



# THE PAPERLESS FACTORY

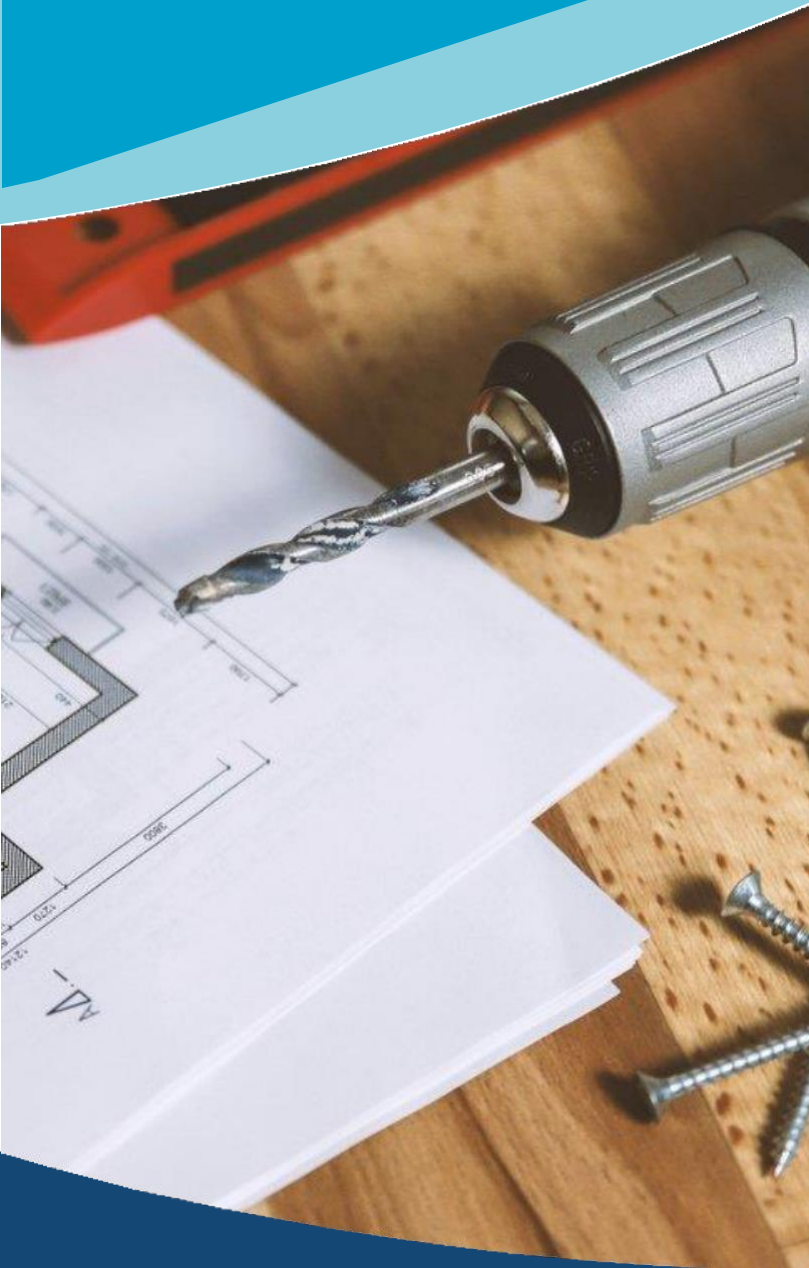
**ANDRÉ MICHEL**  
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amichel@efficientplant.com

## A Well-Known Problem

Each factory produces an enormous amount of paper each day. Order forms, work orders, delivery slips, reports, etc. All this paper goes from one person to another all along the process chain. It is then stored for varying amounts of time, generating additional costs and taking up space.

Everyone agrees that there are clear advantages to going paperless, which we will expand on later in this article. But doing so is often fraught with difficulties. The main one is obviously resistance to change, but this is followed closely by the relatively high cost of the systems available on the market.

But digitization has so many advantages.



