Reluctant to tie the knot with tech?

5 steps to successful adoption of smart technology

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Smart technology is optimising manufacturing in almost every industrial sector. So why are some of us still reluctant to commit?

The 'Internet of Things' (IoT) has numerous definitions but can be summarised as "the interconnection via the internet of electronic devices integrated into everyday objects that enables them to send and receive data over a wireless network without human intervention". Many of us are familiar with examples of smart devices in daily life and the same technology is already revolutionising many aspects of business and commerce.

IoT solutions have been available in manufacturing for at least 10 years. Yet the adoption of potentially game-changing technologies in sectors like quarrying and materials processing is painfully slow. When Martin Engineering began developing its N2® remote monitoring solution to enable condition-based predictive maintenance on conveyor belt cleaners, part of our mission was to find out why there was such reticence in the market to adopt innovative tech.

It soon became clear that we would need to overcome five key challenges, none of which were to do with the IoT technology itself, but more about the approach often taken by proponents of technology, combined with the innate scepticism of operations managers in a very traditional industry.

To create a true 'win-win' business model, in which smart equipment suppliers like Martin Engineering deliver tangible value for materials producers, we realised that a fresh approach would be required. Only when the proposition is attractive for everyone involved, including site operations teams, company owners and service partners, will enough momentum be generated towards adaptation to new ways of working. Here are the five distinct areas we looked at:

1. ADDRESS THE REAL 'PAIN POINTS'

We first started with the actual 'pain points' being experienced by operations teams in our sector of the industry – the everyday problems that cause hassle and waste time. We already work closely with our customers and have a good understanding of their challenges, but we're also fortunate that many

Martin colleagues have years of experience working as operations managers in mining and quarrying.

It was clear from our exploratory work that many technological solutions falter because they do not address real pain points, or developers fail to explain how they address pain points or, even worse, they introduce new pain points! Technology for technology's sake is of little value without beneficial application in the real world. Critical for us, therefore, was to challenge ourselves to be certain that the technology available was truly addressing the pain points and not merely hiding the pain or shifting it elsewhere.

2. MAKE IT AFFORDABLE AND SCALABLE

This is the first question we get asked by customers and rightly so. At Martin Engineering, we already know our belt cleaning systems are great at controlling spillage and carry-back, reducing clean-up and down time, saving money on maintenance, and helping to improve health and safety. And over time we know that our products deliver a solid return in all these areas.

Yet we also realise that the belt cleaners themselves need managing, especially when there are numerous variables during initial installation, combined with the need for regular servicing and timely replacement. That's not to mention the changeability in the material properties, the condition of the belt, condition and age of the processing plant, etc. All of these things must be understood and monitored to maximise the primary benefits of having belt cleaners installed in the first place.

Whilst our own technicians and approved

contractors know this inside out, they can't be on call everywhere all the time, and accommodating regular site visits can be problematic at busy production plants. Equally, the in-house maintenance teams at material processing companies are stretched, so inspecting belt cleaners on the off-chance that some of them might need a service may not be the top of their list of priorities. That is until something goes wrong.

So we needed to come up with an easy, inexpensive way to remove the perception of extra burden and instead be able to monitor remotely and predict when servicing may be required. Our solution is extremely simple and cost-effective for all parties – unlocking the 'win-win' business model we were seeking.

3. DELIVER ACTIONABLE INFORMATION

No matter how impressive any technology may be, when you're in the midst of developing an innovation, it's easy to forget that the outcome is what matters. But the only thing IoT technology can really deliver is data – and data alone doesn't achieve a better outcome.

While the age-old mantra 'if you can measure it you can manage it' is true, any measurement data needs to support clear decision-making, not prompt new questions or debates. Essentially, data needs analysing and too much analysis can lead to paralysis. Businesses can become obsessed by data, over analysing it rather than acting upon it.

Understanding this challenge, at Martin we have invested time and effort ensuring that the data from our N2® system is not only in real time, but is automatically analysed, interpreted and presented in a way which makes decisions

straightforward. Hence with the Martin mobile app and customer portal dashboard you get a series of clear charts with actionable information; our approach being "if you can measure it more easily you can manage it more easily".

4. ALIGN WITH THE DIRECTION OF CHANGE

If companies need to change to adopt IoT solutions then they face a real barrier to advancement. This change comes in two main forms: (a) business processes can be rigid and established ways of working become ingrained over decades and (b) people may show huge resistance to change the daily routines they're familiar with.

