4 INDUSTRY

Whitepaper

5 Steps to Improving Knowledge Management in Your Factory

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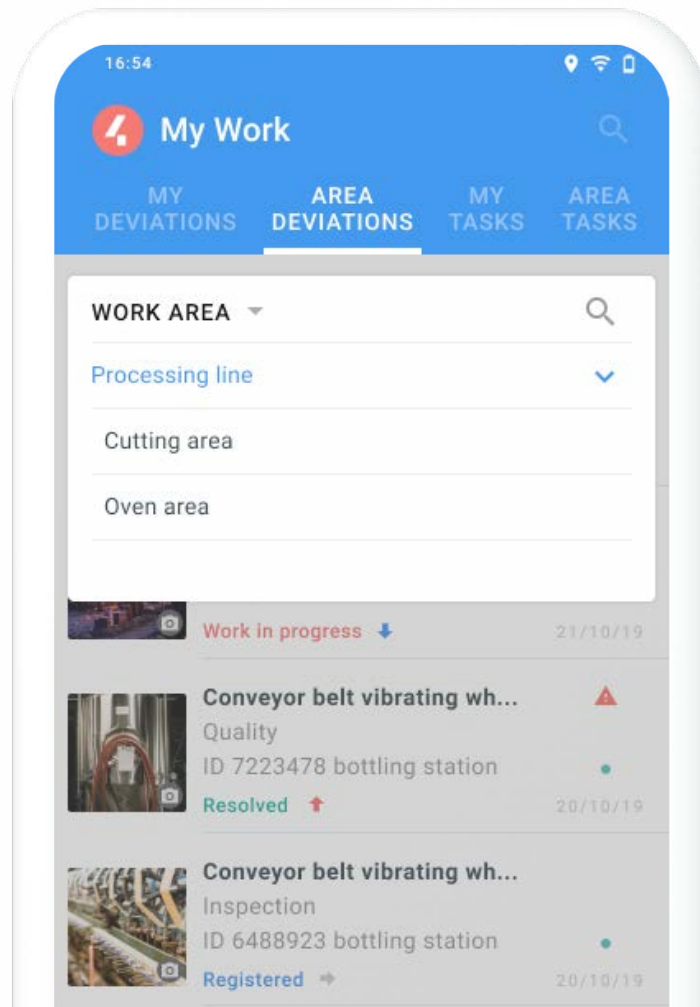
Introduction

Due to high absence rates caused by COVID-19 combined with a high employee turnover, digital Knowledge Management has never been more important in manufacturing. The need to have tacit operational knowledge at hand – preferably digital – in case (experienced) operators fall ill, leave or retire, is high. Even when you have to hire temps to replace workers, you don't want to burden your best operators with guiding them. Nor do you want novice workers to spend twice the amount of time to solve a deviation due to a lack of knowledge, as this results in additional downtime. This is where digital knowledge capture and transfer comes in. It not only increases production efficiency, minimizes downtime and safeguards plant continuity, it also improves the employee experience with happier and more focused workers as a result – setting your factory apart from the rest.

Knowledge management based on the shop floor

Designed and delivered in the right way, digital work instructions like Standard Operating Procedures (SOPs), One-Point Lessons (OPLs), Out of Control Action Plans (OCAPs) and policies are a powerful way to bring efficiency and quality to the shop floor. They give workers the autonomy to make the right decisions or take actions quickly and fully in compliance with applicable policies.

The human factor

For designing a proper lean knowledge tool, we must look at digitization from the worker and shop floor point of view. After all, increasing efficiency is all about facilitating the best way of working with a solution that matches your workers' needs. And by capturing worker knowledge to identify opportunities for improvement, quality and performance will be driven by a continuous stream of valuable human feedback and insights. With this in mind, we have formulated 5 steps to improve knowledge management in your factory.

Step 1 – Make your knowledge digital

This is the very basis for streamlining knowledge management. Typically, a factory has thousands of digitized and paper equipment manuals, policies, SOPs, OPLs and OCAPs. Once digitized, knowledge can be captured, found and shared efficiently. At least, in theory. All too often, a digital knowledge base is no more than a sleeping dinosaur. Yes, it's got power, but nobody has any idea of how to unleash it in such a way that it won't adversely impact operations and workers. In fact, the ability to share best practices and tribal knowledge between workers and across plants is still extremely challenging for most factories.

