



Whitepaper

Humanizing Industry 4.0

Lessons learned from Senior Executives



A Publication by



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Introduction

By leveraging the power of emerging technologies such as artificial intelligence, automation, big data and the internet of things, Industry 4.0 has brought manufacturing and operational excellence into the digital age.

But now that factories and data are becoming connected, what about your people? How can you accelerate your digital transformation by putting your people at the center?

At EFESO and Solvace, we think a more collaborative approach is the key to success – and not just collaboration between people, but also between people and machines.

We also believe that this collaboration should be less top down and instead aim to facilitate collaboration between the shop floor and the top floor. This means shifting the focus from trying to control processes and instead towards looking at ways to further empower the connected worker.

But that's what we think. We wanted to know what you thought.

So, we asked.



Survey Says...

We surveyed Chief Digital, Operations and IT Officers, along with Transformation Directors, Managers and leaders from a wide array of sectors. We asked such questions as ‘what stage is your company at in its digital transformation journey?’ and ‘how would you describe that journey?’.

What we heard was that most companies surveyed ranked their digital transformation as being at the halfway point – the technology has been implemented and they are now ready to not only scale up, but accelerate.

While pretty much every company noted that this transformation was not easy, with many facing significant challenges, the majority continued nonetheless. This shows the value that today’s companies place in digitalization, particularly as a means of cutting costs, keeping up with the competition, increasing efficiency and productivity, and improving quality control.

Straight from the Horse’s Mouth

While these responses are insightful, we felt this survey was just scratching the surface as to how digital transformation is really playing out behind the typically closed doors of industry.

Believing that we can all benefit by sharing our experiences, talking about what worked – and what didn’t – and being candid about the challenges we face, we decided to dig a little deeper. We got on the phone (and Zoom, and Google Meet, and Microsoft Teams...) and had in-depth conversations with those on the front lines of Industry 4.0 and digital transformation.

The result of these conversations is presented in this white paper.

Instead of pages of theory and grand predictions, we are doing something unique: giving you direct access to change managers.

In the following pages, our interviewees discuss the real-life challenges and travails of conducting a digital transformation. You'll learn how Faurecia is leveraging the power of technology to take its customer experience to the next level, while Cargill is turning to advanced automation, emerging technologies and big data to digitize their supply chain.

Lamborghini, a company who ranks their level of digitalization rather high, shares why the farther you are on your journey, the more difficult – and costly – it becomes to transform further. You will also hear from Sandvik, who explains why coupling digitalization with operational excellence proved to be a key factor in their transformation.

Finally Philip Morris explains why one of the first steps in its digitalization journey was to become more like an ATM machine!

Empowering Your People

A consistent message we heard across all our conversations was that digital transformation cannot happen without the full support of your people. In fact, Saint-Gobain goes as far as to say that regardless of how digital a company becomes, you cannot take away the human factor.

Echoing this sentiment, A2A's strategy integrates digital transformation together with people management, with operational excellence, and with communication to create a single, seamless journey. At Ferrari, the company is exploring how it can use digital tools to better connect its sales team to its operations teams, and its operations teams to its customers.

One of the biggest challenges some companies face is convincing an old workforce to adapt to new technologies. Here, Avebe advises focusing less on the 'how to use' and more on showing the benefits of using a new process or technology. To empower their people, ams Osmram makes it a point to implement strategies that facilitate collaboration between the shop floor and management and to consider employee feedback when making decisions.

Sometimes You Need a Partner

These dialogues could spark your interest and enthusiasm, as they have for us. We are confident that you will find these conversations engaging, insightful and inspiring. The information provided in this publication can serve as a roadmap for guiding your own digital transformation. But sometimes you need more than a map. Sometimes you need a partner.

Whether you need a partner to completely digitize your operations across the world, to accelerate the implementation of your Industry 4.0 project or how to benefit from Internet of things or Artificial intelligence, we are there to help. Or maybe you just need a sounding board to start your company's conversation about where to start with your digital transformation....

Or to simply understand what's going on in the manufacturing processes of today - EFESO and Solvace can help you.

Sincerely,

Andrea Montermini

Vice President & Managing
Director Western EU
EFESO Management Consultants

www.efeso.com/industry-40/

Renato Basso

CEO
Solvace

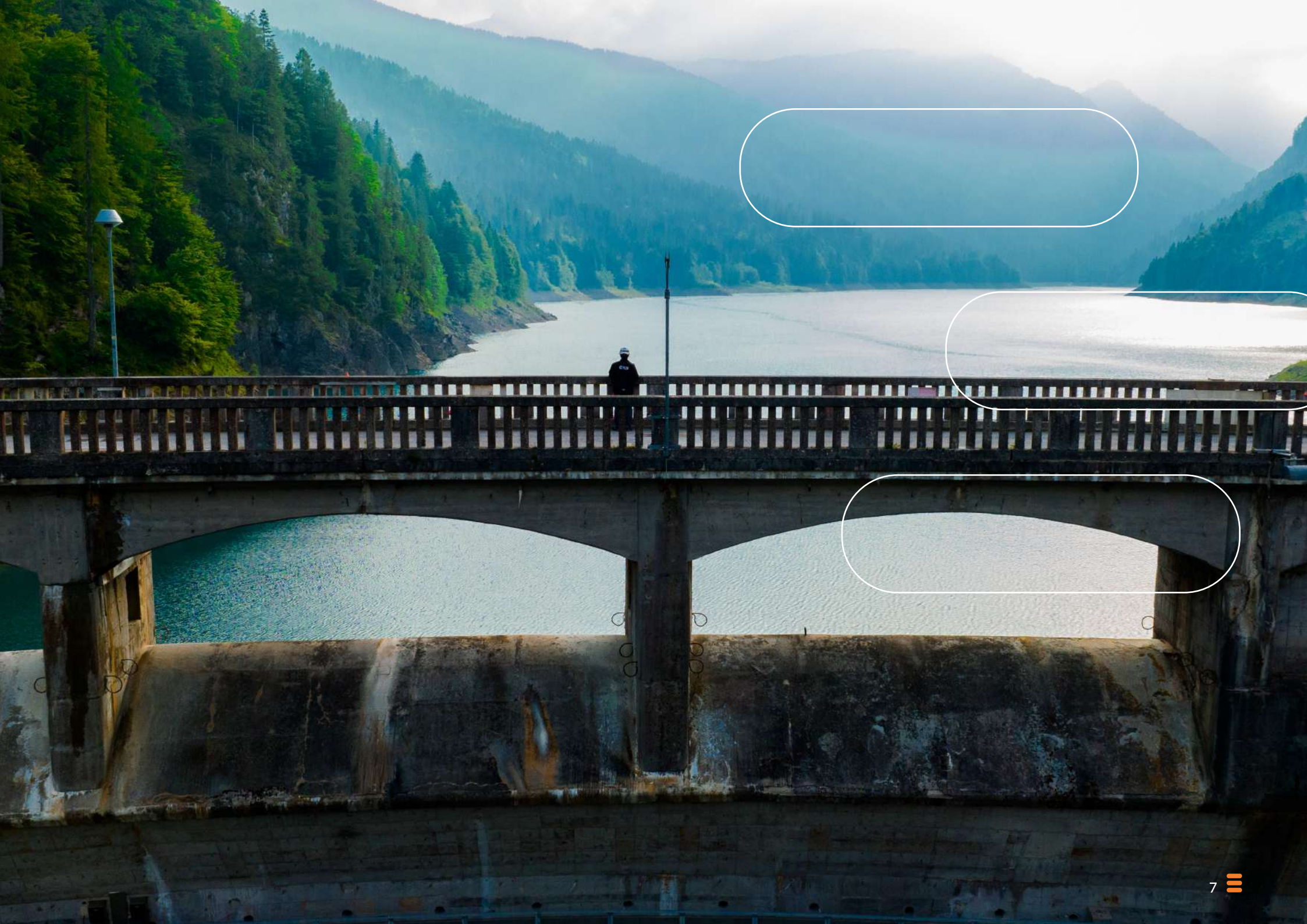
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Change Management Starts with Learning How to Change