Yet in reality introducing any technology is an exercise in change management – the easy bit is the technical and mechanical installation! The trick here is to ensure the benefit of the change is well-understood, and ultimately the new way of working must be less onerous that the current regime.

In our case, with N2® the technology virtually eliminates the need for belt-by-belt physical inspections; on a large quarry plant that could save hours each week, not to mention the reduced exposure to moving belts. For example, one area that we have worked to understand is the comparison between the effects of installing N2 with the effects of not installing N2. This allowed us to build an even more compelling case to convince people that the change – albeit modest – is well worth it.

Finally, if people are required to learn something new, without understanding why they are being asked to change, some degree of resistance is likely, and failure is probable. Resistance can also be diminished and overcome by ensuring any new technology is easy-to-use, designed to be intuitive and even enjoyable. So an integral part of the N2® system is the Martin app that clearly shows blade life and only sends a notification when servicing is needed – a true win for the user.

5. USE EXISTING TECHNOLOGY AND EVERYDAY LANGUAGE

From the outset we knew that no company could justify further spending on upgrades to accommodate a new device like N2® – even a small cost could mean the difference between adoption and non-adoption. So it was essential that the N2® position indicator was able to be retrofitted, without additional upgrades to the plant. Our device is also designed to be scalable across processing plants of all sizes, types and ages without incurring additional cost – so we designed the system to work with any number of conveyors on any plant.

Hand-in-hand with this comes the simplicity of installation – once our central Gateway is installed and powered-up, each N2 position indicator can be fitted, calibrated and paired with the Gateway in just a few minutes. All the clever technical stuff – the data analysis and feed to the app and dashboard – is all done off-site with the support of leading technology providers such as Amazon Web Services so nobody at the processing plant needs to become an IT expert to make N2® work – much to the relief of everyone who's seen the system in action!

FINALLY: LISTEN TO UNDERSTAND

In summary, we have taken the views of the materials producers and approached the

market with a change management mindset. We didn't just listen to our customers to record their feedback – we listened to understand so we could solve their problems. We've tried to take away the potential barriers that might otherwise be encountered with new technology and instead, addressed each potential challenge with a solution.

Of course, the proof of the pudding is in the eating, and whilst the recent trials of N2® have been a huge success, we're not complacent – it'll ultimately be the uptake of this system that will show whether we have got it right. But the global pandemic of the past year has taught all of us that not only can remote working be achieved, but it can be achieved very efficiently and effectively given the right technology.

We believe we have that 'right technology' and we are at the forefront of the movement towards a generational shift towards remote monitoring and predictive, condition-based maintenance. The remote revolution is here to stay and if our experience is anything to go by, it would be well worth getting on board!

BACKGROUND

• *Martin Engineering is a leader in bulk materials processing with a 75-year legacy solving problems for materials processing companies in ways which increase efficiency, boost productivity and improve safety.*

• *Martin Engineering's N2® system for conveyor belt cleaners involves PI's (or position indicators) fitted to belt cleaner mainframes, a central Gateway which receives data from the PI's and sends it to the cloud, and a mobile app which draws on that data to show the performance of the belt cleaners, predicting when servicing is needed and flagging when things aren't running smoothly. N2® was first proven in the USA and has subsequently performed well in major customer trials in the UK since November 2020. The patented technology is being launched across countries in Europe,*

Middle East Africa and India during 2021. The PI is the first in a range of smart N2 remote monitoring devices designed to further optimise plant productivity and performance.

• *Robert Whetstone is Vice President at Martin Engineering, responsible for the company's Europe, Middle East, Africa & India region (EMEAI). He started his career in the British Army before taking up leadership roles first in retail and then business services. He joined Lafarge UK in 1998 where he held a number of senior positions including Managing Director for Aggregates. In 2010, he moved to Lafarge North America with responsibility for the Aggregates business in the Eastern USA, covering the Great Lakes, Mid Atlantic, Georgia and the Caribbean. Remaining in the USA, he then took up a new role with engineering services firm*

Babcock International to lead their Mining & Construction Business in North America before setting up his own consultancy supporting businesses in the USA and across Europe. He was appointed VP of EMEAI at Martin Engineering in March 2017. Whilst with Lafarge, Robert was a Fellow of the institute of Quarrying (FIQ) and is also a Fellow of the Royal Society for Arts, Manufacturing and Commerce (FRSA).

Robert's passion is developing and growing businesses through harnessing people's potential and encouraging them to adopt 'new ways of working'. He strongly believes that people and companies must evolve to stay ahead of the game and realise their full potential.

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