

# The NDTs of NDT • Part 5: Need Decent Tools



We are well on our way to setting the pace for a flourishing industry; one that we all can enjoy. We have discussed the importance of training and mentoring, the use of behavioral assessments to ensure that everybody is set in an environment where they can use their natural talents, and the ever important factor, treating the technicians with respect. The hard part is done and now we can move on to ensure that there is **No Down Time**. There is, however, one more important aspect to ensuring that NDT is carried out correctly in order to be sure that all the possibilities of detecting that fatal flaw are maximized: that happy well-trained technician who is in the right working environment, and well respected by their superior/customer can't perform properly if they don't have the right tools!

## Need Decent Tools

Would you be satisfied bringing your car in for repairs to a garage that doesn't have the equipment required to fix today's cars? Or go to a doctor who only has a thermometer and tongue depressor? *Probably not.* The items that we expect our NDT technicians to inspect should be given the same treatment. After all, the underlying reason why we are asked to inspect these items is because an unseen flaw can ultimately have catastrophic results.

Having the right tools is not about having the latest and greatest equipment that is out there. At the rate that equipment changes, no company can afford to continually upgrade to the latest version. However, having the equipment that can detect what we are looking for and accurately fulfill what has been mandated by contract or inspection procedure is very important.

Having the right tools doesn't stop at the main piece of equipment – it also requires we have the proper reference standards, probes and quantities of consumables. It is the employers' responsibility to provide the proper equipment and quantities, but it is the technicians' responsibility to use the **RIGHT** equipment.

## A true story

Years ago, when I was a young, eager, wide eyed NDT apprentice, set to write my Level 2 CGSB Magnetic Particle exam, I was thrown a curve ball. A colleague of mine was asking me questions to see how prepared I was for the exam, everything was going well, and I was feeling confident until he asked the question: "Do you know about Sand Mag?" "You mean dry powder?" I replied in a cocky tone. "No," he said. "I mean Sand Mag. Once you're a level

*2 you are going to do sand mag!"* I never heard of sand mag, how could I have overlooked such an important part of magnetic particle, how come my teacher never mentioned it, how could I have thought I was ready to write my exam without being familiar with sand mag! I went home looked at my notes ...nothing, looked at the *Principles of Magnetic Particle* by Carl Betz, THE book on magnetic particle in those days...still nothing, and I couldn't search on google, the internet wasn't even a word yet. I gave up.

The next day, I admitted defeat. I was not ready to write the exam and sheepishly asked him to explain *Sand Mag* to me. "Easy," he said. "*Sand Mag is what you do when you are in the field and run out of dry powder, you scoop up some sand, put it in the applicator bulb and continue working...you don't find cracks, but people still see you working!*"

I am glad to say I never did *Sand Mag*, but this illustrates things that do happen when we are ill equipped, and technicians have the wrong attitude. For my colleague to have had that instinctive reaction leads me to believe he did it more than once. It is easy to blame the employer by saying he doesn't order the right quantities of material, but did my colleague ensure that he had the right amount in the truck before leaving? We all have equal responsibility to make sure we do the job right. After all, if we take our job seriously, we should be well aware of the consequences of cutting corners.

Not providing or using the proper equipment has other consequences besides the obvious catastrophic one. The cost of having to provide our customer with a disclosure letter stating that what was done was not really what was asked for can have enormous financial consequences as well as damage to the firm's reputation.

In the past few years, I have come across many incidents involved in the use of wrong equipment, and being asked to do impact assessments and hopefully brush everything under the carpet. That is not the way to do our job. I have seen management with limited knowledge of NDT convert to water washable penetrant instead of post emulsifiable penetrant because there is one less step (ie quicker) and the NDT technician say nothing. I have audited a company doing eddy current bolt hole inspection on titanium while calibrating on an aluminum reference standard. When I asked the technician if that was right, he said "*No, but the company is too cheap to buy the right calibration block, but both aluminum and titanium are non magnetic so it doesn't change anything*" [cringe]. Both incidents ended up having to be reported to the customer. The cost of having done an impact analysis, root cause, and corrective/preventive action widely surpassed the cost of a titanium calibration block and that of the

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small post emulsifiable penetrant line that has since been installed. Not to mention the toll it took on time and effort.

What is the root cause of all these incidents? *Communication*. Management has to admit that it does not always have the technical knowledge or expertise to fully understand the consequences of some of their decisions, and the technicians have the **obligation** to highlight those consequences. For those who hold CGSB certification, this is item 11 on the code of conduct that one must sign prior to being certified.

I hope that the first part of this article raised some awareness to what can happen if we don't have or use the right tools, but those incidents are all in the past, and hopefully the occurrence will decrease.

Another issue in making the proper use of equipment that is available to us is to **Never Disregard Technology**.

The tools that are available to us today were unimaginable a few short decades ago. I remember in the early 2000's that UT phased array was emerging and soon it would revolutionize Ultrasonic Inspection and eddy current array was following in its footsteps. It took a lot of effort and convincing to actually get those tools out of the salesman's car and onto the field. Now we all ask ourselves why it took so long...and without getting too philosophical, the fear of change is why.

As the front line technicians, we have to be the first to embrace what technology has to offer, believe that it can benefit the customer and our employer, and work hard to convince the community that this new

technology, whatever it may be, is the way of the future.

The recent NDT in Canada Conference held in Edmonton Alberta showcased many new pieces of equipment and had many interesting presentations on new and upcoming technologies. It is up to all of us to bring that technology out of the conferences and into the field. It is not always easy, but nothing worthwhile ever comes without effort, hard work, and determination.

In short, let's not forget, we Need Decent Tooling, let's **Not Disregard Technology**, and we can go home having the feeling that our jobs were **Nicely Done Today**.



**Fulvio Mini**

Fulvio Mini holds a Bachelor degree in Physics from McGill University, and holds CGSB Level 3 certification in PT, MT, ET and RT. He has over 20 years experience in NDT related to the aerospace industry: from manufacturing aircraft to the maintenance, repair and overhaul of airframe, engines and components of commercial and private jets. His latest project has been the development of an inspection facility with the aim to provide a real world inspection environment to those entering the field and seeking experience.

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