Before it could change its workforce, A2A, an Italian utility company, had to learn to change itself.

With a portfolio that includes generating, distributing and marketing energy, distributing and marketing gas, water supply, waste management services, sustainable mobility and projects for smart cities, A2A is a very diversified company. Looking across the business, one will notice a wide range in how digitized a segment, service, or department is.





When you make a change to a process you have to enable your people to feel comfortable with that change.

Luca Maccarini,

Head of Digital Corporate,
A2A

For example, why the traditionally 'white collar' office-based jobs are generally at the high-tech end of the spectrum, the more manual, 'blue collar' jobs remain predominately paper-based. Considering that nearly half the company's workforce is employed in these blue collar business units, it should come as no surprise that this is where the company is focusing the bulk of its digitalization efforts.

"Ideally, we want all our operators to have a smartphone with the apps they need to contribute to our business by providing data in a more efficient and streamlined way" says Luca Maccarini, Head of Digital Corporate at A2A.

But making this change is a bit more complicated than just handing out new smartphones. To succeed, it must first clear a hurdle called 'company culture'.

"We are a company that does not like to make mistakes, so much so that we tend to avoid experimentation as that could lead to failure" adds Giampaolo Montemaggi, Head of Operational Excellence, Internal Communication and Change at A2A. *"One thing we are working on, from a cultural perspective, is how we can create an environment that isn't afraid to fail and thus open to change."*

In other words, how can A2A learn to change?

According to Maccarini, the place to start is with the company's people.

"If you tell one of our operators working on the ground that they need to use a new digital system, they'll likely ask 'what for';" explains Maccarini. *"If you can't answer this, if you can't show the benefits, then the change will not happen."*

A Single, Seamless Journey

To answer the 'what for', A2A has implemented a strategic framework for implementing digital change across the company. *"Our strategy integrates digital transformation together with people management, with operational excellence, and with communication to create a single, seamless journey"* says Montemaggi.

"When you make a change to a process you have to enable your people to feel comfortable with that change" adds Maccarini.

For A2A, this enablement meant starting at the beginning. After all, just three years ago, the company's blue-collar workforce didn't even have a digital identity – and it's certainly hard to use digital platforms when one doesn't have an email address to access those platforms.

"Look, just because someone is 'blue collar' doesn't mean they are digitally naive – like everyone else, they use smartphones and tablets and other technologies daily" notes Montemaggi. ***"The challenge is to transfer this digital knowledge from the home to the job."***

Here, A2A got a little creative. They created an app that employees can install on their own device and use for such practical tasks as checking their holiday time and submitting a request to stay home. By giving employees

a very good reason to use a digital solution at work, the company laid the foundation for adding other digital solutions into the repertoire. As a result, when the A2A released an application for its urban hygiene processes, users were happy to embrace it, seeing how it could help reduce paperwork and, ultimately, make their job easier.

"People are open to change, but change can't happen in a vacuum, you, as a company, have to be ready to make the change too" concludes Maccarini.



People Power

At ams OSRAM Schwabmünchen, successful change management starts with empowering your people.

Thomas Edison would hardly recognize today's lighting industry. *"Lighting is changing dramatically, having moved from yesterday's lightbulb to today's LEDs and towards tomorrow's smart lighting systems"* says Ingo Hild, Plant Operations Manager at ams OSRAM, a global leader in intelligent sensors and emitters.

But, as they say, the more things change, the more they stay the same. According to Hild, while the technology and tools may change, the key to navigating change remains the same: successful change management starts with empowering your people. *"The most powerful computers and most cutting-edge technology will be rendered useless if your people don't know how to use it"* he says.

In other words, the line between being a change leader and being disrupted by change is having the right team.

When Hild sees that line starting to widen, he makes moves to close it by getting the right talent. But for this he doesn't go looking outside the company. Instead, he starts with his own people.

"I have a very intelligent, capable team and it is on me, as manager, to leverage this talent and develop it to meet our plant's evolving needs" he explains.



For instance, one thing Hild does to leverage his in-house talent is create an environment that helps employees learn new skills, even if that means sometimes making mistakes. ***"As children, we are taught that we learn from our mistakes, so why aren't we encouraged to make mistakes in our professional lives"*** asks Hild?

To make sure his team stays curious, Hild works to facilitate a company culture that flips failure into opportunity. ***"When something goes wrong, we discuss it as a team and learn from each other"*** he says.

Hild also encourages his team to submit ideas for improvement. Each idea is fully evaluated by a dedicated management system, and employees are compensated and recognized for any idea that is ultimately implemented.

Collaboration Over Control

Another important aspect of ams OSRAM Schwabmünchen's culture is that it favors collaboration over control. ***"Today's factory is a far cry from the days when the plant manager was an all-knowing – and all-controlling – god"*** says Hild.

