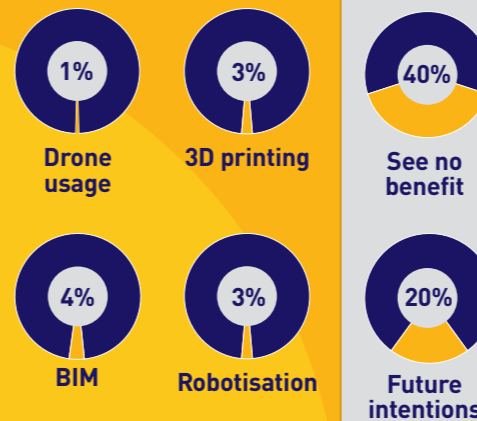# Panasonic
BUSINESS

TOUGHBOOK

DIGITALISATION IN THE CONSTRUCTION SECTOR: **SLOW, BUT STEADY!**

Digital revolution, big data, virtual and augmented reality, drones, 3D printing, artificial intelligence.

Not a day goes by without being confronted (in)directly with digitalisation...

The digital transition boomed after World War II and gained momentum in recent decades. The communication boundary between man and machine has now become entirely blurred; today, machines can also communicate with each other effortlessly. And we haven't seen it all yet! Because the possibilities are endless.

Much has been said about the usefulness, importance, and necessity of digitalisation in the construction sector. The recent advancement of digital technologies has opened doors (online sales, sharing platforms) and encouraged new production techniques. Both in industry and construction, 3D printers, smart glasses, and Building Information Modelling (BIM) are increasingly being utilised.

By making changes in designs immediately and digitally on-site via BIM for example, productivity increases, and the chance of errors decreases. As a result, a digital transition will also significantly reduce personnel costs and increase safety on construction sites. Moreover, digitalisation and automation also partly provide an answer to the dire and persistent shortage of qualified workers.

There's no reason to doubt the march towards full digitalisation then, you would think. Yet digitalisation is not progressing rapidly in the construction sector, and has been in its infancy for several years now.

A 2018 study by the Confederatie Bouw in Belgium, in which 272 construction companies participated, found that only 3% already carry out 3D printing, only 3% use robotisation, 1% work with drones, and 4% use BIM. A large proportion of those surveyed – 20% – expressed their intention to integrate one or more applications in the near future. No less than 41% did not see the point of it.

1% Drone usage

3% 3D printing

40% See no benefit

4% BIM

3% Robotisation

20% Future intentions

RESEARCH FALLOUT

The research was not only a cold shower for everyone promoting digitalisation

it also turned out to be a wake-up call. Because three years later, we notice that the construction sector has made a cautious but steady catch-up. "It remains a difficult story, but in many areas, things are gradually going very well," says Vince Feytongs, Construction Transformation Consultant at Confederatie Bouw Limburg in Belgium. "But I'm mainly talking about the individual islands of the companies. Internally, we see that many companies have already implemented extensive digitalisation, and paperwork is a thing of the past. At the office, in production, and on the construction site. That is very positive. Digital linking to external parties, partners, and suppliers is a different story. The construction sector still has a long way to go there, but steps are being taken."

It's clear that the construction sector has been in its infancy in terms of digitalisation for several years, but the way forward has been set.

Vince Feytongs: **"The interest and the will are certainly there. For example, many companies have already made efforts to implement BIM. The basis is often good, but it fails due to a lack of personnel and/or resources. Another tricky issue is accuracy, which is very important in the construction industry. Many virtual reality and augmented reality projects are already underway, but the applicability is currently too low due to a lack of accuracy. Different technologies have to be linked with each other, and that requires extensive data management and analysis. And investments. Incidentally, the suspicion is mutual because, at the same time, the sector is also regularly viewed condescendingly from the technological side."**

IT REMAINS A DIFFICULT STORY, BUT IN MANY AREAS, THINGS ARE GRADUALLY GOING VERY WELL

Vince Feytongs

ARTIFICIAL INTELLIGENCE (AI)

There's a big difference between construction and, for example, the industrial, retail, and agricultural sectors, where digital technologies are now more the rule than the exception.