According to a study by **Capgemini Consulting**, **digital businesses** (who have for the most part gone paperless) **tend to be 50% more profitable, generating 13% more revenue, and have a 19% higher market valuation than their industry counterpart**

## COVID, an Added Complication

The current pandemic has increased the problems related to the handling of paper. In this article we will focus on work orders. Whether for the continuous or batch manufacturing industries, a work order generally consists of a file containing various documents, such as drawings, bills of materials), routings, standard operating procedures (SOPs), etc. A work order will follow an item all along its production steps. It will be handled by the planner, the production manager, the supervisors, various operators, and the quality control personnel. If, unfortunately, one of these people happens to be a carrier of the virus (asymptomatic), it could be passed on to all of the others.

In this context, the paperless factory becomes essential.

## A Solution with Numerous Advantages

As well as eliminating the risk of possible contamination, the paperless factory has numerous other advantages:

### 1) Saves time

- The time spent filing, organizing and looking for paper documents is time that could be better used for more productive tasks. Digital documents are stored in a central repository, essentially a well-organized digital filing cabinet where all of your documents live.
- With a digital document management system, it is possible to use the same powerful search capabilities that we are used to using in Google. This means that employees can find files with a single click, much faster than the laborious process of physically looking for a specific file in a buried folder. Employees can thus use the time saved on revenue-generating projects. Further, with the standardisation of document management tools, there are many solutions that are already included with your standard office solutions (e.g., Microsoft 365 includes SharePoint and Teams).

### 2) Saves space

- Paper takes a lot of space – as do filing cabinets. Books and shelves are also cumbersome. And the worst thing is that the paper keeps accumulating, often faster than it takes to sort and organize it all. This is particularly true for industries who have long mandatory paperwork retention periods, such as the financial industry and the pharmaceutical industry.
- The digitization of files allows all files to be stored on a local server or on a cloud. A digital file repository requires much less space than physical archives.

### 3) Saves money

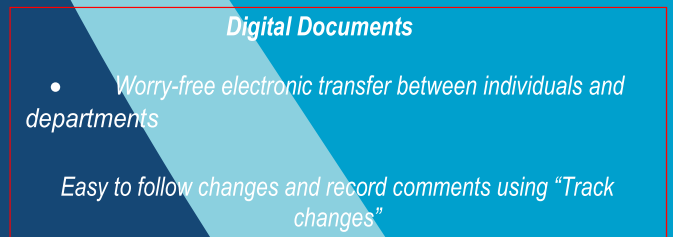
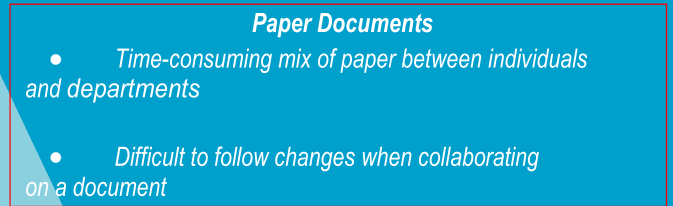
- Going digital improves process efficiency, which saves money. Paperless offices can process a much larger volume of documents compared to traditional offices in the same amount of time.
- The digital format reduces the time and effort necessary to produce reports.
- Eliminating paper not only reduces the amount of money spent on the paper itself, but also on printers, ink, postage, office space for files, and on employee time taken up with producing paperwork. The time saved by employees becomes particularly important with regard to regulatory checks as well as repetitive and high-volume tasks.

### 4) Facilitates the transfer of information

- Document management software provides a simple process for saving documents. The software easily compiles digital documents using scanners, mobile capture using telephone or tablet cameras, or through the import of all types of files (.docx, .pdf, .jpeg, etc.).
- Many commonly-used applications, such as Microsoft Office and Adobe Acrobat, are compatible with document management systems and have native plugins which allows for one-click filing of a document in the content management system.

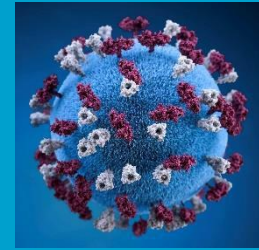
### 5) Improves control

- Tracking and tracing are made easier – you can see where each piece /lot, document, form, etc. is located
- It enables you to produce higher quality reports, in less time.
- Your reaction time is improved, with timely alarms each time there is a problem or a deviation from the set standard.



