

Improving Tablet Production Through E-Learning

Online learning has never been more important. As businesses adapt to the new norm of remote or distanced working, the implementation of e-learning programmes is essential to increase personnel capability and knowledge. In the solid dose manufacturing industry, workforce proficiency is critical to producing quality tablets quickly. As the competition to manufacture mass-produced tablets grows, companies need to ensure staff understand the processes required to produce high quantities of quality tablets quickly and efficiently. Electronic learning is an effective solution to this.

Developing Workforce Skills

Manufacturers of tablets used in animal health are under pressure to make production more cost-effective. It needs to be quicker, more efficient and able to keep in line with the competition from developing markets. For these reasons, it is important to not only have the right tools for the job, but also the right workforce skills.

Tablet tooling and compression machinery are important considerations when looking for solutions to optimise manufacturing processes. However, so are well-trained, skilled and knowledgeable operators, technicians, supervisors and managers. If the skills of the staff drop, so too does the productivity and quality of the end product.

Manufacturers should consider the technical expertise and skills gaps found within the workforce, as this can hugely impact on the bottom line. The introduction of technology-enabled learning is helping companies improve the capability of their staff and is seeing huge growth in recent years, having increased by 900% since 2000. Its popularity is set to continue, particularly in the wake of the COVID-19 pandemic. This increase is being seen through all industries including those in animal health and pharmaceutical and nutraceutical manufacturing.

Challenging Tablets

What makes e-learning even more important within the manufacture of medication for livestock, cattle and companion animals is its difficulty to produce. There are several factors that can cause problems during the manufacture of tablets. One example is the formulation itself.

'Bolus formulation poses challenges because of the high drug to-excipient ratio. Less room is left for diluent, binders, and other adjuvant needed to overcome objectionable features of the drug or to facilitate bolus manufacture.'²

The high drug to-excipient ratio found in animal solid dose forms can be problematic. Ingredients within the formulation are often coarse, abrasive and sometimes corrosive in character. Some formulations can instigate adverse effects on the punch tips when under compression, causing abrasion, pitting or corrosion. Although tools are made from hardened and tempered tool steel, the



demanding processes can lead to deterioration if the tool material is not optimised to suit what is being compressed. Understanding what tool material and coatings are required to work with a formula's specific characteristics is essential to reduce any potential problems during production. This is a key area that all staff should be trained in. Information on these problems can be learnt through interactive online learning modules.

Another area which is significant when it comes to staff knowledge is understanding the importance of the design of the tablet. There are two basic tablet shapes; round and non-round. Non-round shapes can be very varied and complex and require specialised tool manufacturing capability. Boluses which are commonly used for large animals are cylindrical-shaped to prevent choking. Due to their size (typically 3 to 16 g) it is important to get the shape correct. It is essential to remember that through the implementation of the correct design, problems like wear and impregnation to the tablet tooling can be reduced, a common factor when it comes to the complex characteristics of abrasive ingredients found in animal medicine.

A 'virtual classroom' platform can help operators to advance into skilled technicians by understanding key aspects; for example, what makes a good tablet design, through to how formulations can affect production and how to resolve production problems.

Why E-learning is Benefitting the Veterinary Pharmaceutical Industry

Distance learning or e-learning is becoming more and more of a practical option for productivity improvement, particularly with training people in new skills sets and updating knowledge. Although training may take place 'on the job', finding the time and correct information is not always easy. We also have to now factor in the work distancing rules which can make face-to-face learning problematic. E-learning programmes can combine comprehensive and flexible courses in a wide variety of disciplines with the



convenience of taking place on-site or even in the home. It is an important method in which to bring staff in line with new pharmaceutical manufacturing advances quickly.

The main benefits of e-learning for those within tablet manufacturing include:

Flexibility – A huge draw to e-learning is its flexibility to support those in manufacturing who are looking to further understand tableting, whether that is presses, compression tooling or the management of the entire process. It can be done where and when it is needed. Online training can fit around production schedules and does not take away from productivity. The user can also stop and resume their learning at any time, reducing the impact on operations.

Additionally, with e-learning, all the materials and tools are digital which means they can be trained at any time that is convenient. This eliminates the time spent coordinating where and when a course will take place. E-learning also gives both management and employees more flexibility to complete important training as requirements change, for example specifications or operating standards. Online training platforms also allow employees the flexibility to revisit key information when they need it.