This is because they hold on to the traditional ways of training workers and sharing knowledge. This usually involves time-consuming external training programs or sharing tribal knowledge during work. This is not only a drain on resources, but also results in downtime and unnecessarily long disruptions. Importantly, by not safekeeping tribal knowledge, valuable knowledge is lost when an employee leaves.

Leveraging the power of digital knowledge management enables you to boost your competitive advantage. As soon as knowledge is easily retrievable and structured in such a way that authorized decisions can be made quickly, productivity will increase significantly. At the same, the easier it is for operators to find information, the faster a problem can be understood, and a solution found.

In order to maximize the likelihood that operators will look up troubleshooting information or instructions, knowledge needs to be mobile and fully retrievable at the place and point in time where and when it is needed. Similarly, valuable feedback or insights from the shop floor are more likely to be fed back into the system if it can be done immediately, not during a weekly meetup or via a suggestions box.

The ability to share knowledge remains a challenge but structured properly it becomes a powerful tool.

Step 2 – Structure it by and for the shop floor

Every factory is unique. So are the people, the equipment, production areas and the way they collaborate. When setting out to digitize their knowledge, we still see that many plants tend to collect information in a random way, depending largely on the personal insights and knowledge of the person responsible at the time the database is set up.

Knowledge captured in this way only gives part of the picture and is by definition incomplete. It fails to capture what is really happening in a production process. For the people on the factory floor who have to use such an anecdotal database, finding the instructions they need is not only challenging, but at times frustrating and above all time-consuming.

We propose to build your knowledge database in a continuous loop, driven from the shop floor up. In that way, the content structure matches your shop floor and operations, as well as the production lines, areas and equipment. It ensures that only relevant information is given at any point in time and production area in your factory.

Another benefit of organizing knowledge like this is that

**Structure content to match your factory floor and the needs of operators.**

it opens up possibilities to use advanced technologies to make SOPs and maintenance instructions instantly retrievable and push safety warnings. For instance, by scanning a QR code on or near equipment using a mobile device, an operator gets to see the instructions for that equipment. Similarly, using iBeacons, a mobile device can determine the exact position of an operator on the factory floor. So, when an operator enters a certain area, the system automatically filters out the required information for the operator to be able carry out his work safely and in compliance with applicable policies.
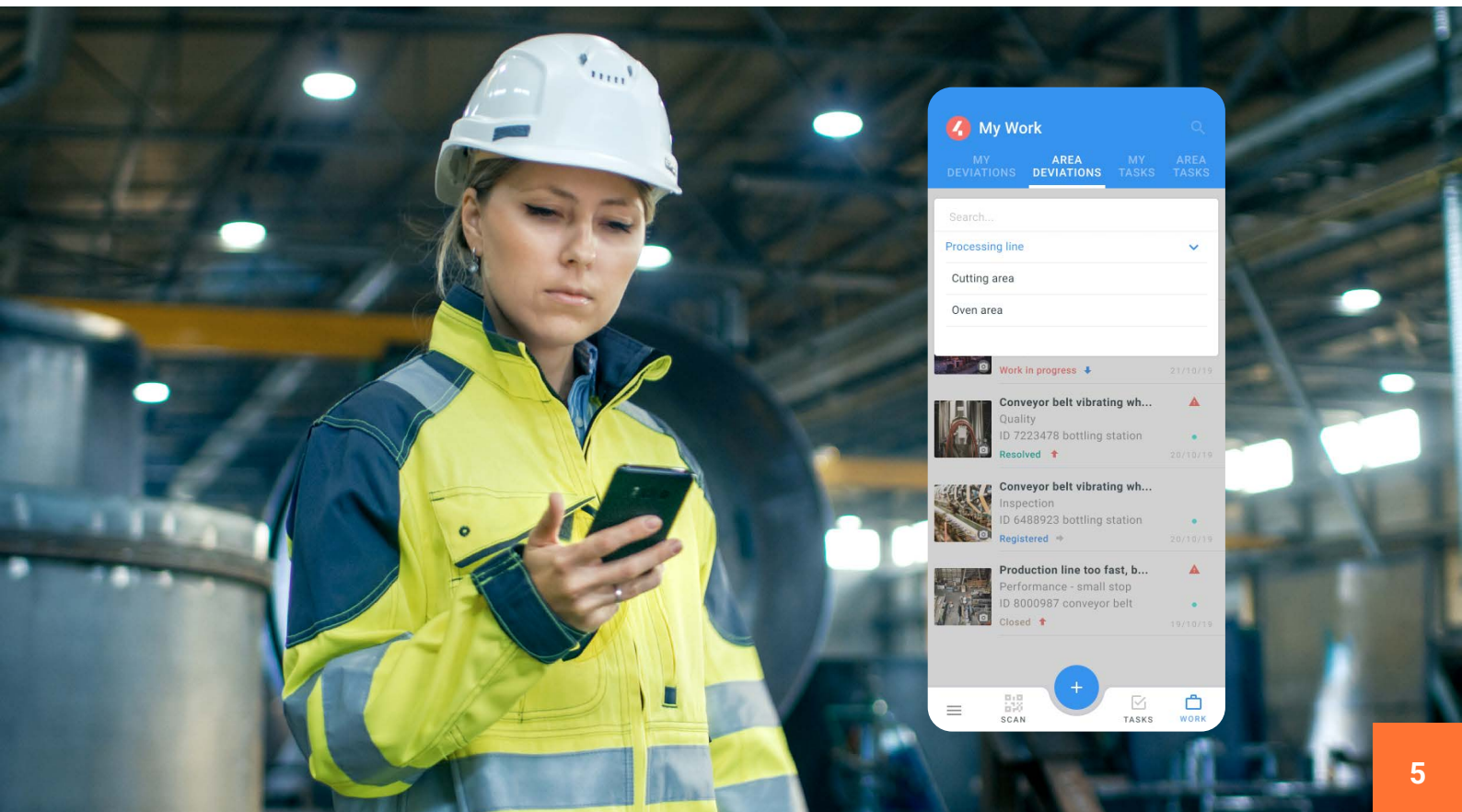
Step 3 – Get it just right with on-demand knowledge