The reason is simple: return on investment (ROI). Margins are wider in those sectors, and ROI is higher. One-off projects characterise the construction sector, so, standardisation is difficult. If we were to limit the options, more is possible. After all, during the construction process, many decisions are made at the last minute – an extra socket is a typical example of this.

The agricultural sector has taken gigantic steps in the field of machine construction in recent years. You can compare it with the 3D control of machines during infrastructure works, in combination with artificial intelligence (AI). Agricultural machines are equipped with AI to accurately determine the harvest, for example, by measuring how many flowers on the strawberry plant are fertilised. Very useful and valuable, but how do you translate that into the construction sector? You can try to capture materials during demolition works to measure how many different materials there were in the building, but that translation has not yet been initiated.

AI can play an important role not only in the construction process but also in terms of safety. Belgian rail network company Infrabel proves this, using AI to guarantee safety on construction sites. This development has gained momentum due to the COVID-19 crisis. For example, an application was developed that can derive 3D information based on an ordinary 2D image. If the safety distance of 1.5 metres is not respected, a warning message will sound. In addition, a smart camera system was also developed to detect whether or not a mouth mask is being worn properly.

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Another reason to continue digitalisation on site:
the specific hardware needed on construction sites has actually been available for some time – rugged, durable, glove-operated, and resistant to all weather conditions. An excellent example of this is the Panasonic TOUGHBOOK notebook, tablet and handhelds lineup, which guarantees smart remote monitoring, high-resolution screens, offers a combination of touch and pen operation, and long battery life. Also, data is fully secured, and the user enjoys an interface that is optimal for any outdoor environment or conditions, from sun and dust to rain and damp. TOUGHBOOK devices combine the robustness required of on-site hardware with high reliability in terms of digital working.

DRONES

When we talk about construction digitalisation, we also have to distinguish between production and execution. Concerning production, which mainly occurs in a fixed and unchanged environment, it is easier to harness digital than on an ever-changing site with few fixed parameters to link to.
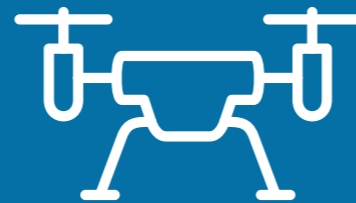
We're currently using digital quite effectively at the production level, but extending the line to the site remains difficult (partly because of accuracy problems). One technology gradually finding its way to the construction site, is that of drones. Drones are becoming increasingly efficient and affordable. And they're pretty helpful. Taking aerial photos, visualising hard-to-reach places, documenting pipeline systems, and developing 3D models are just a few advantages at a glance.

"Drones are definitely coming," confirms Vince Feytongs.

"Especially in the field of aftercare, drones are showing their added value today. They are ideal for collecting data and implementing it in the as-built file. The recent simplification of legislation and certification is an important factor in increasing drones' increasing popularity on the construction site. It means that companies can now both purchase and operate the drone themselves. It is imperative to collect data at critical moments, and outsourcing drones often wastes valuable time.

For example, there is often not much time to map pipes and wells. When you are ready to, say, pour the concrete deck onto the moulds, you really don't want to wait an hour for the drone to arrive to take pictures."

BIGGER PICTURE

It is clear that digital transformation is slowly but irreversibly seeping through the construction industry. More and more companies are opting for extensive digitalisation in-house

But beyond the office doors lies the threshold for making clear overarching agreements and developing processes around it all. "We notice that this is becoming a frustration for subcontractors and suppliers," says Vince Feytongs.

"How can a subcontractor digitise relevantly when his customers are constantly confronted with different digital processes? In addition, the price tag also remains a problem, and then you immediately return to ROI. When a construction company applies BIM at the implementation phase, everyone will notice the usefulness, and you will also get rid of the costs. But the added value only really becomes great when you use BIM at the start of the construction process. Then you create many more possibilities, and you can simply engineer much better and more efficiently."

This implies that clients in specifications must also dare to become open to using technology and co-invest themselves. Because as is so often the case: collaboration pays off. If the construction sector wants to take significant steps in the digital field, it will also have to look and act across companies. Total digital progress is only possible if the bigger picture is always kept in mind. Digital implementation is not an end in itself but offers construction professionals all kinds of tools in the pursuit of improvements in the construction process.

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