Improving Productivity using Technology in NDT & Inspection Industry

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Abstract

cuteTrac – Know the exact whereabouts of your team and optimize the vehicle usage and enforce safety.

cuteQM – Automate the entire QA/QC Activities related to inspection. Generate reports and organize them digitally and prepare the final documentation in one click. Specialized modules available for Pressure Vessel and Heat Exchangers, Piping, Skids and Modules.

cutePMS NDT - NDT Inspectors time spent on projects, their time sheet, invoice status are all managed systematically to make sure all the jobs are invoiced on time and correct incentives are paid to staff and monitor the consumable usage.

cuteHR – Manage the entire staff details with the digital file for each staff. The passport, work pass copies their expiry dates, courses and their expiry are all can be recorded. The email alert keeps the HR staff notified of important dates to take action in advance.

cuteTime – Mobile Time Attendance system to capture the time in/out and automatically print the Time Sheet, Calculate the OT, SOT hours and printing pay slips by the month end.

cuteOffice – Automate the entire purchase process. Purchase Request, Approval, PO Creation, Material Inward and inspection, Stores, Assets management, Calibration details etc.
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1 Introduction

In the modern era, technology plays a major role in the growth of any organization. Especially it is very critical in NDT and inspection industry as there is a huge competition and challenges. In Singapore, the government is providing help to all SME companies in numerous ways to adopt the technology to improve productivity. The help includes subsidy (iSPRINT), tax rebates (PIC) etc.

In this paper various technologies and software products that are used in our organization to improve the productivity to optimize the resources and effectively use them.

The key solutions that are discussed are:

- cuteTrac – Know the exact whereabouts of your team and optimize the vehicle usage and enforce safety.
- cuteQM – Automate the entire QA/QC Activities related to inspection. Generate reports and organize them digitally and prepare the final documentation in one click. Specialized modules available for Pressure Vessel and Heat Exchangers, Piping, Skids and Modules.
- cutePMS NDT - NDT Inspectors time spent on projects, their time sheet, invoice status are all managed systematically to make sure all the jobs are invoiced on time and correct incentives are paid to staff and monitor the consumable usage.
- cuteHR – Manage the entire staff details with the digital file for each staff. The passport, work pass copies their expiry dates, courses, NDT Certificates and their expiry are all can be recorded. The email alert keeps the HR staff notified of important dates to take action in advance.
- cuteTime – Mobile Time Attendance system to capture the time in/out and automatically print the Time Sheet, Calculate the OT, SOT hours and printing pay slips by the month end.
- cuteOffice – Automate the entire purchase process. Purchase Request, Approval, PO Creation, Material Inward and inspection, Stores, Assets management, Calibration details etc.

1.1 About the audience

This document is intended for everyone in all organizations who are involved in various operations for managing the office effectively.
2 Technology Solutions

2.1 cuteTrac

Every NDT company, whether big or small has at least few vehicles to manage their operations. For example, if there are 5 vehicles in the organization and the vehicle coordinator spends most of the time asking the drivers about their whereabouts. This is not only affects the productivity but also it involves safety, as the driver is expected to pick up the call and answer it while driving.

The solution is “GPS tracking system” and this is very mature these days. The solution such as cuteTrac helps organizations to manage their fleets in a very effective manner. Live tracking and knowing the exact whereabouts of the vehicles in real time helps to coordinate them efficiently. Even when required, the past history of travel details of any vehicles can be retrieved. When the vehicle travels more than the designated speed, an alert is sent to the coordinator and the driver themselves. Unauthorized travel to areas that are marked by the organizations are duly notified to them when the vehicles enters into the zones. Various reports can be generated.

cuteTrac is one of the software listed under iSPRINT – Packaged Solutions. SMEs can claim up to 70% of the qualifying costs, capped at $20,000 for the purchase of the first packaged solution (listed) under each solution category. This is subjected to fulfilling the SME eligibility criteria and the availability of funds. For more information on iSPRINT packaged solutions, please log on to www.ida.gov.sg/sme/ITpackages.
2.2 cuteQM

cuteQM helps to manage the databank of PQR, WPS, Welders, and WPQ while automating the entire fabrication QA activities while building pressure vessels, heat exchangers, tanks, skids or modules. cuteQM provides a critical linking between the NDT companies and the fabricators by electronically issuing NDT requests. Preparing the NDT reports and providing them electronically online to the customer is now easier.