Equipment is only profitable as long as it stays up and running. Predictive Maintenance is already helping many factories cut back considerably on downtime and maintenance costs. Yet, there are even more cost benefits to be gained if your factory's knowledge database is used to push the right information to the right operator at just the right moment. Such on-demand knowledge is also known as 'suggested' knowledge.

Imagine a deviation or abnormality is detected by the operator or the system. With on-demand knowledge, descriptions of fixes from similar previous deviations automatically pop up, including related SOPs, OPLs or manuals. This means workers no longer need to remember fixes and procedures, because they have them right at hand. At the same time, they are prompted to tick off all the steps taken and report back on any issues. Empowering your workers with a knowledge system like this enables smooth workflows, with minimal production downtime. In addition, everything is carried out in full compliance with safety and operational guidelines.
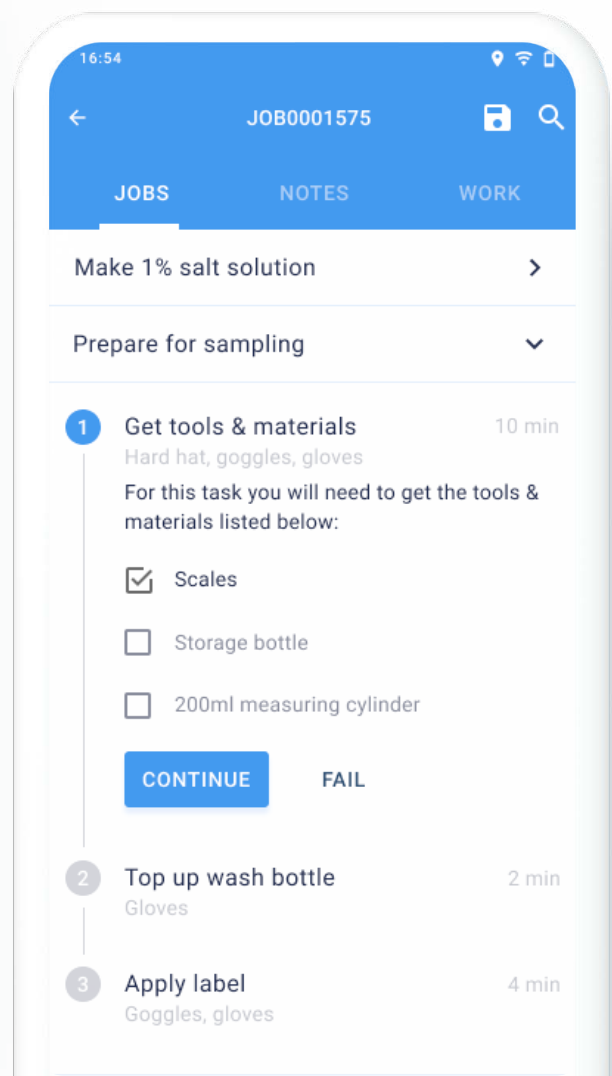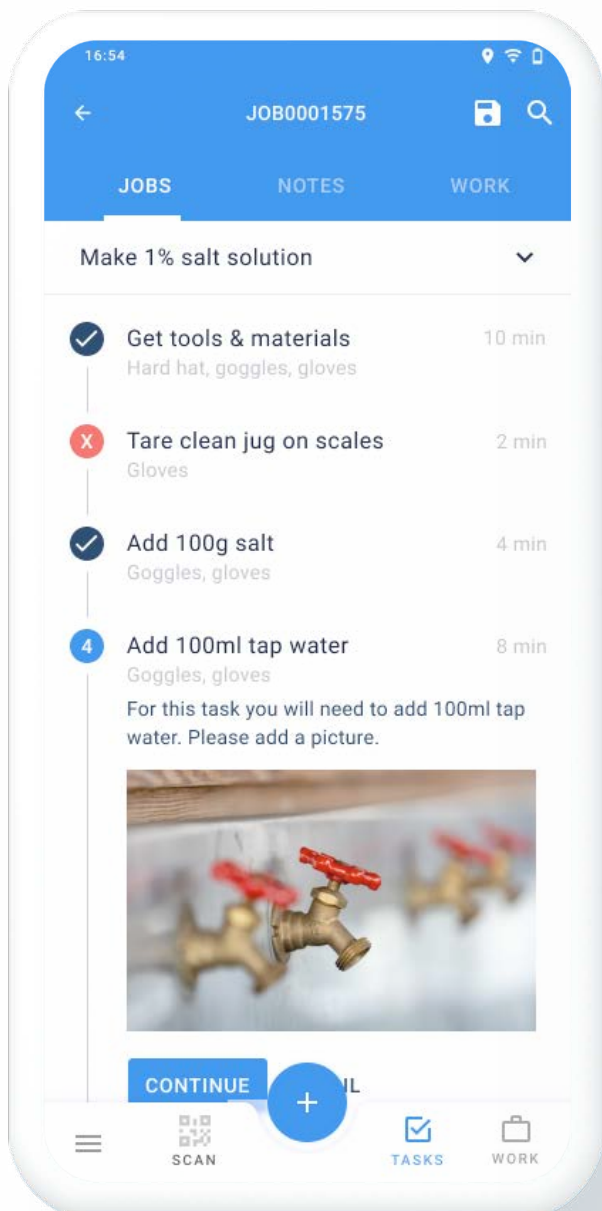
Step 4 – Slice your knowledge – small is beautiful

Say, one of your operators is not quite sure about how to replace a certain component in a machine. He could ask a colleague. But that colleague's knowledge might not be completely up-to-date. With a centralized database in place, your workers should be able to search for and find the information they need in this constantly expanding body of knowledge. But can they? How much effort and time does it cost them to find what they need? How intuitive is your database? Are your workers finding satisfactory answers?