Instead, Hild makes it a point to implement strategies that facilitate collaboration between the shop floor and the top floor and to consider employee feedback when making decisions. For example, ams OSRAM Schwabmünchen kicks every year off with a team meeting where annual goals are clearly outlined. ***"When you communicate with your employees and they know where you're going, they can independently figure out the best way to get you there – that's the epitome of employee empowerment"*** explains Hild.

A regular feature on the ams OSRAM Schwabmünchen calendar are 'skip-level-meetings'. These meetings further facilitate communication by 'skipping' the middle management and allowing employees to talk directly with Hild himself.



Digital tools are at their most powerful when they are used to support your employees.

Ingo Hild,

Plant Operations Manager,
ams OSRAM Schwabmünchen

The content of the interview reflects Ingo's personal statement, not ams OSRAM one

Technology as the Cart, Not the Horse

While the focus of Hild's change management may be on the company's people, this doesn't mean technology isn't involved. It's just that at ams OSRAM Schwabmünchen the technology is the cart, not the horse.

"Digital tools are at their most powerful when they are used to support your employees" says Hild.

Hild uses this mantra when vetting new technologies. Instead of going for the shiniest thing on the shelf, he looks for solutions that can enhance his employee's performance or answer unmet operational needs.

"At the end of the day, digitalization is a puzzle that is put together piece-by-piece" concludes Hild. "While I know what the end picture will look like, the challenge is to find the right pieces and fit them together in a way that creates this vision."







One-on-One with Avebe

According to author Douglas Adams, ‘it’s a mistake to think you can solve any major problem just with potatoes’ – which is why Avebe, a Dutch company producing potato starch and protein, is turning to technology. To learn more about the company’s ongoing digital transformation, we sat down with Mark Tettelaar, Former Manager of Operations at Avebe.

You have a long history in the food and beverage industry, having worked at Heineken and the Bel Group before joining Avebe seven years ago. How has technology changed the industry – and your job – over the course of your career?

Considering that when I first started with Heineken I didn’t even have a computer, the simple answer would be ‘a lot!’ But even then, Heineken was at the forefront of adopting the latest technologies, believing that doing so would result in more advantages than disadvantages.



I also think that the food and beverage industry in general has always been an early adopter of new technologies. Because the processes we use are simple, at least compared to say the oil or chemicals industries, integrating new technologies is much easier.

The food and beverage industry is also a highly regulated sector, meaning there's no room for variation between plants or products. How do you minimize the risk for such variations? With automation, which is why the industry, in general, has always been ahead of the automation curve. I say in general because, surprisingly, Avebe was a notable exception.

I imagine your first task was to rectify this situation.

Absolutely, but automation doesn't happen overnight. It is particularly challenging at Avebe as we have six factories located in the Netherlands, Germany and Sweden, each of which has its own unique function – meaning there is no one-size-fits-all solution. Instead, each plant tends to be automated in its own way and by using different systems, whether that be Honeywell, Foxboro, Siemens or a combination thereof.

One of the first things I did at Avebe was to set up a strategy for moving us from six factories to a factory 4.0. This meant looking at the data and seeing how we can better connect all the operations happening across all our sites. The funny thing is that we had a lot of data already gathered, it's just nothing was being done with it! But at least we had the data, which meant we could move forward with our factory 4.0 strategy.

With this data in hand, we are now exploring it in databases and modeling it using dynamic dashboards. Because not every line is a priority, we start with the most important processes. It's a big job, but we're making progress.

Can you provide an example of what this progress looks like?

A good example can be seen in our shift to preventative maintenance. When I started, I would say Avebe was about 80% corrective maintenance, 20% preventive – which is an awful ratio as this means you are very unpredictable, always putting out fires and never able to implement structural plans.



One thing we have found to work is to focus less on the 'how to use' and more on showing the benefits of using a new process or technology. If they see the advantages firsthand, and especially if it makes their job easier, they will be more likely to accept – if not embrace – the change.

Mark Tettelaar,

Former Manager of Operations,
Avebe



Through automation and the use of emerging technologies, we have flipped this ratio in favor of preventive maintenance.

Part of this shift involved giving our operators devices, such as iPads, that they can use in their everyday processes. This means that when they do a tour of a process or a machine, they can take pictures, add comments, etc., directly into their personal device, which is then automatically added to our SAP system, ensuring that everyone is aware of the issue and can take immediate action when needed. We also implemented a digitized work permit process to ensure that all tasks are completed on time.

What challenges have you faced on your digitalization journey?

The biggest challenge is that we must convince an old workforce to adapt to new technologies. As they say, you can't teach an old dog a new trick, and considering that the average age of our operators is 55, training our people is an ongoing process.

One thing we have found to work is to focus less on the 'how to use' and more on showing the benefits of using a new process or technology. If they see the advantages firsthand, and especially if it makes their job easier, they will be more likely to accept – if not embrace – the change.

Speaking of having an older workforce, how worried are you about securing the talent you need for tomorrow?

We have big worries as there is a huge shortage of people with the technical skills we need. A challenge for us in the Netherlands is to position Avebe as an attractive employer – which is easier said than done as we're a relatively small fish swimming in a rather large pond of bigger, perhaps 'sexier', fish.

As we're talking about tomorrow, where do you see Avebe – particularly as to its digital transformation – in the coming years?

I think for us, the main goal of our digitalization is to get us to a level of automation that allows us to eliminate the risk of variations. As I mentioned earlier, variations are the bane of the highly regulated food and beverage industry, and Avebe is no exception.

To achieve this level of operational excellence, in the coming years we will likely focus on integrating the best sensors into our processes so that we can gather even more detailed data. At first this data will enable our operators to intervene at the first sign of a deviation, but ultimately, we want this intervention to also be automated.

If we can do this, then I believe Avebe, as a Factory 4.0 company, will be fit for the future.



Connecting the Digital Dots

Cargill's digitalization journey involves advanced automation, data and analytics.

At first glance, Cargill might not look like your typical tech company. As a global food corporation, you're likely to see more silos than servers.

"We have something like 160 grain elevators, with many located in the middle of nowhere – which can make it difficult to digitize" says Nikolas Rocon, Regional Smart Manufacturing Leader at Cargill Agrícola S.A. in Brazil.

But if you look a little closer, you'll see that these are more than just farms, they're part of a state-of-the-art, highly connected agricultural supply chain.

"Cargill has been automating its operations for the past 30 years" adds Rocon.