#### 6) Promotes the environment / health and safety

- Producing paper documents generates greenhouse gases, leading to deforestation and global warming. Recycling can only mitigate the environmental impact to a limited extent: most paper ends up in landfill. Moreover, ink and toner contain volatile compounds and non-renewable substances which damage the environment. It is much more sustainable to reduce your use of paper by switching to a paperless office.
- Of course the risk of transmitting COVID between workstations and employees is greatly reduced.



#### 7) Strengthens security

- Physical documents are hard to follow – reams of paper can be lost or destroyed, without anybody noticing. It can also be hard to control who accesses, prints and copies sensitive files. Document management software has advanced security features that can take care of all these issues. The system administrators can configure granular access rights at the individual document level (e.g., parameters based on the type of document), at the user level (e.g., parameters based on the person's job function), or at the system level (e.g., global security for all system data).
- The security advantages of a paperless workplace go beyond access rights. The implementation of document management software also allows organisations to use electronic signatures, to bar or restrict access to confidential information, to create audit trails, and more.



## A Solution for Smaller Businesses

Discussions with our SME clients has helped us identify their essential needs:

1. The solution must be simple. The solution must use software already in place within the company.
  - They can use existing software such as Microsoft 365 for Business.
2. The solution must be quick to implement. A multi-month project is out of the question.
  - It can be implemented within a week.
3. The solution must not require advanced expertise. It should be possible to train an employee in less than a day. If your personnel can answer emails or press a button on a cellphone (or tablet), they can operate our system.
  - Our solution requires little training for operators.
4. The solution must be easy to maintain.
  - Being based on software such as Microsoft 365 the solution can be maintained by their personnel (or IT supplier).
5. The company must not be at the mercy of the supplier each time that a change is needed. Obviously you are dependent on Microsoft, but no one else.
  - They are in full control of the solution once installed.
6. The solution must be easily migratable to a different system. The files are stored in SharePoint which is compatible with all document management systems.
  - Our solution is easily migratable

*Studies estimate that companies that still use physical documents spend an average of **\$80 in paper per employee each year**, and that **50 to 70 % of their office space** is used for the filing and storage of printed documents. It also costs an organization on average **\$20 to file a document, an additional \$120 to find a misplaced document and \$220 to reproduce a lost document**. The average worker in the United States uses **10,000 sheets of paper per year**. By switching to a paperless system, companies from all industries can reduce or even progressively eliminate these expenses*



7. The solution must allow production summaries to be generated. Each action carried out by the personnel (and the associated parameters) must be documented with a date and time in an Excel file of a SQL database. These data are accessible by the system administrator.
  - Generating Excel or Power BI reports is child's play.
8. The solution must generate alarms if an item or lot is at a work station past a certain amount of time.
  - Alarms can be received promptly.
9. The solution has to be inexpensive.
  - It cost less than \$10,000.



Obviously such a solution will have its **limits**. It will never replace the functionalities that a more complete, high price system would offer.

## **A Little Bit of History**

*Dreams of the paperless factory began in the 1960s with the arrival of IBM terminals. In 1975, Business Week magazine published an article which already predicted the paperless office! With the arrival of desktop computers at the beginning of the 1980s, we thought that the prediction had come true. But paper has stubbornly hung on, and today, in 2020, there are still many activities within a factory that hum along happily on paper and warehouse owners are living the good life.*

*Regulated industries in particular are extremely fond of paper (production files, but also quality files and a variety of other documentation) as the authorities require them to be able to track any given lot in the event of any problems.*

*Progress has however been made. Within continuous manufacturing industries the problem was initially taken on by Manufacturing Execution Systems (MES). These software programs provided many production information management functionalities (planning, traceability and others), but can also replace all paper by providing the same information on a screen. The projects initiated in this area were called "Paper on glass". This approach has become extremely popular in the pharmaceutical industry where high costs were not a problem (this type of project could run into the millions of dollars).*

*In discrete manufacturing industries, ERPs were the solution most often used, without, however, much success, as the solutions quickly became complex and ERPs lacked an important element: real time.*

*More recently, standalone solutions focused solely on going paperless have been developed. One of these that is well-known here in Québec was developed locally: VKS. But even these new solutions are relatively expensive, with a per-user monthly fee-type business model.*



Tel.: 514-674-127  
6600 Trans Canada Hwy, Suite 710  
**Pointe-Claire, QC, H9R 4S2**