Knowledge and information are only beautiful if they are easy to find. Yet, in many factories still, workers have to scroll through endless pages or lists, before getting to the information they need. In order to help them find the right info (and don't get fed up trying to do so), it is essential to slice knowledge up. Slicing involves cutting up knowledge and information into small, relevant units of information. By doing so, searching no longer requires workers to scroll through complete manuals, for instance. They immediately get to where they need to be. In this way, they quickly have the right information at hand to get on with their work – without loss of time.
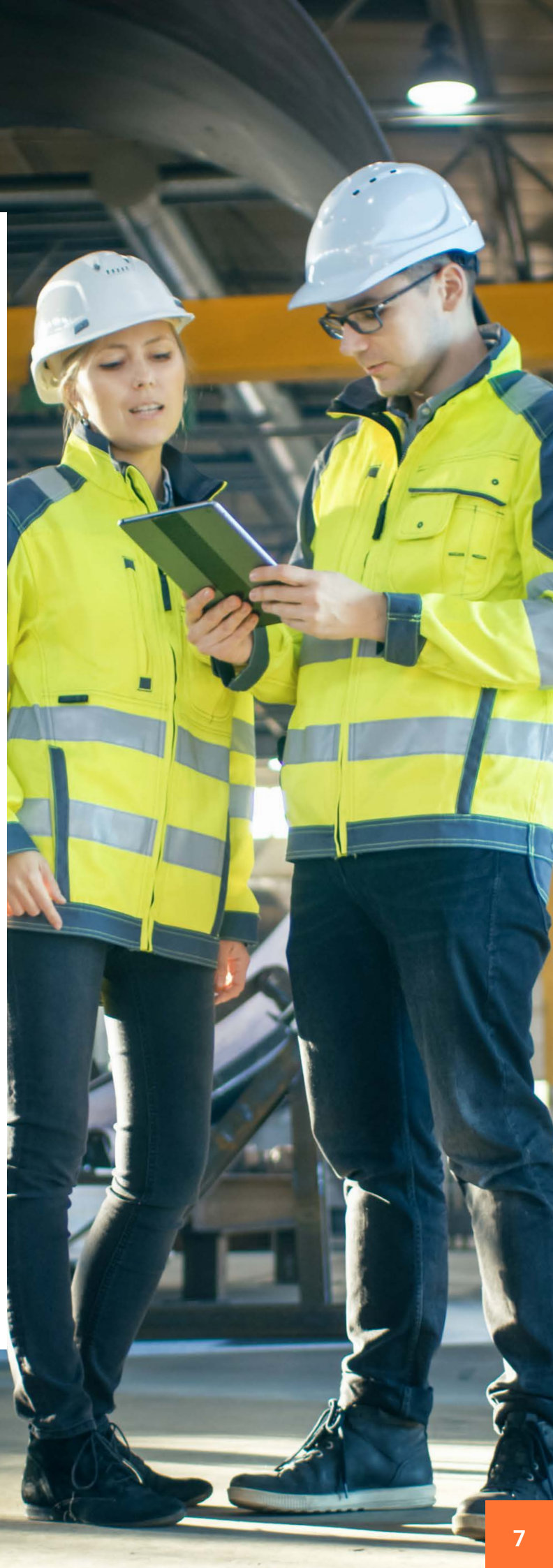
Step 5 – Put knowledge to work, immediately!

This is what we like to call 'actionable' knowledge. Traditionally, operators have to fill out numerous forms to record, validate and authorize certain operational critical actions. What we see is that such a procedure can take up to 25 minutes to complete.

But what happens if your knowledge database is structured in such a way that at the click of a button, an operator can get the required authorizations? By being able to access the latest updates, fixes and guidelines, work authorization is simply a matter of ticking boxes. In addition, workers also automatically get the information and step-by-step instructions they need to carry out a procedure in full compliance with all policies. What used to take 25 minutes can now be done in as little as

The cost benefits of actionable knowledge are potentially huge.