Using this automation as a foundation, the company is now in the process of adding a new layer of digitalization to its global assets – an ongoing process that is being rolled out via three key steps.





Step 1: More Tech

In the first phase of Cargill's digitalization journey, the company looks to enhance its legacy automation solutions with next generation capabilities.

"We're adding artificial intelligence, connecting robotics, and exploring emerging technologies that can enhance the level of automation we already have in our plants and facilities" explains Rocon.

But Rocon is quick to note that automation is not meant to be an alternative to human talent. Instead, every new technology incorporated into a plant or facility aims to support the company's people and streamline its operations.

"Nobody wants to climb four levels of stairs to open a valve or make a trip to turn on a motor, and why should they when it is something we can easily do by connecting automation with digitalization on the shop floor" remarks Rocon.

Speaking of technology and employees, Cargill also makes it a point to look at how its people interact with technology. For instance, knowing one is more likely to use a technology when they understand it and are comfortable with it, the company looked at ways to design applications that employees could install on their own digital devices. As a result, employees can often monitor quality, raw materials and finished products from the palm of their hand, and a significant amount of the paperwork once involved with these processes has been all but eliminated.



Our primary objective is to use technology, to use digitalization, to make our processes smarter and more efficient and to make everyone's lives easier and keep our businesses competitive in front of the market challenges ahead.

Nikolas Rocon,

LATAM Smart Manufacturing Leader,
Cargill Agrícola S.A.

Step 2: Enhanced Data

In addition to improving efficiency, this new layer of automation also results in the collection of massive amounts of data. Thus, the second step of Cargill's digitalization journey is defined by data.

"What's unique about this data is that it comes from our operators" explains Rocon. "Again, sometimes using their own devices, our people can collect images and recordings that add an important human perspective to our data collection process."

According to Rocon, this human-collected data has the potential to enhance all the data that is automatically generated by the company's equipment. But doing this involves advanced analytics, which just so happens to be Step 3 in the Cargill digitalization journey.

Step 3: Analyze This

Data without insight is meaningless. The way you get that insight is through analysis.

For Cargill, that means using advanced analytics, such as machine learning algorithms, to analyze all the data that's being collected from across all sources and sites, and then turning that information into actionable insight.

"By connecting our entire agriculture supply chain, we're creating an ecosystem of interconnected data and applications that we can use to power our business optimization process" says Rocon.

Three Dots on a Page

Advanced automation, data and analytics. Individually, they're nothing more than three dots on a page. But connected, they form a direct path to a digitalized supply chain.

"Analytics needs data, and usefull data doesn't grow on trees, it comes everywhere but needs automation and technology to be captured, treated and further used" concludes Rocon. "The beauty is when connected, these three components create a connected company ready to lead the future."

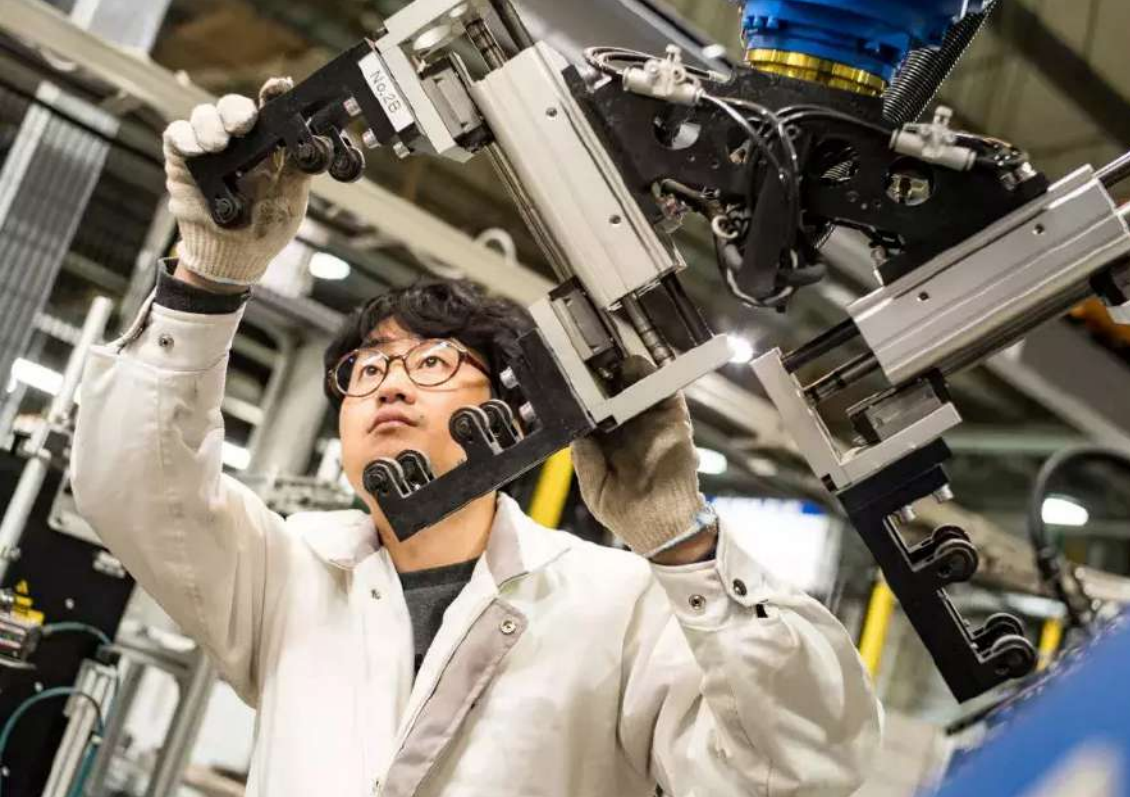


Digitizing the Five Star Customer Experience

When it comes to driving the transformation, for Faurecia, a global leader in automotive technology, the destination is total customer satisfaction.

Faurecia has built a company culture centered on its customers and focused on continually improving how it serves them – with the goal of being their preferred supplier and partner. The foundation from which this culture has been built is the Faurecia Excellence System (FES), recently renamed FES X.0.

Based on the lean management approach, FES X.0 involves all functions and aims to understand, anticipate and exceed customer expectations – something it does via a combination of technology and people. For example, Faurecia launched an app that allows customers to provide feedback anywhere, anytime. In 2022, it received over 3,260 customer responses from over 1,500 unique users, with an average rating of 4.6 stars (out of 5).