The cuteQM software not only helps creating the reports in a much easier manner, it also helps linking the defects to the welders automatically. In the future, we expect most of the fabricators will dictate the NDT contractors to provide their reports online so that the time can be productively used.

The following are some of the reports that can be generated from cuteQM.

a. Fitup
b. Weld VI
c. NDT Reports
   i. RT
   ii. UT
iii. MT
iv. PT
v. PWHT
vi. PMI
vii. Ferrite
viii. Hardness
d. Final Dimension Reports
e. Leak Test
f. Hydrostatic
g. Pneumatic Pressure Test
h. Heat Exchangers Reports
   i. Tube Bending Inspection
   ii. Tube sheet expansion
   iii. Tube hole & expansion

This list is not exhaustive.
Managing many NDT inspectors effectively is a great challenge. Everyone reading this paper is experts in it. Obviously getting the job is most critical, but after getting the job, from performing the job to billing the invoice involves many stages. The time sheet has to be collected. After the time sheet is collected, depending on the job such as RT, MT etc, various parameters needs to be checked by NDT coordinator to make sure all the necessary information are in place for the accounts team to invoice. Some jobs are invoiced for few staff together. For some jobs the invoice is sent for the whole month person wise. For some jobs, invoice needs to be done individually and immediately. Getting the invoice out as early as possible is the key. Also when there are many inspectors and many jobs are going on making sure all the jobs performed are invoiced is the prime requirement of the management. cutePMS – NDT takes care of all these requirements to efficiently bill the clients accurately.
2.4 cuteHR

Managing a big pay role in the organization has many challenges for HR and management. The information of an employee is required instantly in the organization from different work places. Having access to the critical information on the required time is crucial. Information such as certificates of an inspector, calibration certificates of the equipment are required.

The cuteHR system maintains all the employee details starting from name, date of birth, address to their work pass / employment card / passport details including its expiry dates. The courses and their certificates and its validity dates are also maintained. When the dates are due for renewal, the system will automatically sends out an email alert to remind the HR staff proactively.

The entire salary details including their various revisions, increments are all available to the finance and HR team. Report generation is much easier and productive.
2.5 cuteTime

Ask the accounts department for some information two days before the pay day. They will say that they are busy processing for payment. If we ask more about what exactly processing means then they will say that checking the timesheets of staff and calculating OT hours etc. But this is thing of a past. There are many time clock solutions that provide the time sheet and all the normal hour OT hour calculations instantly.

The above solution works well when it is a one or two location operation. But when it involves multiple site, again organizations falls back to manual method. We have gone one step further with the introduction of mobile attendance. The information such as clock in, clock out from various site offices including overseas operations is logged into the central server using the GPRS and mobile phone technology. Rest of the reporting requirements will be much easier.

The leave details, various allowances, work hours, OT rules are taken into account to print out the pay slip of an employee in just a click.
2.6 cuteOffice

All office operations in terms of purchase request, approval, PO creation, receiving material, inspection of them and adding to the stock, issue of material to various projects, issuing of assets and collecting it back are happening in all organizations. But how efficiently are they done? The purchase department is one of the key departments that really help in saving the money for the company if they are adequately provided with the tools that they need.

First of all, all the requests to be received directly from end users. It has to be authorized and approved by the management. The past price history needs to be referred before making decisions and allow the room for negotiations.

Please note above what a big change in price from vendor to vendor and time to time for items starting from A4 paper. When it comes to expensive materials, it plays a huge role.

When the approving authority is not in office, the purchase process should not stop there. All the requests are notified by email to the department in-charges and they can simply respond to approve / reject the request. There is no need to connect to the server and this really saves time as most of the management staff is always on the road.

2.7 Conclusion

Use of technology really helps all the organizations to take a step ahead in their journey towards success. The government’s help is another huge opportunity here. Those who realizes it late, it is not really very late. Just grab the opportunity and explore.

ALL THE BEST