5 minutes. With operators carrying out, on average, at least one procedure every day, the cost benefits of such actionable knowledge are potentially huge.
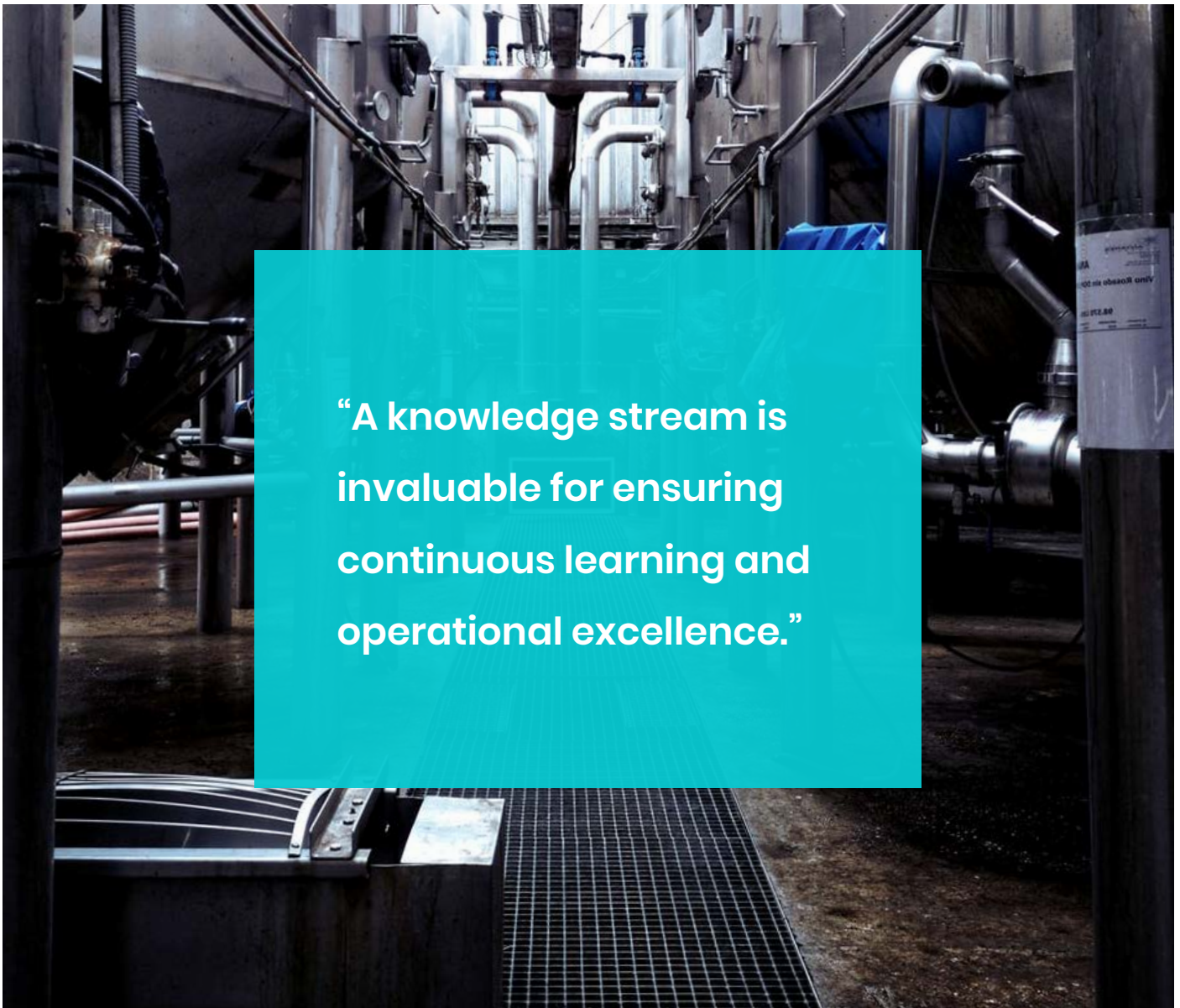
"A knowledge stream is invaluable for ensuring continuous learning and operational excellence."

Making it lean – The value of a knowledge stream

The goal of a digital knowledge database is to drive your competitive advantage. As proven in this white paper, such a database calls for more than filling it with manuals, OPLs, OCAPs, SOPs, etc. It's about setting it up in a way that it fits in seamlessly with the knowledge needs of operators on the factory floor – wherever they are. But it's also about capturing continuous improvement in a knowledge stream. Essential and valuable learnings often come from the experts in your factories: the operators. This is where lean knowledge management comes in.

Lean knowledge management drives the democratization of knowledge as a way to increase operational excellence. Crowd-sourced insights, recommendations and instructions are incredibly effective if learnings are captured in your knowledge database. In fact,

the contribution of your workers on the shop floor to operational efficiency is key, now that such knowledge is retrievable from one central, digital source.