“The confidence of Faurecia’s customers in our strategy is expressed both through its record order intake over the past few years and the numerous awards that customers give to the Group for global performance, manufacturing excellence, cost savings and innovation” says Frederic Moret, Worldwide Industrial Director at Faurecia.

But this feedback isn’t just a pat on the back – all concerns and issues are proactively addressed. ***“Achieving that coveted five star customer experience requires a near-perfect match between our customers’ expectations and our capacity to deliver on those expectations”*** notes Moret.

Digitalization is Flexibility

When it comes to achieving this match, Faurecia can leverage its high level of digitalization. In fact, following a comprehensive transformation project launched in 2016 that saw the integration of a wide range of Industry 4.0 technologies into its processes, Faurecia is today considered one of the most modern factories in France and beyond.

“This digitalization gives us flexibility, meaning we can react to customer and market changes and switch from one product to another in near-real time – which is one of our key competitive advantages” explains Moret.



Moret particularly notes the important role data plays. *“With the right algorithms, when a change needs to be made, we can quickly analyze all the data on what has been produced and use that to accurately forecast our capacity to manufacture the new product”* he says. *“Without digitalization, such flexibility would be impossible.”*

Whenever Faurecia purchases a new machine, it gives the supplier a list of data they expect the machine to provide and in what format it must be provided. Thus, every machine should provide the same type of data – adding an important layer of consistency across all the company’s sites.

The same goes for reacting to a customer concern or issue. *“When digitalization is done right, everything is transparent – you can look at the data, identify the problem – even predict the problem – and then act”* remarks Moret.

Problem Solving Starts on the Shop Floor

Data and digitalization also ensure that issues can be addressed not from the top down, but directly where they happen: the shop floor. *“A critical feature of our FES strategy is that it places the bulk of our problem solving with our shop floor people”* says Moret.

To secure its long-term customer centric transformation, Faurecia has rolled out a five-star certification program focused on enhancing the service mindset and skills of its people.

As Moret explains, whenever there is an issue, it first goes to the shop floor, ensuring that the operator immediately sees the issue and can react. If the issue cannot be fully addressed by the operator, the FES includes a hierarchy of action, meaning the operator is always clear about who they should escalate the issue to.

This approach has proven to be very efficient, with about 99% of all issues being handled by the company’s shop floor employees.

“By involving everybody – from the shop floor to the top floor – and providing them with the right digital tools, we are well on our way to delivering a five star customer experience” concludes Moret.

Lamborghini

One-on-One with Lamborghini



For many companies, digitalization means standardization. But for Lamborghini, it's all about product adaptation – finding a more efficient way to produce more customized cars. Lamborghini Chief Manufacturing Officer Ranieri Niccoli explains.

On a scale of 1 to 10, where would you rank Lamborghini's current level of digitalization?

While we've always used technology, we really began digitizing in earnest starting in 2017, first in the leadup to the launch of the Urus, our Super SUV, and then, most recently, with the launch of the Revuelto, our new flagship vehicle.

In both cases, our digitalization process was a bit akin to trial by fire. For example, with the Urus, not only did we have to produce an all new, high-tech, highly customized luxury vehicle, we also had to more than double our production volumes – going from 4,000 vehicles a year to more than 9,000.





For us, digitalization touches on the entire production process, from designing the car to delivering it to the customer.

Ranieri Niccoli,

Lamborghini Chief Manufacturing Officer

This was quite the incentive to change and to fully leverage digitalization. As a result, I believe, at least compared to the automotive industry in general, we are quite advanced in terms of digitalization. If I had to rank us, I'd put us at a high seven.

What does digitalization look like at Lamborghini?

For us, digitalization touches on the entire production process, from designing the car to delivering it to the customer. In this sense, digitalization, and all the various technologies and processes involved, follow the development of the car. Thus, before a new solution is introduced, we make sure it will advance the vehicle's development. What we don't do is introduce technology for technology's sake.

How do you find the right technology?

This is an ongoing challenge for us. Take for example the development of the Urus and the Revuelto. These are two new products that have never been done before. This makes it extremely difficult to define what you need.

It also makes it difficult to find the right technology. Even if you know what you need, more often than not, the right solution does not exist. I guess that's one of the hazards of being a pioneer in digitizing an industry!

Is Lamborghini now 'fully digitized'?

Digitalization is a never-ending journey, and we continue to refine our processes. As I mentioned, with the launch of the Revuelto, we further fine-tuned our digital production processes, adding, for example, the production of carbon fiber.

The challenge is that the more digitally advanced you become, the more difficult – and costly – it is to take the next step. When you first start, digitalization happens in leaps and bounds, often delivering big results. But the further you go down this road, the smaller the changes, the more minut the benefits – with each step requiring much more time and investment.





Is there an example of a technology that you're working to integrate into your processes?

We are currently taking a deep dive into virtual reality. We feel this technology is mature enough that we can explore where its use could potentially benefit our processes. We're already using VR goggles in our carbon fiber production, with workers using the technology to precisely add glue and stickers to the carbon fiber chassis.

What about artificial intelligence?

While I believe AI has great potential, it's not yet mature enough for our needs. We need to first understand the technology before we can understand how to best use it. With AI, we're just not there yet.

Where I think AI will be a real game changer is with data management. Our digitalization process produces tones – giga terra – of data every second. But we don't have the ability to use this data, which is an absolute waste.

I believe AI will provide us with the tools we need to process – and act – on our data.

What is the ultimate goal of your digitalization journey?

Whereas most companies draw a direct line from digitalization to standardization, for Lamborghini, it's all about building flexibility, agility, and customization into our production processes. Our customers don't want a car, they want to have their car. They want a Lamborghini that nobody else has. So, even as we look to increase volume, we must do so without losing our ability to customize, which puts incredible pressure on our production process.

For us, digitalization is the answer to maintaining this balance. By digitizing, we aim to essentially put customization on autopilot.



Philip Morris

Orchestrating the Perfect Day

For Philip Morris International, Industry 4.0 is all about making its manufacturing processes smarter.

There's an ambition in manufacturing: A perfect day on the production floor where there are no safety nor quality incidents, and when there are no unplanned stops on the machines. It's PMI's ambition and what they're striving for as part of their lean manufacturing methodology – having the right set of tools, processes and capabilities to make every day a perfect day.

According to Reza Shahrabaki, Vice President for Engineering Solutions at Philip Morris International (PMI), the perfect day is no longer a factory fantasy. With the right data, processes and mindset it can be a reality.