Improves Productivity – As we have already discussed, productivity is essential in tablet manufacture. It is important to take control of tooling and production processes in order to achieve maximum productivity. Enhanced learning and upskilling a workforce can assist in achieving this goal.

It is true that productivity can be increased through new machinery, for example; however, businesses who focus on helping workers develop themselves and learn new skills and knowledge can also increase engagement and performance metrics.

Cost-effective – Tablet manufacturers must produce tablets in the most cost-effective way, and this is also true when it comes to training staff in the required manufacturing processes. E-learning provides an economical training solution which results in better performance and faster production.

Time is a big cost-saving. If training is required in tooling maintenance, for example, they may have to wait several months to receive face-to-face or seminar training from an expert. E-learning can reduce employees' learning time by as much as 60% when compared to traditional learning.³

Updated Learning – With outdated training methods, updating and reproducing learning materials is costly and time-



consuming. Online training platforms can be revised with important information quickly and easily.

New regulations, requirements and operating procedures are introduced within the pharmaceutical industry regularly, therefore any e-learning technology or resource should have the ability to incorporate these new updates and the latest industry guidelines. One example is the Eurostandard educational suite. This advises tablet manufacturers on tablet tooling terminology, configuration and procurement. It also includes the latest technical specification compatible with ISO 18084 – 'Press Tools for Tablets'. Staff must be aware of these standards and trained in all aspects of it.

Subject Variety – It is important that the platform has the option to incorporate a wide variety of subjects allowing staff to broaden their skill set. For example when looking to improve their knowledge on tablet compression tooling, look for modules that cover everything from the basic subjects like an 'introduction to tablet tooling and terminology' and 'tooling maintenance', to more advanced levels like 'troubleshooting production problems' and 'improving productivity'. This allows all ability levels to access the learning package and improve their expertise.

Staff Progression – Importantly, e-learning can accommodate everyone from director level to engineers and operators





looking to improve their knowledge in areas of tablet compression tooling. Platforms are available which include newly developed courses designed with a hierarchical system giving training managers and supervisors a full audit, tracking and reporting of employee development and certification. When the course has been completed, certification is given which coordinates with a company's specific guidelines and standard operating procedures. This includes features like the scheduling of re-qualification after a period of elapsed time. With a classified structure, courses can be used for comparison purposes across different departments, job roles, sites and countries thanks to the software's ability to translate information into several languages.

Multifunctioning – Modern learning platforms can deliver material in a multimedia format incorporating animations, webinars and interactive content. Furthermore, the information can be validated by interactive tests to ensure key points are understood. This is accessed via desktop computers or mobile devices, making it easily available. This enables employees to be educated and updated on the best industry practices and tablet tooling developments whenever is most suitable.

Training is Key to Tablet Production

By ensuring key training is achieved and being used, manufacturers are helping to make processes more effective and efficient, resulting in an increase in tablet output and quality.



To optimise tablet production, you must combine many factors, whether that is capital equipment and tooling, or advanced learning. It is important to take a step back and look at the bigger picture; this will lead to better processes and a quality end product. Proficient and well-planned e-learning is an important element in this approach. If the organisations have educated, well-trained and knowledgeable employees, it will have a direct impact on productivity.

To meet the growing demand of e-learning, I Holland has launched an online learning platform which takes advantage of materials developed from over 70 years of experience. The programme focuses on tablet compression tooling and offers professionals comprehensive and flexible courses in a wide variety of disciplines. The courses are designed for everyone from director level to engineers and operators looking to improve their knowledge in areas and can be customised to individual company requirements.

To find out more about e-learning programmes which offer professionals comprehensive and flexible courses on tablet manufacture, visit <https://tablettingscience.com/online-training/>.

REFERENCES

1. <https://www.shifte-learning.com/blog/bid/301248/15-facts-and-stats-that-reveal-the-power-of-e-learning>
2. The Pharmacist and Veterinary Pharmaceutical Dosage Forms. J. Patrick McDonnell, Lisa Blair Banker.
3. <https://www.edgepointlearning.com/blog/advantages-of-e-learning/#:~:text=If%20you're%20making%20a,for%20your%20employees%20and%20company%3A&text=Better%20employee%20retention%20for%20most,ongoing%20access%20to%20key%20resources>



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