: **"Build the stories of the future with us."** More than just a slogan, it is a narrative that opens up to everyone's contribution, transforming a tax gesture into an action of trust, vision, and shared impact.

5xMille

9 6 4 7 7 1 8 0 5 8 0

A social mission with industrial roots

The Fondazione MAIRE - ETS is a Third Sector Entity that was established within a large publicly traded industrial group. Its **hybrid and virtuous** organizational architecture allows the Fondazione to operate with autonomy while in synergy with a business ecosystem oriented towards innovation.

«The fact that the Foundation was created by a company such as MAIRE is both a challenge and an opportunity for us, » continues Irene Di Amato. «Two legally distinct entities, yet united by the same idea of the future: to generate social, environmental, and cultural impact through technological innovation. »

Since 2024, the Foundation's activities have been included in the sustainability report, within the **Group's consolidated financial statements** as a positive indirect impact. This link makes the Foundation a "sensitive bridge" between business, the local territory, and the community. *« Our mission* - adds Irene Di Amato - *is to contribute to building a more just, equitable, and sustainable future by taking action where there is a need to listen and act, especially in the field of education. »*

Three pillars, one goal: to generate impact

The funds raised through the 5xMille tax initiative support the Foundation's activities along three main trajectories: **education, industrial heritage, and socio-economic research**. These three pillars define a concrete mission: to build opportunities, appreciate the value of the past, and clearly understand the transformations that are taking place.

Training is at the heart of many of the Foundation's projects. *« With MAIREmpower, launched in 2024, we are supporting young people from disadvantaged backgrounds on their journey to a university degree, with three-year scholarships and dedicated coaching support, »*, explains Di Amato. The goal is clear: **to combat educational poverty and make access to STEM faculties a right, not a privilege**. Special attention is paid to girls who want to pursue engineering: *« We are also committed to encouraging*

Build the stories of the future with us

women to enter fields where their presence is still marginal, so that the engineering of the future is truly inclusive and diverse. »

But inclusion is not "just" about gender. *«Last year, the Foundation launched a research project on migration flows and energy transition, which will end this year, "* says Irene Di Amato. *The goal is to develop - using the research results as a starting point - a training program that promotes the inclusion of migrants in the job market of the energy transition sector. »* It is a way of connecting **the themes of innovation and social responsibility**, aiming for a future that integrates rather than excludes.

The second area of focus is the **valorization of our historic industrial heritage. The MAIRE Historical Archive**, a vast and valuable collection of documents, is being returned to the community through educational projects, exhibitions, and digitization. Here too, the involvement is collective: *«Many colleagues are contributing documents, stories, and experiences that enrich our archive. It is a way to preserve memory, but also to teach the value of Italian industrial history to new generations. »*

The third area of focus concerns studies and research, with particular attention to the most pressing social issues. *«We want to generate ideas,*

analysis, and knowledge - emphasizes Irene Di Amato - *and put them at the service of concrete training and educational policies.* » The call for proposals dedicated to migrants is only the first step: in the coming years, the Foundation intends to strengthen its role as an active player in the field of applied research and cultural transformation.

More than a donation: a generative alliance

Choosing to give **5xMille to the Fondazione MAIRE - ETS** means being part of a pact between generations. But the contribution does not end with the tax gesture. There are many other ways to participate, especially for Group employees: by dedicating your time, skills, equipment, and memories. By participating as a trainer, by proposing educational projects, by giving back an experience.

«*Our colleagues at MAIRE are the first ambassadors of the Fondazione,* » recalls Irene Di Amato. «*When they go into schools, when they dedicate part of their time to training or enhancing the archives, they are helping to build a legacy that is not only corporate, but also cultural. This is what we mean when we say, "Build the stories of the future with us": opening up spaces where everyone can leave a mark, starting with what they know and who they are.* »

A horizon open to new generations

Every project undertaken by the Foundation is driven by a deep conviction: the **younger generations already hold within them, in potential, the future we imagine**. It is a future that requires technical expertise, certainly, but also humanistic vision, social awareness, and the ability to listen and to care.

«*We were born to train the 'humanist engineers' of tomorrow: people capable of combining knowledge and responsibility,* » Irene Di Amato concludes. «*Donating 5xMille is a way of saying it loud and clear: I believe in it. And I want to be part of it. Not as a spectator, but as a builder.* »

WE MAKE ENERGY TRANSITION HAPPEN

ELECTRIC ORCHIDS

The artwork on the cover of this issue of EVOLVE was created by young artist Mattia Andronic, from the Benedetto Alfieri High School of Art in Asti. The title of the work is **"Electric Orchids"**. Through a surreal and symbolic composition, Mattia sought to evoke the connection between nature and technology, a central theme in sustainable innovation processes.

The flower, fragile yet full of life, grows from a pot connected to an electric cable, as if drawing energy from an unexpected source. The image plays on the union between nature and technology, suggesting that innovation can arise from this very encounter. The yellow background and minimalist framing highlight the message: even simple things can be powerful. The work invites us to look to the future with creativity and awareness, finding new energy in contrasts.