"If you analyze the data from what happened on even a near-perfect day, you can better understand the critical values and variables that were in play" he says. "If you understand this, you can replicate it, essentially creating a digital twin to the perfect day."

Unfortunately, doing this is easier said than done. That's because digitization is a journey that takes both patience and resources. ***"Just as Rome wasn't built in a day, neither is the perfect day"*** adds Shahrabaki. ***"In other words, you cannot launch something of this magnitude and expect to see results in six months – change takes time."***

Back to Basics

While there may not be a shortcut to achieving the perfect day, companies do have access to 'enablers' – a sequence of steps, with each step enabling the next. One of the first steps in the company's digitization journey was to become more like an ATM machine.

"Many of us across the world use ATM machines. Over the years these machines have standardized the human machine interface (HMI) and we have reached the stage where you can close your eyes and go through the procedure as you know the sequence by heart. The question I have is : 'Why should the HMI in manufacturing systems be so complicated ? We should have this same level of user friendliness with our machines so operators, no matter where they are located or what machine they are using, will intuitively know what to do'" says Shahrabaki.

For Shahrabaki, this exemplifies the importance of getting the basics right. *"A digital transformation must start with the basics – ensuring you can access the data you do have and then use it in your operations on a daily basis"* he adds.

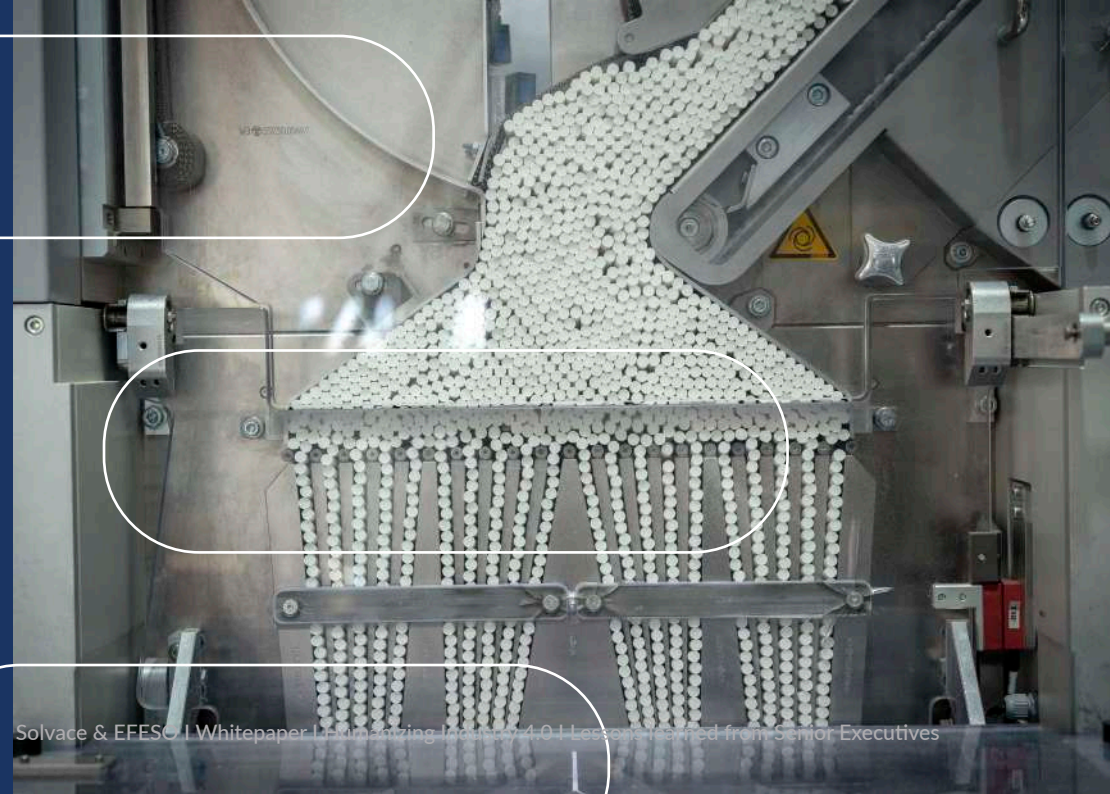




Factory employees will become manufacturing maestros, using data to conduct predictive maintenance, improve efficiency, ensure operational excellence and orchestrate the perfect day every day.

Reza Shahrabaki,

Vice President for Engineering Solutions,
Philip Morris International



Learning to Fail Fast

Having the right data enables a company to take the next step of introducing new technologies into its processes. For example, PMI has started introducing machine learning algorithms to analyze data and help the company refine its approach to digitization.

However, when it comes to adopting new technologies, Shahrababaki recommends that companies learn to 'fail fast'. ***"Not every new technology makes sense for every operational need, but the only way to know is to try"*** he says.

Here, PMI uses rapid testing and simulations to quickly evaluate a technology or application's potential with limited financial and time commitment.

"I don't shy away from trying, but I also don't like to insist too long" notes Shahrababaki. ***"If something doesn't work, move on – that's how you fail fast."***

People-Powered

Digital transformation isn't just about technology; it's powered by people. It's like a symphony orchestra – you will get a harmony while working together only when everyone plays their part best and listen to others.

When teams collaborate, silos disappear, and businesses can adapt faster. Being on the ground, in the 'gemba,' encourages us to dream big but start small, test ideas, embrace successful strategies, and continually improve. Think of it like building a skyscraper, one floor at a time, ensuring each level is sturdy and well-crafted.

Open communication and a focus on customers becomes the guiding star, where data and technology are trusty tools in our hands, used by our people who make the magic happen in the digital world!

Towards the Factory of the Future

Thanks to its step-by-step approach to digital transformation, PMI continues to make its manufacturing processes smarter.

"There is no finish line to digitization, it's an ongoing process – and challenge" says Shahrababaki.

Having put in the time to get the basics right, the company is well positioned to evolve into the next phase of its digital transformation, a phase that Shahrababaki believes will involve even smarter machines and more data, reducing repetitive or ergonomically unsuitable tasks.

Manufacturing Maestros

According to Shahrababaki, tomorrow's factory will be like today's air traffic control tower. Instead of pushing buttons and restarting machines, factories will have highly-skilled employees monitoring and managing operations from data-driven control rooms. And just as components of an aircraft communicate directly with a control tower, the smart machines of the future will communicate directly with the workers in the control room.

