3i in NDT

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Abstract

It has been obvious that our NDT world has been changed from the analogue to digital for these years. Whilst considering more newly equipment for quality examination available to the market for the betterment of our society, one should not forget the innovative, inspired and improved NDT solutions. Innovation, inspiration and improvement (3i) are probably of the major elements for the future success.

Keywords: innovation, inspiration, improvement in NDT

Thanks for the relentless efforts of NDT professionals, leading to more safety world. For the last 2 decades, it has been obvious that our NDT world has been changed from the analogue to digital. Whilst considering more newly equipment for quality examination available to the market for the betterment of our society, one should not forget the innovative, inspired and improved NDT solutions.

Quality leads the market. In addition to this golden rule, innovation, inspiration and improvement (3i) are probably of the major elements for the future success. The writer has been in the NDT for roughly 30 years, and has seen tremendous changes in this industrial sector due to increasingly demand and challenges. Perhaps you may agree with me that people have no time to wait and always would like to go at a faster pace. This obviously has been vastly applied to the NDT solutions.

For the manual ultrasonic inspection, traditionally operators have to use portable flaw detectors with single and twin crystal probes to carry out detection work on given materials. One might take days to finish a job on a large piece of metallic plate or curved structures of steel industry for thickness mapping and crack detection or composite materials of aircraft industry for delamination and bond detection. Today a portable instrument (figure 1) and various wheel probes of different frequencies and dimensions with single and array element transducers will be the right tool to perform

rapid scanning manually and semi automatically by increasing the detecting speed by 10 or 50 or 100 times but still at high resolution to achieve a complete c-scan solution. The dry coupled and semi dry coupled sensors are applicable to this innovative technique. It is no miracle but is simply a result from 3i. Thanks to the specialists of NDT Solutions being a member of Sonatest group for their contribution to our NDT community. This innovative solution will be of great help to save substantial amount of money and time, and has turned the quality inspection into a new chapter for a more enjoyable life.

Figure 1 – Rapidscan with wheel probe

Ultrasonic immersion technique and gantry system (figure 2) for inspection of large aircraft components are not strange to users. But as well known, there have been many restrictions to which are never appreciated by the inspectors. Today a twin robotic ultrasonic squirter inspection system (figure 3) with nozzles can allow through transmission and pulse echo measurement in fully automatic mode at all directions freely. The mechanical structure of versatile behaviour can be designed as a 13-axis system with two 6-axis robots of high precision fixed on the floor to efficiently give c-scan presentation and 3D evaluation. Bent and curved locations can effectively be checked. Is it worthwhile to take a look how the testing versatility is performed?

Figure 2 – Ultrasonic gantry system

Figure 3 – Ultrasonic robotic system

Today inspectors still place their films on the test pieces by employing traditional technology even though the imaging technique has been applied for years. For inspection of massively produced work pieces, like automotive components, it will surely be a very exhausting experience if image intensifier is not applied. Thanks to the computer technology, fully automatic evaluation of work pieces like wheels has made our dream come true due to users' friendly and highly precision software being a part of Bosello expertise (figure 4 and figure 5). This is not only confined to the automatic recognition of wheel dimensions, but can also sort out bad parts without any visual analysis manually from the assessment process at speed much higher than that of traditional method.

Figure 4 and figure 5 – Fully automatic wheel testing system with software of wheel recognition and automatic assessment.

The above is simply few examples of the latest NDT innovation. For your searching the way to first hand and foremost information on NDT techniques, one must not

forget to visit the coming WCNDT in Shanghai, and I together with my colleagues will be very much delighted to receive all friends around the world.