Ideally, factory floor knowledge capture should be done using a feedback management system. This allows operators to provide feedback and discuss topics with each other. These systems are typically called Communities of Excellence (CoE), with each community responsible for a specific machine or production area. They consist of a group of co-workers who jointly approves added knowledge and adapts the knowledge base. In this way, processes and procedures are constantly re-evaluated and refined, at the click of a button.

Key Benefits

Capture tribal knowledge

Safekeep your collective knowledge and best practices in a database in case an employee leaves, retires or falls ill.
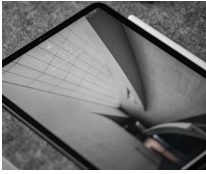
Boost worker autonomy

Facilitate learning and reduce operator dependency. Empower them to act and make the right decisions in line with safety measures, procedures, quality controls and policies

Cut costs

Operators spend up to 18% of their time looking up information. Manufacturers who make information readily available can achieve considerable cost savings.

Boost your Employee Experience with Knowledge Management

Make it accessible

Bring on-demand knowledge to your shop floor

Make it easy

Give employees the insights they need (and not the stuff they don't)

Make it actionable

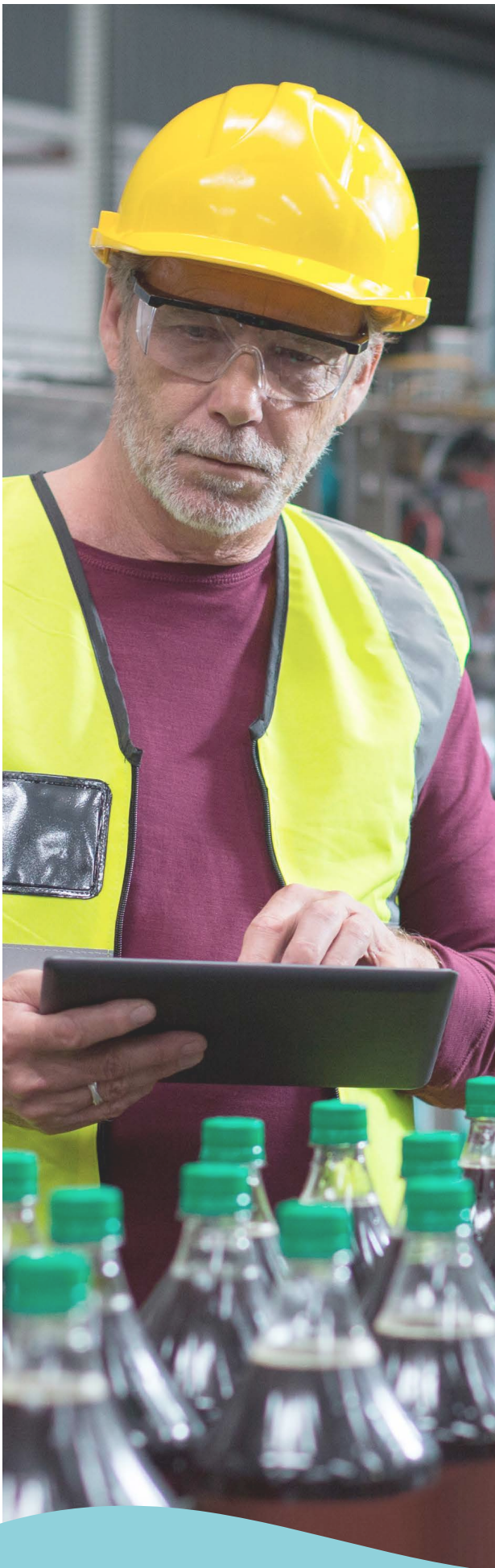No matter who's working, they'll know what to do

Make it findable

QR codes and iBeacon technologies present only relevant information

Turn knowledge into added value

Enable workers to submit ideas and collaborate for continuous improvement

About 4Industry

4Industry is a digital manufacturing operating system (DMOS) aimed at increasing Operational Equipment Effectiveness (OEE). The DMOS is mobile enabled, highly customizable and equips organizations with the tools they need to take advantage of all that Industry 4.0 has to offer.

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Contact us

Interested in finding out how we can help you optimize your knowledge management? Request a demo, send us an email via info@4industry.com or visit our website www.4industry.com.