"Factory employees will become manufacturing maestros, using data to conduct predictive maintenance, improve efficiency, ensure operational excellence and orchestrate the perfect day every day" concludes Shahrababaki.



Revolution 4.0

At Saint-Gobain, which designs, manufactures and distributes materials and services for the construction and industrial markets, the Industry 4.0 revolution is just as much about people as it is about digital.

2018. That was the year the revolution started. *“There was a lot of hype but also a lot of confusion”* recalls Kyle Tansill who, as an automation engineer, was on the frontlines of Saint-Gobain’s Industry 4.0 revolution.

According to Tansill, who today serves as Digital Manufacturing Solutions Architect at Saint-Gobain Life Sciences, the spark that lit the digitalization fire was a spur of acquisitions. *“Facing a low level of standardization for our machinery, we turned our focus to automation and connectivity”* he says.

It was also a matter of bringing the company from the Paper Age into the Digital Age. *“We got to work using Google Maps on our smartphone, but once we are there, we switch the phone for pen and paper”* explains Tansill.

However, as Tansill is quick to point out, the solution to this problem wasn't as easy as replacing the pen and paper with tech and apps. Change is never so simple. *"We brought in all these sexy tools and then we realized that while everyone knew we should be doing something with them, nobody actually knew what that something was"* he adds.

To bridge this digital disconnect, the company took a couple of steps back. They started with skills, ensuring that its people had basic automation skills. They also upgraded their PLCs and invested in automation infrastructure.

As a result, today Saint-Gobain is in a position where most of its strategic machinery features updated PLCs and some form of connectivity. Most importantly, its sites are staffed with people who understand automation.

"Our teams didn't know what an industrial network was just a few years back" remarks Tansill. *"Since then, they've developed the necessary skills, which puts us in a really strong position going forward."*

Digitize Your Head

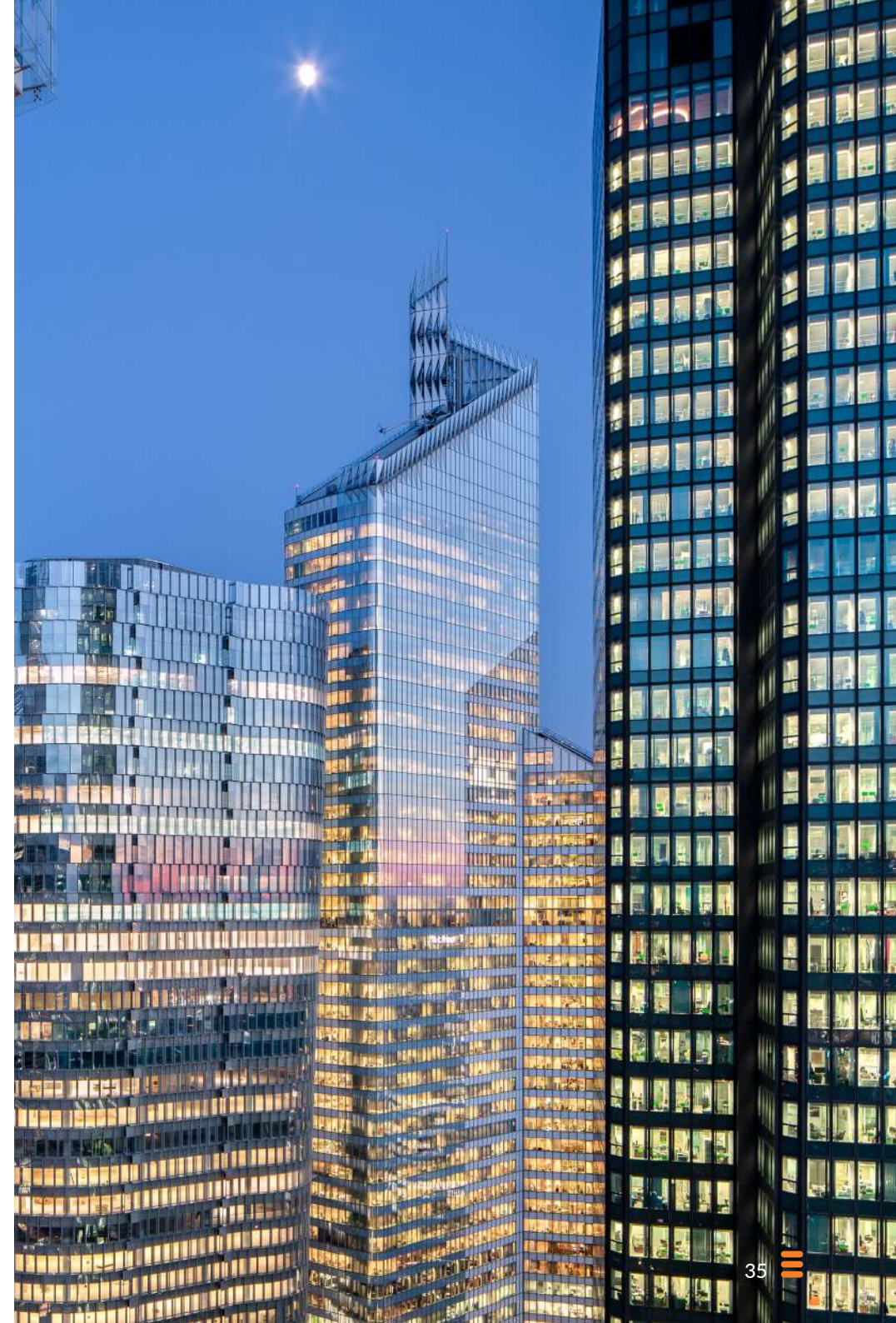
While going forward does mean increasing automation, it does not mean replacing people. *"Regardless of how digital a company becomes, you cannot replace the human factor"* says Tansill.

So, how does one preserve that essential people component in a sector notorious for having a high turnover?

Somewhat ironically, the answer is digitalization.

"Turnover means more than just having to train new people, it also means constantly losing your company's knowledge base" explains Tansill.

To help plug this leak, Saint-Gobain is in the process of digitizing its know-how. One approach being implemented involves utilizing data to establish standardized operating procedures for its machinery. This ensures that the operational steps are embedded within the machine itself, rather than relying on an individual's memory or personal knowledge.





Regardless of how digital a company becomes, you cannot remove the human factor.

Kyle Tansill,

Digital Manufacturing Solutions Architect,
Saint-Gobain Performance Plastics

The company also decided to bring in a ringer. ***"We employed a top-level senior software engineer who was an incredibly talented Python developer and all-around software genius"*** says Tansill.

While the developer was only with the company for less than two years, his impact remains. ***"Having this developer allowed our automation developers to learn how to do develop properly and then implement a proper continuous integration lifecycle and support system"*** adds Tansill.

We'd All Love to See the Plan

Over the course of six years, Saint-Gobain went from Industry 3.0 to Industry 4.0. Yet its journey is far from over. In fact, Tansill doesn't even like the term Industry 4.0, believing it gives the false perception that one comes in, does digital, and then is done – which clearly is not the case.

"Digital shouldn't be seen as the end but the means to achieving the goal of improved performance" says Tansill. ***"Whatever domain you're working in, you need to accept that even though your expertise might be digital, you are just as responsible as everyone else for the company's performance."***

Yet while Saint-Gobain's digital transformation may be an ongoing work-in-progress, they do have the benefit of hindsight – meaning they can offer some sage advice for those just starting off on their journey.

"Do not start this journey without a clear plan of where the business is going" warns Tansill.

As Tansill explains, without a plan, you risk deploying technology for technology's sake. ***"But with a well thought out roadmap, you can match technology to objective, ensuring that every investment gets results, improves performance and, ultimately, advances the company towards where it wants to be"*** he concludes.

The image shows a modern glass skyscraper with the Saint-Gobain logo prominently displayed on its facade. The logo consists of a stylized red and blue graphic above the company name in blue capital letters. The glass reflects the sky and surrounding buildings.

SAINT-GOBAIN



Digitalization with a Purpose



Sandvik, a Swedish multinational engineering company specializing in products and services for mining, rock excavation, rock drilling, rock processing, metal cutting and machining, recently underwent a comprehensive rebranding. At the heart of that rebranding was digitalization.



For Sandvik, digitalization was something that they knew they needed to do. The challenge was the 'how' and the 'what'. *"We knew we wanted to digitize in order to reduce costs and increase efficiency"* says Adriano Leone Osti, Program Lead Manufacturing Excellence Industry 4.0 at Sandvik. *"What we didn't know was where to begin."*

For Osti, an obvious place to start was with the customer experience. *"We built a digital platform that our customers can use to monitor the performance of their machines and predict potential failures"* he says. Not only was this individual platform a success, it also served as a clear case study on how to implement a successful digital transformation project. *"Digitalization takes time, which is something that tends to be in short supply"* adds Osti. *"More often than not, management wants to see results and they want to see them fast."*





Digitalization and operational excellence are invariably linked, in fact, it's hard to do one without the other.

Adriano Leone Osti,

Program Lead Manufacturing Excellence Industry 4.0,
Sandvik



This means that change managers need to keep senior managers convinced about the importance of these long-term digitalization projects. ***"It is essential that you keep management updated about a project's progress and how it will ultimately benefit the company"*** says Osti.

Another challenge is that a change manager will sometimes be required to discuss a project with someone with little to no knowledge of the topic. ***"Having a successful example with clear results in your back pocket – such as our customer application – can certainly help overcome this hurdle"*** notes Osti.

Digitalization and Operational Excellence – Two Peas in a Pod

A key aspect of Sandvik's digital transformation is that it is tied directly to operational excellence. ***"Digitalization and operational excellence are invariably linked, in fact, it's hard to do one without the other"*** explains Osti.

For Osti, operational excellence is the roadmap that guides all his team's digitalization projects. ***"In doing so, we can ensure that we aren't digitizing just to digitize, but that each project serves the purpose of advancing our operational excellence"*** he says.

By providing a comprehensive view of where the company is, where it wants to go and how digitalization will help get them there, this roadmap lets the company optimize the tools and processes they already have instead of changing the entire system. It also allows those people working on a specific project to see the 'big picture' benefits of their work.

"When an employee, whether they be middle management or on the shop floor, sees where their work fits into the big picture, they feel a part of that picture and are thus motivated to embrace the change" notes Osti.

The Importance of Partners and Performance Management

For those just getting started on their own digitalization journeys, Osti offers two final pieces of advice: invest in your partners and in a change management system.

As to the former, the key to a smooth digital transformation is having the right partners. ***"The projects that succeed tend to be the ones who are able to select the right partners and who get those partners to work together"*** says Osti.

Last but not least, Osti stresses the importance of having a performance management system in place. Such a system allows one to monitor all the relevant data and weed out everything that doesn't matter, leaving you with a clear picture of what you want – and often need – to do.

"If you have a performance management system in place, then you're already well on your way to a successful digitalization project" he concludes.



Conclusion

The digital transformation landscape is terra incognita for many, rife with challenges but equally replete with opportunities. As our EFESO/ SOLVACE survey indicates, 81% of industrial firms have grappled with this transformation, and nearly a fifth have capitulated to the enormity of the task. This is not just a technological pivot but a top-down strategic revolution that begins in your office.

The crux of the matter, as faced by 67% of your peers, is change management. The ability to shift an entrenched mindset, to persuade seasoned employees to welcome new technology, is a Herculean task—but not insurmountable. The second obstacle, the one that has stymied more than half of your counterparts, is the alignment of data and systems. Seamless integration is not just a goal; it's a necessity for forward motion.

This is not a white-collar crusade alone. The shop floor, the backbone of industry, is ripe for digitization. But this requires a culture that champions innovation and forgives the stumbles that come before the stride.

Remember, the digital shift is a human endeavor as much as a technical one. It's about guiding your teams through the transformation with a well-calibrated pace and a clear vision. The intensity and scope of change are yours to command.



Digital transformation is not an option; it's a prerequisite for survival in an era where technology rewrites the rules of the game daily.

Your strategy should carve a path through the digital wilderness with a purpose—improving productivity, efficiency, and enhancing the very fabric of your workforce's day-to-day roles. We are not digitalizing for the sake of buzzwords; we are rebuilding for resilience, efficiency, and competitive edge.

Digital transformation is not an option; it's a prerequisite for survival in an era where technology rewrites the rules of the game daily. This entails transforming procedures, maximizing data use, and enabling all team members to adopt and propel this new reality forward.

As we stand at the threshold of the future, your digital transformation is not merely an upgrade; it's a renaissance. It's a commitment to progress, to lead, and to outpace in a race that is increasingly defined by digital prowess. Together, let's shape the future of industrialization—one that is smarter, more connected, and unequivocally human.



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